



# DATA COMMUNICATIONS

**Our free solutions guide features all of our dependable connectivity solutions for data & power.**

## **You'll get**

1. Data Communications Product Guide
2. Standard Flexible Printed Circuit (FPC) Connectors Quick Reference Guide
3. Memory Sockets Quick Reference Guide
4. Stacking Height Guide for Parallel Board-to-Board Applications
5. RF Connectors Quick Reference Guide
6. High Speed Input/Output Solutions Quick Reference Guide
7. AMPLIMITE Subminiature D Connectors Catalog
8. Soft Shell Pin & Socket Connectors Catalog

**Browse Products:** <http://www.te.com/usa-en/solutions/data-communications.html>

# DATA COMMUNICATIONS

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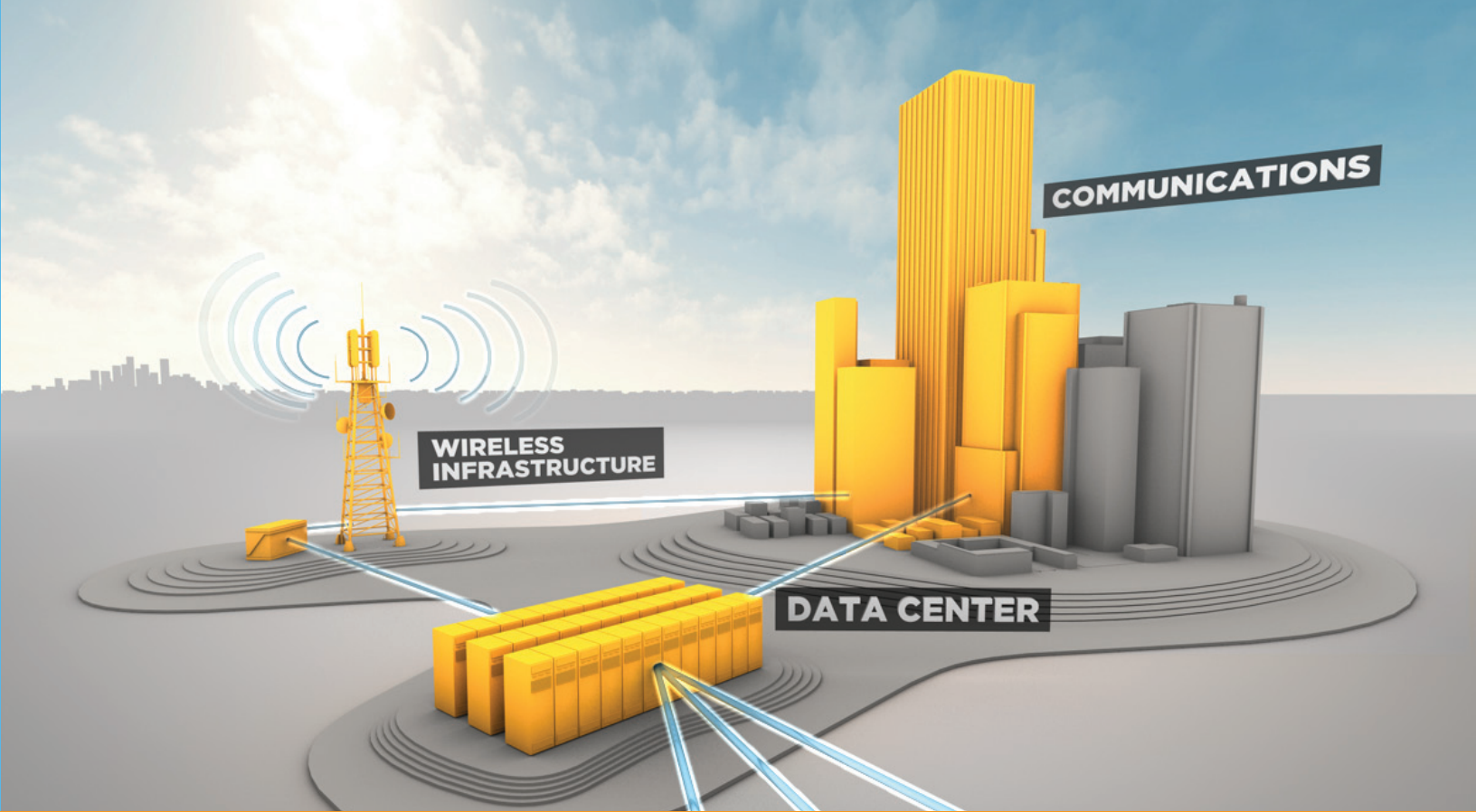
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# DATA COMMUNICATIONS

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DATA COMMUNICATIONS PRODUCT GUIDE

Browse Products: <http://www.te.com/usa-en/solutions/data-communications.html>



## TE Connectivity Data Communications Product Guide:

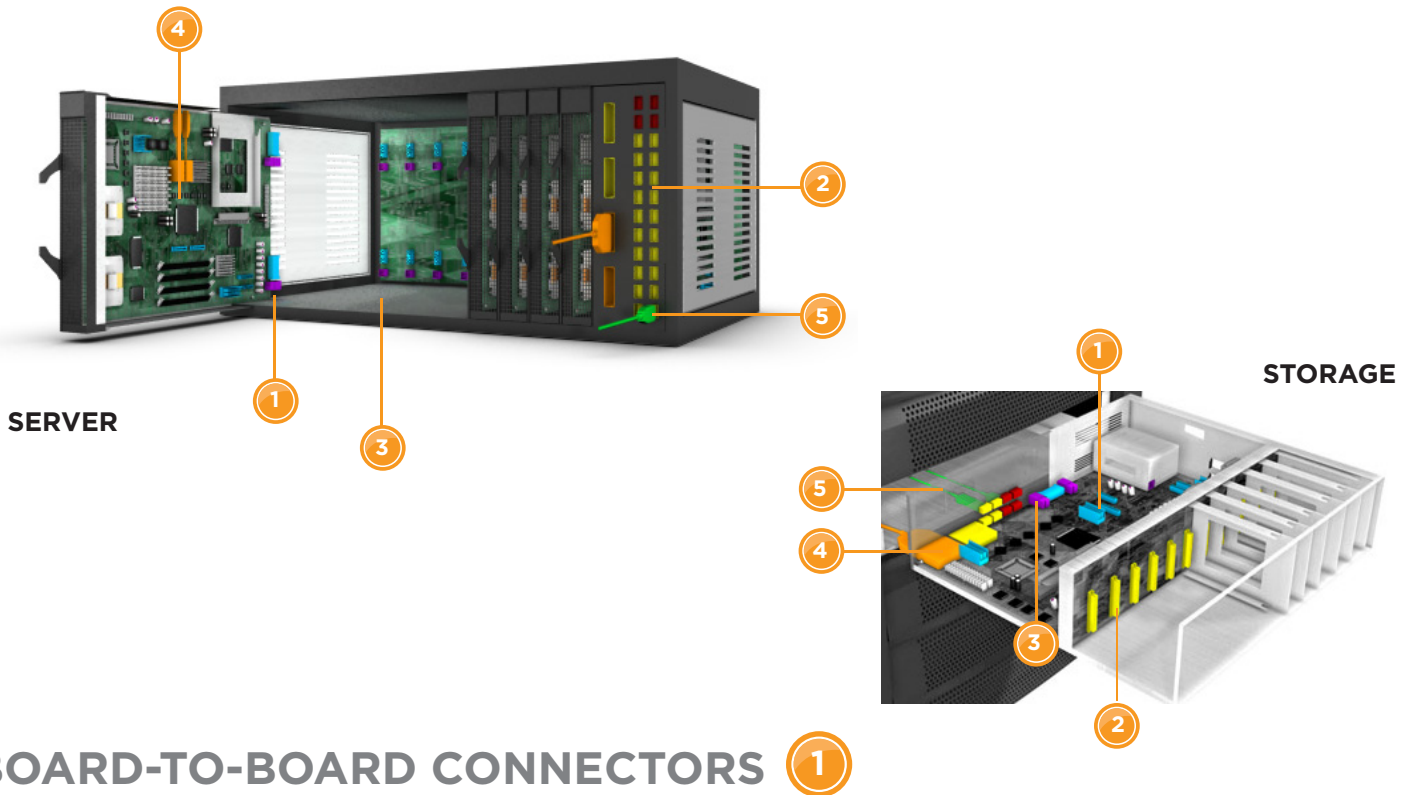
Providing technology leadership for your next-generation high-speed architectural platforms

Success in today and tomorrow's data communications relies on dependable high-speed interconnections. From the data center, central office, enterprise communications and the wireless infrastructure, TE Connectivity provides a broad portfolio of high-speed products. This expansive portfolio addresses the increasing data rate demands for data communications.

This guide provides TE's high-speed product portfolio and capabilities for next-generation data communication architectures.



# DATA CENTER - SERVER



## BOARD-TO-BOARD CONNECTORS 1

### BackPlane

STRADA Whisper connector + + + +  
[www.te.com/products/STRADAwisper](http://www.te.com/products/STRADAwisper)

IMPACT connector ● ● ●  
[www.te.com/products/Impact](http://www.te.com/products/Impact)

Z-PACK TinMan connector ●  
[www.te.com/products/tinman](http://www.te.com/products/tinman)

Z-PACK TinMan Plus connector + +  
 In Development  
 Please contact technical support team on back page

Z-PACK Slim UHD high-speed connector ● ●  
[www.te.com/products/zpackUHD](http://www.te.com/products/zpackUHD)

Z-PACK HM-Zd connector ●  
[www.te.com/products/HMZD](http://www.te.com/products/HMZD)

Z-PACK HM-Zd Plus connector ● ●  
[www.te.com/products/hmzdplus](http://www.te.com/products/hmzdplus)

MULTIGIG RT connector ●  
[www.te.com/products/multigigrt](http://www.te.com/products/multigigrt)

Slim UHD connector + +  
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 Please contact technical support team on back page

### Mezzanine

STRADA Mesa connector + + ●  
[www.te.com/products/STRADAmesa](http://www.te.com/products/STRADAmesa)

STEP-Z connector ●  
[www.te.com/products/STEP-Z](http://www.te.com/products/STEP-Z)

### CoPlanar

Z-PACK HM-Zd connector ●  
[www.te.com/products/HMZD](http://www.te.com/products/HMZD)

Z-PACK HM-Zd Plus connector ● ●  
[www.te.com/products/hmzdplus](http://www.te.com/products/hmzdplus)

Z-PACK Slim UHD high-speed connector ● ●  
[www.te.com/products/zpackUHD](http://www.te.com/products/zpackUHD)

STRADA Whisper Connector + + + +  
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 Please contact technical support team on back page

KEY CODE	<span style="color: blue;">●</span> Data Rate: 25+ GB/s	<span style="color: yellow;">●</span> Data Rate: 10G
	<span style="color: blue;">●</span> Data Rate: 20-25 GB/s	<span style="color: orange;">●</span> Data Rate: 1G
	<span style="color: green;">●</span> Data Rate: 15-20 GB/s	<span style="color: red;">●</span> Data Rate: 10/100
	<span style="color: green;">●</span> Data Rate: 10-15 GB/s	<span style="color: grey;">●</span> Available
		<span style="color: grey;">+</span> In Development

\*\* Data Rates based on current TE Connectivity road maps. Subject to change.

# COMMUNICATION - SWITCH / ROUTER

## I-O 2

### Pluggable

Mini SAS HD connector ●

[www.te.com/products/MiniSASHD](http://www.te.com/products/MiniSASHD)

MultiLink SAS connector ⊕

In Development

Please contact technical support team on back page

Quad SAS connector ⊕ ⊕ ⊕

In Development

Please contact technical support team on back page

12G SAS connector ⊕

In Development

Please contact technical support team on back page

SFP+ connector ●

[www.te.com/products/SFPplus](http://www.te.com/products/SFPplus)

zSFP+ connector ⊕ ⊕ ⊕ ⊕

In Development

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QSFP+ connector ●

[www.te.com/products/QSFP](http://www.te.com/products/QSFP)

zQSFP+ connector ● ● ● ●

[www.te.com/products/zQSFPplus](http://www.te.com/products/zQSFPplus)

CXP connector ⊕

[www.te.com/products/CXP](http://www.te.com/products/CXP)

zCXP connector ⊕ ⊕ ⊕

In Development

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CFP connector ● ● ● ●

[www.te.com/products/cfp](http://www.te.com/products/cfp)

Quadra connector (CFP2 & CFP4) ⊕ ⊕ ⊕ ⊕

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XFP connector ●

[www.te.com/products/xfp](http://www.te.com/products/xfp)

X2 connector ●

[www.te.com/products/x2](http://www.te.com/products/x2)

Cat 6A (10GBase-T) connector ●

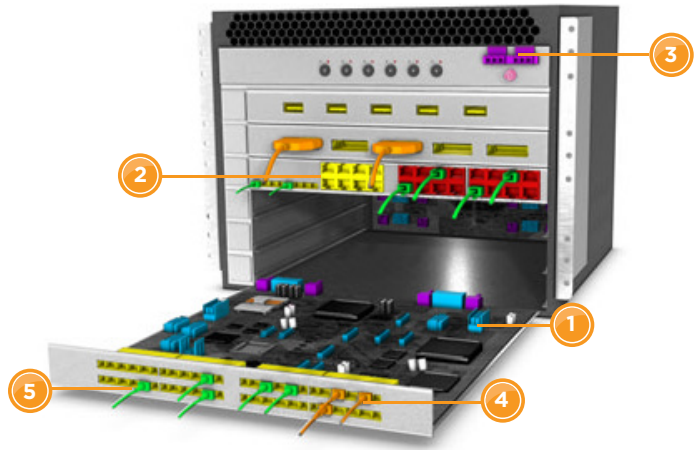
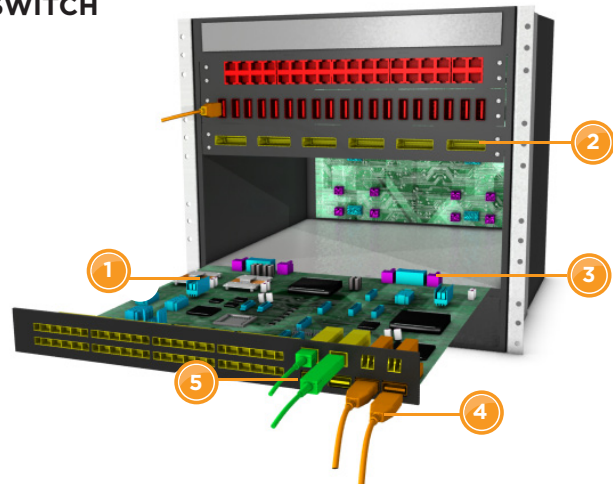
In Development

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RJ point five connector system ⊕ ● ●

[www.te.com/products/rjpointfive](http://www.te.com/products/rjpointfive)

## SWITCH



## ROUTER

## POWER CONNECTORS 3

MULTI-BEAM XLE connector

[www.te.com/products/MULTIBEAMXLE](http://www.te.com/products/MULTIBEAMXLE)

MINIPAK HDL connector

[www.te.com/products/minipakhdl](http://www.te.com/products/minipakhdl)

MULTI-BEAM XL connector

[www.te.com/products/MULTIBEAMXL](http://www.te.com/products/MULTIBEAMXL)

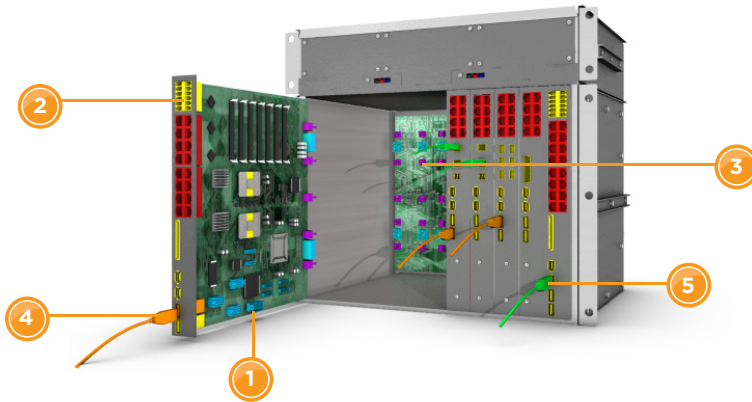
ET Power connector

[www.te.com/products/Etpower](http://www.te.com/products/Etpower)

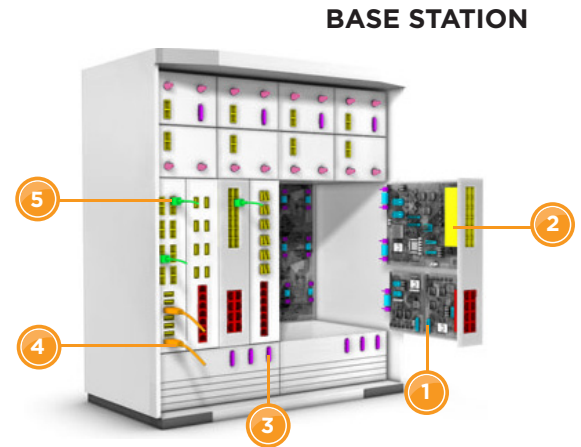
CROWN LINE connector

[www.te.com/products/CROWNLINELINE](http://www.te.com/products/CROWNLINELINE)

# WIRELESS INFRASTRUCTURE - MOBILE SWITCH



**MOBILE SWITCH**



**BASE STATION**

## FIBER OPTICS 4

### Active Optical Cable Assemblies

QSFP cable assemblies ● ●  
[www.te.com/products/QSFP](http://www.te.com/products/QSFP)

QSFP+ cable assemblies ● ● ● ●  
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zQSFP Cable Assemblies + + +  
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zSFP Cable Assemblies + + + +  
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Hybrid cable assemblies + + +  
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### Active Optical Modules (Transceivers)

QSFP modules + + +  
[www.te.com/products/QSFP-modules](http://www.te.com/products/QSFP-modules)

QSFP+ modules + + + +  
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### Advanced Packing Solutions

Mid-board optics + + +  
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## COPPER CABLE ASSEMBLIES 5

4X cable assemblies (SAS, Fibre Channel, Infiniband, 10G Ethernet) ●  
[www.te.com/products/4X12X](http://www.te.com/products/4X12X)

HM-Zd cable assemblies ●  
[www.te.com/products/high-speed-cable-assemblies](http://www.te.com/products/high-speed-cable-assemblies)

QSFP+ cable assemblies ● ● ●  
[www.te.com/products/QSFP](http://www.te.com/products/QSFP)

zQSFP+ cable assemblies + + +  
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SFP+ cable assemblies ● ● ●  
[www.te.com/products/SFPplusca](http://www.te.com/products/SFPplusca)

zSFP+ cable assemblies + + +  
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XFP cable assemblies ● ● ●  
[www.te.com/products/XFP](http://www.te.com/products/XFP)

RJ *point five* connector system cable assemblies + ● ●  
[www.te.com/products/rjpointfive](http://www.te.com/products/rjpointfive)

Mini SAS cable assemblies ●  
[www.te.com/products/minisascableassy](http://www.te.com/products/minisascableassy)

Mini SAS HD cable assemblies + +  
[www.te.com/products/MiniSASHD](http://www.te.com/products/MiniSASHD)

InfiniTwist cables + ● ●  
[www.te.com/products/InfiniTwist](http://www.te.com/products/InfiniTwist)

# HIGH-SPEED PRODUCT DEVELOPMENT CAPABILITIES AND TECHNOLOGIES

## Signal Integrity Capabilities

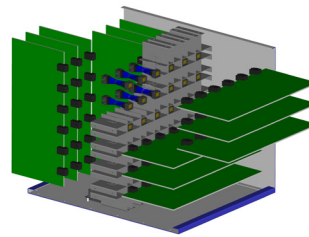
TE has leading edge signal integrity and Electro-Magnetic-Interference (EMI) modeling and testing capabilities required for ever increasing data rates. Our global team can function as your initial design and consultation resource to perform electrical modeling and simulation of high-speed connectors and cable assemblies. Additionally, we provide test and validation of electrical performances across your complete channel or system. So whether you're looking to validate a current system layout or developing the next-generation high-speed system, our signal integrity team can provide support for all areas of your analysis.

For more information about TE's signal integrity capabilities, visit our landing page at: <http://www.TE.com/documentation/electrical-models/>

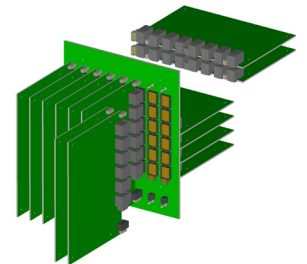
## High-Speed Products Enabling Next-Generation Architectures

### High-Speed Backplane

- Broad portfolio of high-speed, high-performance backplane connectors and cable assemblies for aggregate data rates greater than 100 Gbps (up to 40 Gbps per differential pair)
- Enables orthogonal and cabled backplane architectures
- Reduced connector noise and insertion loss
- Optimized PCB footprints



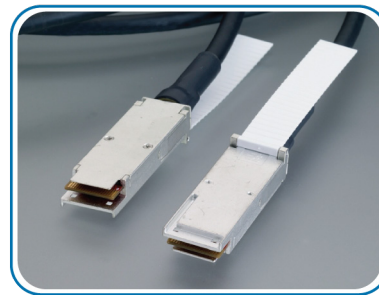
Cabled Backplane Architecture



Traditional Orthogonal Backplane Architecture

### High-Speed Copper Cables

- Wide array of high-speed, high-performance cables and cable assemblies for next-generation industry standard applications
- Conductor sizes of 32, 30, 28, 26 and 24 AWG available
- Capable of aggregate data rates greater than 100 Gbps (up to 40 Gbps per differential pair)



QSFP Cable Assembly



InfiniTwist Cable

### High-Speed Fiber Optics

- Complete product solution set including passive and active optical cables and transceivers
- Our portfolio enables a wide range of applications including chip-to-chip, optical backplanes and fiber-to-the-antenna
- Capable of aggregate data rates greater than 100 Gbps (up to 40 Gbps per wave length)



QSFP Active Optical Cable Assembly



QSFP+ Transceiver

## DATA COMMUNICATION INDUSTRY URLs

[www.te.com/data-comm](http://www.te.com/data-comm)

[www.te.com/industry/datacenter](http://www.te.com/industry/datacenter)

[www.te.com/industry/communications](http://www.te.com/industry/communications)

[www.te.com/industry/wireless](http://www.te.com/industry/wireless)

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Canada: +1 (905) 475-6222

Mexico: +52 (0) 55-1106-0800

Latin/S. America: +54 (0) 11-4733-2200

Germany: +49 (0) 6251-133-1999

UK: +44 (0) 800-267666

France: +33 (0) 1-3420-8686

Netherlands: +31 (0) 73-6246-999

China: +86 (0) 400-820-6015

### Contact Information

Name:

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Phone:

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Email:

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MultiLink SAS is a trademark of SCSI Trade Association

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RJ *point five*, STEP-Z, STRADA, STRADA Mesa, STRADA Whisper, Z-PACK, Z-PACK Slim UHD,

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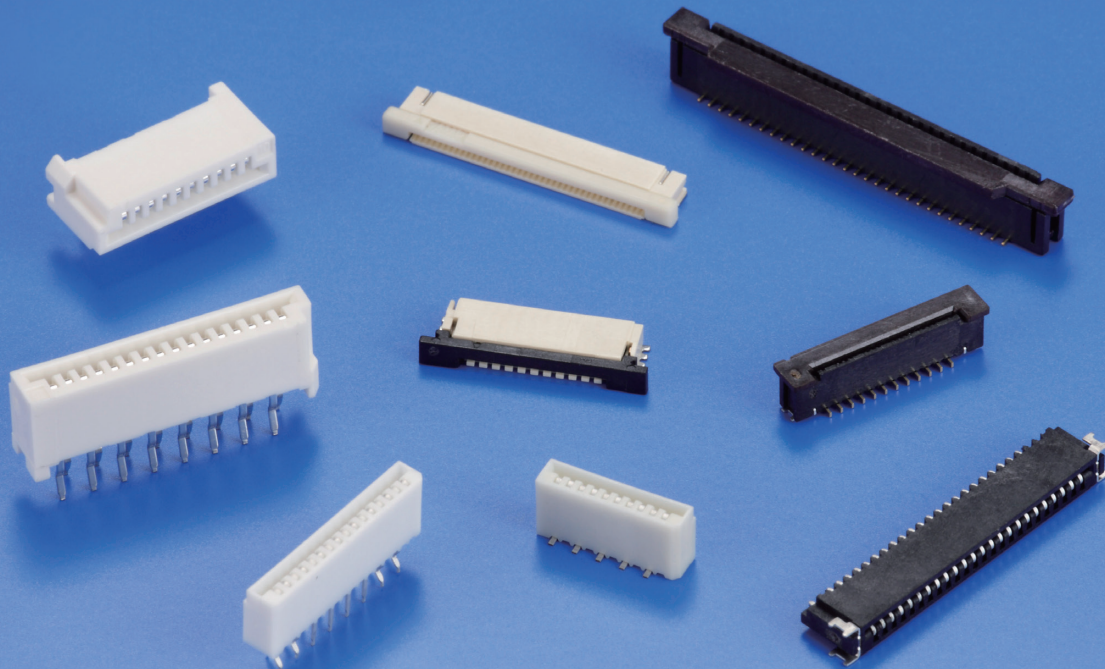
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# DATA COMMUNICATIONS

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STANDARD FLEXIBLE PRINTED CIRCUIT (FPC) CONNECTORS QUICK REFERENCE GUIDE





## Quick Reference Guide Standard Flexible Printed Circuit (FPC) Connectors - 0.5mm, 1.0mm & 1.25mm Pitch

As the demands for higher-density packaging of electronic equipment increase, the use of flexible printed circuits (FPC) to reduce size, weight and assembly costs has expanded.

As with our fine pitch FPC product, our larger pitch FPC connectors are also an ideal solution for routing signal through your device when standard wire-to-board products are too large or impractical. Set on larger centerline pitch, these FPC products are generally found in larger mobile devices such as hand-held scanners, cameras and GPS units; as well as in larger applications such as set-top boxes, business equipment and industrial controls.

FPC interconnects of this size are also commonly found on devices that have low-definition displays, touch panels or screens. This makes it very easy to identify potential FPC interconnect opportunities.

TE Connectivity's FPC solutions are available in 0.25mm, 0.3mm, 0.4mm, 0.5mm, 1.0mm and 1.25mm centerline spacing. In this quick reference guide we introduce items with 0.5mm, 1.0mm and 1.25mm centerline spacing.

### FEATURES AND BENEFITS

- Multiple Centerline Spacing Options
- ZIF and non-ZIF Versions Available
- Top and Bottom Contact Options
- Requires No Application Tooling

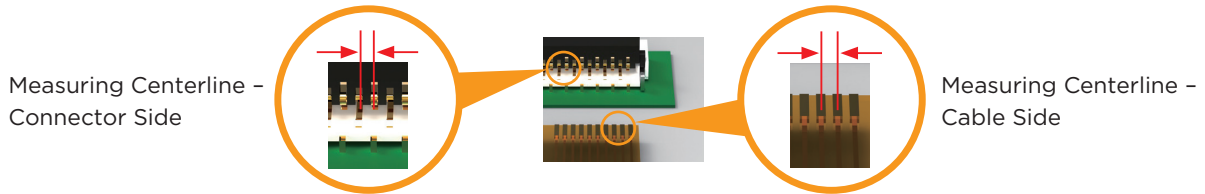
### PRODUCT APPLICATIONS

- Consumer Electronics
  - Hand-Held Scanners
  - POS Devices / Payment Terminals
  - Set-Top Boxes
  - PCs
  - PC Peripherals
- Business Equipment
- Industrial Equipment
  - Industrial Controls
  - Gas Pumps
  - ATMs
  - Slot Machines
- Medical Equipment



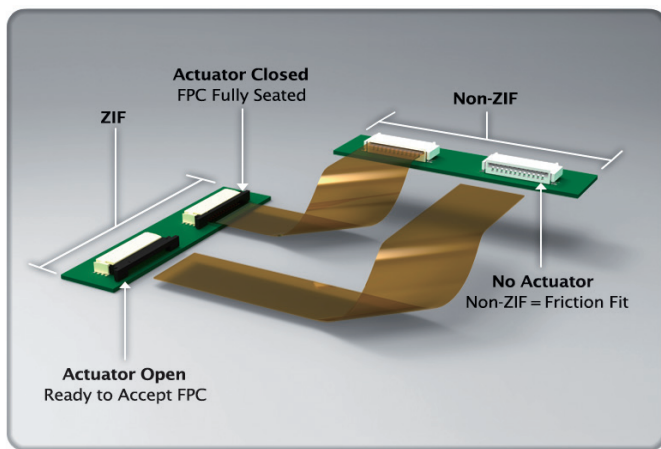
# Basic Information

## Multiple Centerlines



Centerline can be measured many different ways; however, in general, it is simply the spacing between the center of one contact and the center of its neighboring contact. Here you can see an example of the centerline spacing on an FPC connector and the centerline spacing on a flexible printed circuit cable.

## ZIF and non-ZIF



### ZIF Connectors

- Use an actuator to secure the flex cable
- Less wear on contacts
- Increase mating cycle count
- Provide added retention
- Better for high vibration environments

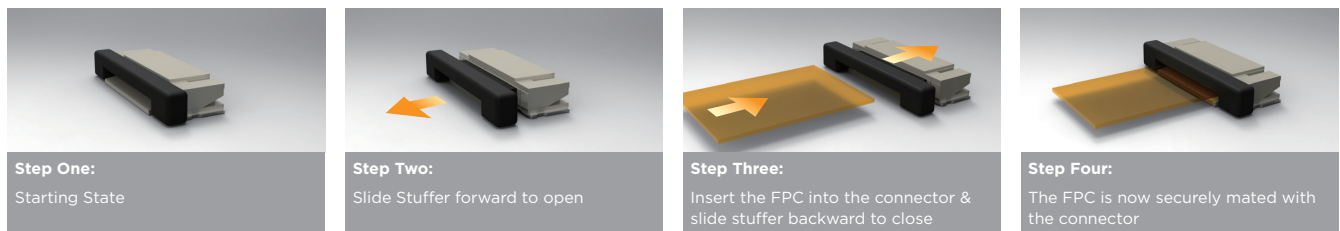
### Non-ZIF Connectors

- Use friction to secure the flex cable
- Lower mating cycle count
- Better for static applications
- Smaller and lighter weight than equivalent ZIF counterpart
- Take up less board real-estate
- Typically less expensive than equivalent ZIF counterpart

## Stuffer Actuator (Plunger Style)

Many of our larger pitch ZIF-style FPC connectors use a stuffer-type actuator [See Below]. Stuffer actuators use a slightly different method to secure an FPC cable into the connector than the flip-lock versions [For flip-lock versions, see Fine Pitch FPC Connector Quick Reference Guide, document number 8-1773459-2].

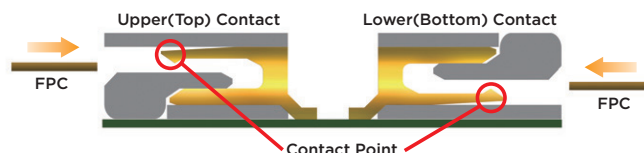
Stuffer actuators are typically used in vertical applications for ease of use; however right angle versions are also available.



## Upper (Top) Contact vs Lower (Bottom) Contact

Many of our fine pitch FPC products are available in both Upper (top) or Lower (bottom) contact versions. This attribute simply represents which portion of the contact the flexible printed circuit interacts with. As you can see from the image below, the FPC contacts are formed in a “U” shape. Only one prong of that “U” shaped contact interfaces with the flexible printed circuit contacts. Choosing the correct contact design is generally based on the orientation of the flexible printed circuit as described below.

If the contacts of the flexible printed circuit are facing up (away from the board) then the upper contact version is required.



If the contacts of the flexible printed circuit are facing down (towards the board) then the lower contact version is required.

0.5mm pitch (All PNs are ZIF style)								1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30			
ORIENTATION	CONTACT TYPE	PCB MOUNT	ACTUATOR STYLE	PLATING	FEATURES	IMAGE	BASE PN	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60			
								POSITION SIZE																																
RIGHT ANGLE	TOP	SMT	STUFFER	30 GOLD			1775560					-5	-6	-7	-8	-9	-10	-11	-12	-13	-14	-15	-16	-17	-18	-19	-20	-21	-22	-23	-24	-25	-26	-27	-28	-29	-30			
				GOLD FLASH	NARROW BODY		1734839					-5	-6	-7	-8	-9	-10	-11	-12	-13	-14	-15	-16	-17	-18	-19	-20	-21	-22	-23	-24	-25	-26	-27	-28	-29	-30			
	BOTTOM	SMT	STUFFER	30 GOLD			1775635						-5	-6	-7	-8	-9	-10	-11	-12	-13	-14	-15	-16	-17	-18	-19	-20	-21	-22	-23	-24	-25	-26	-27	-28	-29	-30		
				LOW HALOGEN			2041324																																	
				GOLD FLASH	NARROW BODY		1735842																																	
				BLACK HOUSING			1775628																																	
			FLIP - LOCK	90 DEGREE FLIP-LOCK			1775333																																	
				GOLD FLASH	105 DEGREE FLIP-LOCK		2041070																																	
					60 POSITION		2041215																																	

1.0mm pitch (PNs are ZIF and non-ZIF styles, see "FEATURES" for details)								1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
ORIENTATION	CONTACT TYPE	PCB MOUNT	ACTUATOR STYLE	PLATING	FEATURES	IMAGE	BASE PN	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	
								POSITION SIZE																														
VERTICAL	N/A	SMT	STUFFER	GOLD FLASH	ZIF		1734248				-3	-4	-5	-6	-7	-8	-9	-10	-11	-12	-13	-14	-15	-16	-17	-18	-19	-20	-21	-22		-24	-25	-26	-27	-28	-29	-30
RIGHT ANGLE	TOP	SMT	STUFFER	TIN	ZIF		84953					-4	-5	-6	-7	-8	-9	-10	-11	-12	-13	-14	-15	-16	-17	-18	-19	-20	-21	-22	-23	-24	-25	-26	-27	-28	-29	-30
	BOTTOM	SMT	STUFFER	TIN	ZIF		84952					-4	-5	-6	-7	-8	-9	-10	-11	-12	-13	-14	-15	-16	-17	-18	-19	-20	-21	-22	-23	-24	-25	-26	-27	-28	-29	-30
		FLIP - LOCK	GOLD FLASH	ZIF		2041084							-4	-6	-8	-10	-12																					
VERTICAL	N/A	SMT	N/A	TIN	non-ZIF		84982					-4	-5	-6	-7	-8	-9	-10	-11	-12	-13	-14	-15	-16	-17	-18	-19	-20	-21	-22	-23	-24	-25	-26	-27	-28	-29	-30
		T/H			non-ZIF		84984					-4	-5	-6	-7	-8	-9	-10	-11	-12	-13	-14	-15	-16	-17	-18	-19	-20	-21	-22	-23	-24	-25	-26	-27	-28	-29	-30
RIGHT ANGLE	TOP	SMT	N/A	TIN	non-ZIF		84981					-4	-5	-6	-7	-8	-9	-10	-11	-12	-13	-14	-15	-16	-17	-18	-19	-20	-21	-22	-23	-24	-25	-26	-27	-28	-29	-30
		T/H			non-ZIF		84983					-4	-5	-6	-7	-8	-9	-10	-11	-12	-13	-14	-15	-16	-17	-18	-19	-20	-21	-22	-23	-24	-25	-26	-27	-28	-29	-30
	BOTTOM	SMT	N/A	TIN	non-ZIF		1734798					-4	-5	-6	-7	-8	-9	-10	-11	-12	-13	-14	-15	-16	-17	-18	-19	-20	-21	-22	-23	-24	-25	-26	-27	-28	-29	-30
		T/H			non-ZIF		1734779					-4	-5	-6	-7	-8	-9	-10	-11	-12	-13	-14	-15	-16	-17	-18	-19	-20	-21	-22	-23	-24	-25	-26	-27	-28	-29	-30

1.25mm pitch (All PNs are non-ZIF style)								1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
ORIENTATION	CONTACT TYPE	PCB MOUNT	ACTUATOR STYLE	PLATING	FEATURES	IMAGE	BASE PN	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	
								POSITION SIZE																														
VERTICAL	N/A	T/H	N/A	TIN	non-ZIF		84534					-4	-5	-6	-7	-8	-9	-10	-11	-12	-13	-14	-15	-16	-17	-18	-19	-20	-21	-22	-23	-24	-25	-26	-27	-28	-29	-30
RIGHT ANGLE	TOP				non-ZIF		84533																															

## Frequently asked questions

### Question 1

Is there a pitch requirement for your interconnect need?

### Answer 1

TE offers FPC products from 0.25mm to 1.25mm centerline spacing.

### Question 2

Is your application in a high vibration environment?

### Answer 2

ZIF version FPC interconnects have a greater retention force and are suitable for high vibration applications.

### Question 3

Do you have a need for a higher number of mating cycles?

### Answer 3

ZIF version FPC interconnects allow for a greater number of mating cycles via the use of an actuator.

### Question 4

In your application, when the flex cable meets the board-mounted connectors, will the flex cable contact pads be face up or face down?

### Answer 4

If face down, use bottom contact versions. If face up, use top contact versions.

## FOR MORE INFORMATION

### TE Technical Support Center

USA:	+1 (800) 522-6752
Canada:	+1 (905) 475-6222
Mexico	+52 (0) 55-1106-0800
Latin/S. America:	+54 (0) 11-4733-2200
Germany:	+49 (0) 6251-133-1999
UK:	+44 (0) 800-267666
France:	+33 (0) 1-3420-8686
Netherlands:	+31 (0) 73-6246-999
China:	+86 (0) 400-820-6015

Part numbers in this brochure are RoHS Compliant\*, unless marked otherwise.

\*as defined [www.te.com/leadfree](http://www.te.com/leadfree)

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# DATA COMMUNICATIONS

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MEMORY SOCKETS QUICK REFERENCE GUIDE



# MEMORY SOCKETS

## Quick Reference Guide

TE Connectivity's (TE) main memory connectors are made to JEDEC industry standards for dual in-line memory modules (DIMM) and small outline DIMM (SO DIMM) as well as custom memory modules for server, workstation, desktop, notebook, storage and communication applications. Our memory socket portfolio covers the DDR2, DDR3, and DDR4 generations of sockets. Each product family consists of vertical and a few right-angle and various-angled configurations in solder tail and surface mount (SMT) mounting options.

### Applications

- Servers
- High Performance Computing (HPC)
- Workstations
- Mass storages
- Communication equipment
- Desktop PCs
- Instrument equipment

### Benefits

- Wide variety of options
- Enable reliable connections to standard memory modules
- Contact design protects against module stubbing

### Features

- Designed to JEDEC industry standards for new and existing DIMM memory modules
- Provide end latches for module retention, ejection and mechanical voltage keying
- SO DIMM sockets are offered in several stacking heights to maximize board space



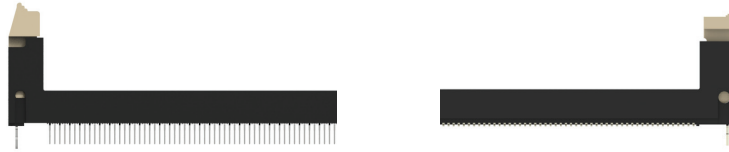
# Memory Sockets

## DIMM Sockets

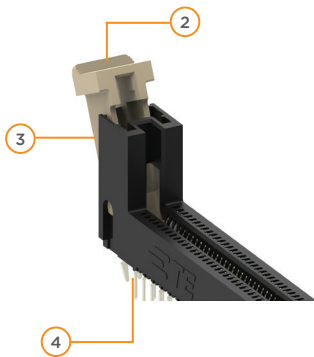
DIMM sockets enable reliable connection to standard memory modules

Through Hole (TH)

Surface Mount (SMT)



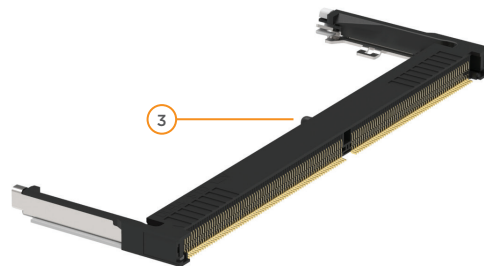
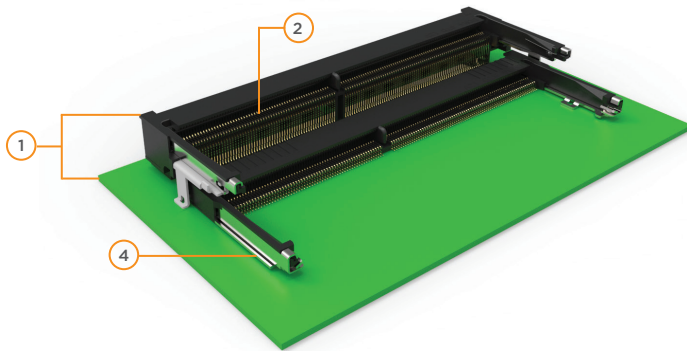
①



1. Various mounting types: through hole, surface mount
2. Various latch types: short and long latch to meet different space requirements
3. Multiple color options for latch and housing
4. Various contact length (TH) and plating options to meet different PCB and field lifetime

## SO DIMM Sockets

SO DIMM sockets provide highly reliable, low cost, space saving benefits where height off the board is important



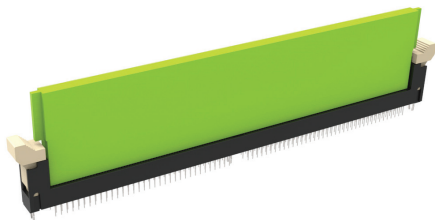
1. Multiple height options are ideal to stack and save space
2. Zero insertion force for easy module insertion
3. Two key types: standard and reverse key position to prevent mis-insertion
4. Latch floating helps ensure coplanarity and easy soldering

# Memory Sockets

## Technical Specifications

		DDR1/2 SO DIMM	DDR3 SO DIMM	DDR4 DIMM	DDR4 SO DIMM
Pin count		200	204	288	260
Card thickness		1.0+/-0.10	1.0+/-0.10	1.40+/-0.10	1.20+/-0.10
Pitch		0.6	0.6	0.85	0.5
Operation voltage		2.5V/1.8V	1.5V	1.2V	1.2V
Voltage (max)		25 VAC	25 VAC	25 VAC	25 VAC
Voltage key positions		Center	Center	Center	Center
Current (max)		0.5 A	0.5 A	0.75A	0.5 A
Low level contact resistance (mac)		50mΩ initial	50mΩ initial	10mΩ initial	50mΩ initial
Dielectric withstanding voltage		250 VAC	250 VAC	500 VAC	250 VAC
Insulation resistance (min)		250 MΩ initial	250 MΩ initial	1000 MΩ initial	250 MΩ initial
Module insertion force (with latch))		N/A	N/A	106N	N/A
Terminal retention force (min)		1.2N	1.2N	3N	1.2N
Fork lock		N/A	N/A	13.3N	N/A
Latch actuation force (to open)		N/A	N/A	20N	N/A
Module rip-out force at center (without damage)		N/A	N/A	20N max	N/A
PCB retention force		N/A	N/A	75N max	N/A
Durability (mating cycles)		25	25	25	25
Operating temperature		-55°C to 85°C	-55°C to 85°C	-55°C to 85°C	-55°C to 85°C
JEDEC Standards	Microelectronic Outlines	SO-005	SO-006	SO-016	SO-018
	Socket Outlines	MO-224	MO-268	MO-309	MO-310
Compliance		RoHS, ELV, UL 94V0			

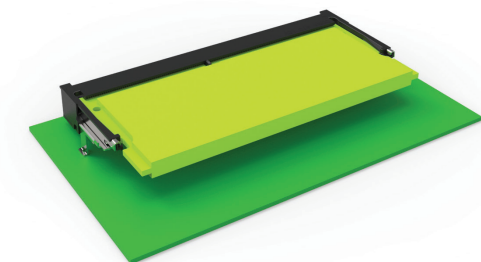
### DIMM module fully inserted into socket



#### Applications:

- Servers
- Communications Equipment
- Workstations
- High-Performance Computing

### SO DIMM module fully inserted into socket



#### Applications:

- Mass storage
- Communications
- Desktop PCs
- Instrument equipment

# Memory Sockets

## Part Number Detail

### DDR4 DIMM

Part Number	Latch Type	Tail Length (mm)	Type	Contact Plating	Gold Thickness	Housing Color	Latch Color	Packaging
2308107-1	Long	2.4	TH	Gold	15u"	Black	Black	Tray
2308107-2	Long	2.4	TH	Gold	15u"	Blue	Natural	Tray
2308107-3	Long	2.4	TH	Gold	15u"	Green	Natural	Tray
2308107-4	Long	2.4	TH	Gold	30u"	Black	Black	Tray
2308107-5	Long	2.4	TH	Gold	30u"	Natural	Natural	Tray
2308107-6	Long	3.18	TH	Gold	15u"	Blue	Natural	Tray
2308107-7	Long	3.18	TH	Gold	15u"	Black	Natural	Tray
2308107-8	Long	2.1	TH	Gold	15u"	Green	Natural	Tray
2308107-9	Long	2.1	TH	Gold	15u"	Blue	Natural	Tray
1-2308107-0	Long	2.1	TH	Gold	15u"	Black	Natural	Tray
1-2308107-1	Long	2.67	TH	Gold	30u"	Black	Green	Tray
1-2308107-2	Long	2.67	TH	Gold	30u"	Black	Natural	Tray
1-2308107-3	Long	2.67	TH	Gold	30u"	Black	Black	Tray
1-2308107-4	Long	2.1	TH	Gold	30u"	Black	Green	Tray
1-2308107-5	Long	2.1	TH	Gold	30u"	Black	Natural	Tray
1-2308107-6	Long	2.1	TH	Gold	30u"	Black	Black	Tray
1-2308107-7	Long	3.18	TH	Gold	15u"	Black	Black	Tray
1-2308107-8	Long	3.18	TH	Gold	15u"	Natural	Natural	Tray
1-2308107-9	Long	3.18	TH	Gold	15u"	Green	Green	Tray
2-2308107-0	Long	3.18	TH	Gold	15u"	Blue	Blue	Tray
2-2308107-1	Long	2.4	TH	Gold	15u"	Black	Natural	Tray
5-2308107-1	Short	2.67	TH	Gold	15u"	Black	Natural	Tray
5-2308107-2	Short	2.67	TH	Gold	15u"	Blue	Natural	Tray
5-2308107-3	Short	2.67	TH	Gold	15u"	Natural	Natural	Tray
5-2308107-4	Short	2.67	TH	Gold	15u"	Black	Black	Tray
5-2308107-5	Short	2.67	TH	Gold	30u"	Natural	Natural	Tray
5-2308107-6	Short	2.67	TH	Gold	30u"	Black	Black	Tray
5-2308107-7	Short	2.1	TH	Gold	30u"	Black	Black	Tray
5-2308107-8	Short	2.1	TH	Gold	30u"	Natural	Natural	Tray
5-2308107-9	Short	3.18	TH	Gold	30u"	Black	Black	Tray
6-2308107-0	Short	3.18	TH	Gold	30u"	Black	Natural	Tray
6-2308107-1	Short	3.18	TH	Gold	30u"	Black	Green	Tray
2199155-7	Short	N/A	SMT	Gold	30u"	Black	Green	Tray
2199155-6	Short	N/A	SMT	Gold	30u"	Natural	Natural	Tray
2199155-4	Short	N/A	SMT	Gold	30u"	Black	Black	Tray
2199155-3	Short	N/A	SMT	Gold	15u"	Black	Black	Tray
2199155-2	Short	N/A	SMT	Gold	30u"	Black	Natural	Tray
2199155-1	Short	N/A	SMT	Gold	15u"	Black	Natural	Tray

### DDR4 SO DIMM

Packaging	Height (mm)	Module Orientation	Type	Part Number	Contact Gold Plating Thickness				
					GF	5u"	10u"	15u"	30u"
Tape & Reel	4.0	Right Angle	SMT, Std	2309407-x	-1	-2	-3	-4	-5
		Right Angle	SMT, Rvs	2309408-x	-1	-2	-3	-4	-5
	5.2	Right Angle	SMT, Std	2309409-x	-1	-2	-3	-4	-5
		Right Angle	SMT, Rvs	2309410-x	-1	-2	-3	-4	-5
	8.0	Right Angle	SMT, Std	2309411-x	-1	-2	-3	-4	-5
		Right Angle	SMT, Rvs	2309412-x	-1	-2	-3	-4	-5
	9.2	Right Angle	SMT, Std	2309413-x	-1	-2	-3	-4	-5
		Right Angle	SMT, Rvs	2309414-x	-1	-2	-3	-4	-5

# Memory Sockets

## Part Number Detail

### DDR3 SO DIMM

Part Number	Module Orientation	Type	Contact Plating	Gold Thickness	Housing Color	Height (mm)	Packaging
2013022-1	Right Angle	SMT, Std	Gold	GF	Black	4.0	Tray
2-2013022-1	Right Angle	SMT, Std	Gold	GF	Black	4.0	Reel
2-2013022-2	Right Angle	SMT, Std	Gold	10u"	Black	4.0	Reel
2-2013022-3	Right Angle	SMT, Std	Gold	30u"	Black	4.0	Reel
2-2013287-1	Right Angle	SMT, Rvs	Gold	GF	Black	4.0	Reel
2013289-1	Right Angle	SMT, Std	Gold	GF	Black	5.2	Tray
2013289-2	Right Angle	SMT, Std	Gold	10u"	Black	5.2	Tray
2013289-3	Right Angle	SMT, Std	Gold	30u"	Black	5.2	Tray
2-2013289-1	Right Angle	SMT, Std	Gold	GF	Black	5.2	Reel
2-2013289-2	Right Angle	SMT, Std	Gold	10u"	Black	5.2	Reel
2-2013289-3	Right Angle	SMT, Std	Gold	30u"	Black	5.2	Reel
2013290-1	Right Angle	SMT, Rvs	Gold	GF	Black	5.2	Tray
2013290-2	Right Angle	SMT, Rvs	Gold	10u"	Black	5.2	Tray
2-2013290-1	Right Angle	SMT, Rvs	Gold	GF	Black	5.2	Reel
2-2013290-2	Right Angle	SMT, Rvs	Gold	10u"	Black	5.2	Reel
2-2013290-3	Right Angle	SMT, Rvs	Gold	30u"	Black	5.2	Reel
2-2013297-1	Right Angle	SMT, Std	Gold	GF	Black	8.0	Reel
2013310-1	Right Angle	SMT, Std	Gold	GF	Black	9.2	Tray
2013310-3	Right Angle	SMT, Std	Gold	30u"	Black	9.2	Tray
2-2013310-1	Right Angle	SMT, Std	Gold	GF	Black	9.2	Reel
2-2013310-2	Right Angle	SMT, Std	Gold	10u"	Black	9.2	Reel
2-2013311-1	Right Angle	SMT, Rvs	Gold	GF	Black	9.2	Reel

### DDR2 SO DIMM

Part Number	Module Orientation	Type	Power Supply	Housing Color	Height (mm)	Packaging	Remark
1473005-4	Right Angle	SMT, Std	1.8V	Black	5.2	Tray	N/A
1717254-4	Right Angle	SMT, Std	1.8V	Black	5.2	Reel	N/A
1473149-4	Right Angle	SMT, Std	1.8V	Black	5.2	Tray	New Latch Type
1473150-4	Right Angle	SMT, Rvs	1.8V	Black	5.2	Tray	New Latch Type
1565917-4	Right Angle	SMT, Std	1.8V	Black	5.2	Reel	Emboss
1565918-4	Right Angle	SMT, Rvs	1.8V	Black	5.2	Reel	Emboss
1612773-4	Right Angle	SMT, Rvs	1.8V	Black	6.5	Tray	N/A

### DDR1 SO DIMM

Part Number	Module Orientation	Type	Power Supply	Housing Color	Height (mm)	Packaging	Remark
1473005-1	Right Angle	SMT, Std	2.5V	Black	5.2	Tray	N/A
1-1473005-1	Right Angle	SMT, Std	2.5V	Black	5.2	Tray	Bossless
1717254-1	Right Angle	SMT, Std	2.5V	Black	5.2	Reel	N/A
5-1612773-1	Right Angle	SMT, Rvs	2.5V	Gray	6.5	Tray	N/A

## Frequently Asked Questions

### Question 1

Is it possible to stack two SO DIMM module cards by using different height SO DIMM sockets?

### Answer 1

Yes, it is possible and 8H or 9.2H height SODIMM socket is suggested to be used with 4H height SODIMM socket, and 9.2H height SODIMM socket is suggested to be used with 5.2H height SODIMM socket. When designing the printed circuit board (PCB), two SODIMM socket footprints are still needed and they can be next to each other, so when inserting the SODIMM module cards to two different height SODIMM sockets, you will find the two module cards are kind of stacked.

### Question 2

Are all TE memory sockets RoHS compliant and halogen free ?

### Answer 2

Yes, TE's DDR1/2 SODIMM, DDR3 SODIMM, and DDR4 DIMM and SODIMM are all RoHS compliant and halogen free.

### Question 3

What is the suggested thickness of solder paste on the printed circuit board (PCB) for surface mount technology (SMT) memory sockets?

### Answer 3

For SMT type TE memory sockets, 0.13mm solder paste thickness is suggested to achieve the required flatness specification.

## TE Technical Support Center

USA:	1.800.522.6752
Canada:	1.905.475.6222
Mexico:	52.0.55.1106.0800
Latin/S. America:	54.0.11.4733.2200
Germany:	49.0.6251.133.1999
UK:	44.0.800.267666
France:	33.0.1.3420.8686
Netherlands:	31.0.73.6246.999
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1-1773929-8 07/17

# DATA COMMUNICATIONS

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STACKING HEIGHT GUIDE FOR PARALLEL BOARD-TO-BOARD APPLICATIONS





## Introduction to the MICTOR Interconnection System (0.64 [.025] Centerline)

### Product Facts

- 76 dedicated signal lines per linear inch
- Surface mount family designed for parallel and right angle board-to-board, flex-to-board and cable-to-board configurations
- 0.64 [.025] centerline contact spacing
- Redundant interfaces on mated contacts
- Fifteen mated stack heights available ranging from 6.60 [.260] to 31.90 [1.256]
- Infrared and forced air convection compatible housing materials
- Designed for 50-ohm systems
- Connector housings polarized for correct mating
- Built-in connector-to-board retention feature
- Connector can be separated by peeling from one end to the other
- Various packaging styles can be made available for automated assembly (tape and reel, tubes)
- Recognized under the Component Program of Underwriter Laboratories Inc.  File No. E28476



The MICTOR connector family is based on the microstrip concept of two rows of signal contacts divided by a center power ground plane. MICTOR connectors are mother-board and daughtercard compatible and include designs for cable-to-board applications.

Various mated heights are available for parallel board-to-board systems. Custom stacking heights can be

provided. The MICTOR connector family is available in 0.64 [.025] centerlines and in sizes ranging from 38 signal positions to 266 positions (in increments of 38 positions). There is a discrete ground bus every 12.7 [.50] of the connector length, which can be assigned to either power or ground in any combination.

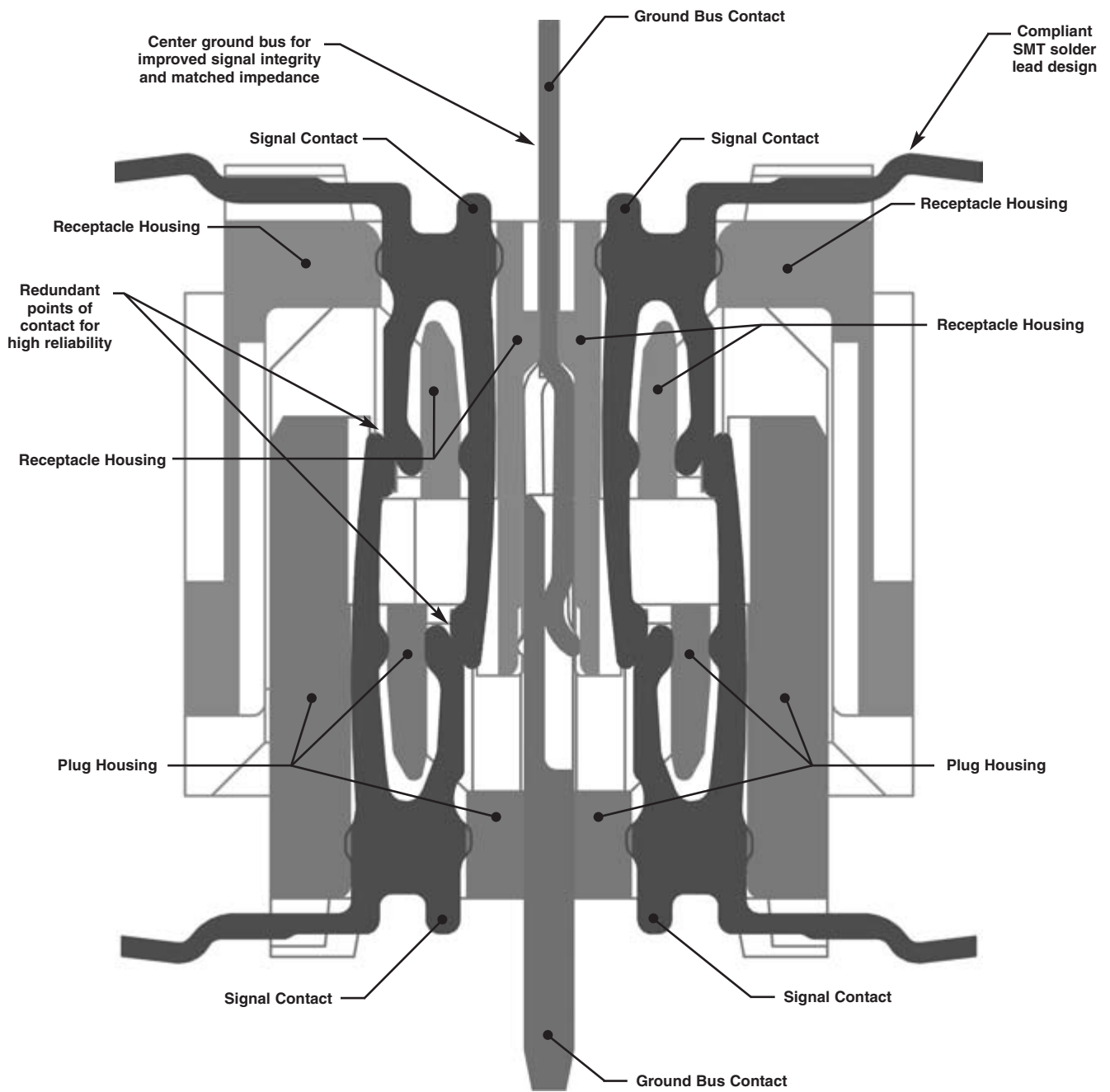
Redundant interfaces on every signal line provide added reliability. Two plating

options are available to meet the needs of various applications.

The housing material is a liquid crystal polymer, compatible with infrared and forced air convection operations.

The connector system uses the solid ground bus between the rows of signals to provide low crosstalk and excellent high-speed signal characteristics.

**MICTOR Connector Cross Section**



Connectors are shown at point where signal contact first touch each other.  
Connectors are designed to be fully mated when the two "Z" datums meet.

0.635mm MICTOR Connectors

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## Material and Performance Specifications, MICTOR Connectors

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### Material Specifications

#### Material

**Housing** — Liquid crystal polymer, black

**Contacts** — High reliability copper alloy

**Ground Bus** — Phosphor bronze

#### Finish (Gold Plating)

**Contacts and Ground Bus** — 0.00076 [.000030] min. gold on contact area, 0.00381-0.00635 [.000150-.000250] matte tin per ASTM B 545 on leads, all over 0.00177-0.00445 [.000070-.000175] nickel.

#### Finish (Palladium-Nickel Plating)

**Contacts and Ground Bus** — 0.00013 [.000005] min. gold over, 0.00076 [.000030] min. palladium nickel on contact area, 0.00381-0.00635 [.000150-.000250] matte tin per ASTM B 545 on leads, all over 0.00191-0.00445 [.000075-.000175] nickel.

### Performance Specifications

#### Ratings

**Voltage** — 30 vac

**Current** — Signal; rated 1.0 Amps, fully derated 0.5 Amps  
Ground; rated 11.5 Amps, fully derated 7.6 Amps

**Temperature** — -55°C to +125°C

#### Electrical Characteristics

**Characteristic Impedance** — 50±5 ohms at 1 ns

**Termination Resistance** — ΔR 10 milliohms max.; AMP Specification 109-6-1

**Insulation Resistance** — 10,000 megohms min.; AMP Specification 109-208-1

**Dielectric Withstanding Voltage** — 500 vac at sea level; AMP Specification 109-29-1

#### Mechanical Characteristics

**Solderability** — Solderable area shall have a 95% min. solder coverage; AMP Specification 109-11-1

**Vibration (Random)** — No discontinuities of 1μs or longer duration; AMP Specification 109-21-5

**Physical Shock** — No discontinuities of 1μs or longer duration; AMP Specification 109-26-1

**Durability (Tested to)** — Mate and unmate samples at a rate of 600 cycles max. per hour. 25 cycles, gold plating; 500 cycles, palladium-nickel plating; AMP Specification 109-27

**Contact Retention** — 1 lb min.; AMP Specification 109-30

**Mating Force** — 152 oz max. per 1/2 inch of connector (1 module). Each module equals 38 signal contacts and 1 ground bus; AMP Specification 109-42

**Unmating Force** — 19 oz min. per 1/2 inch of connector (1 module). Each module equals 38 signal contacts and 1 ground bus; AMP Specification 109-42

#### Environmental Characteristics

**Thermal Shock** — Subject mated samples to 5 cycles between -55°C and +125°C; AMP Specification 109-22

**Humidity - Temperature Cycling** — Subject mated samples to 10 cycles between +25°C and +65°C at 95% RH; AMP Specification 109-23-3, Condition B

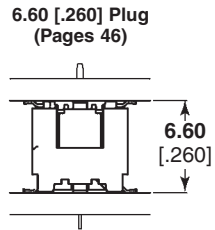
**Temperature Cycling** — Subject mated samples to 1024 cycles between -40°C and +60°C at 2 hours per cycle; AMP Specification 109-75-1

**Temperature Life** — Subject mated samples to temperature life at +118°C for 792 hours; AMP Specification 109-43

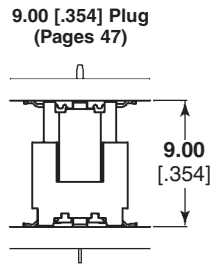
**Mixed Flowing Gas** — Subject mated samples to environmental class II for 14 days; AMP Specification 109-85-2

**MICTOR Stack Height Combinations**

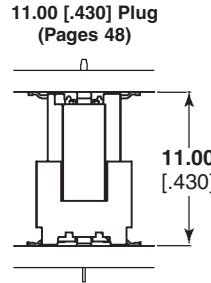
**30µ Gold and Palladium  
Nickel Plated Vertical  
Connectors**



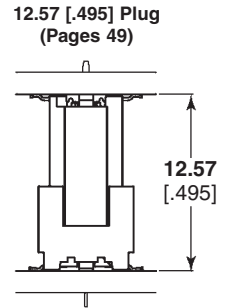
6.60 [.260] Plug  
(Pages 46)  
Standard Receptacle  
(Pages 56 and 57)



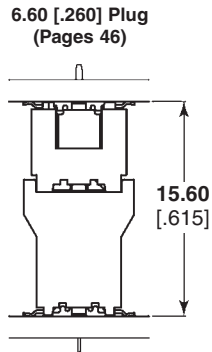
9.00 [.354] Plug  
(Pages 47)  
Standard Receptacle  
(Pages 56 and 57)



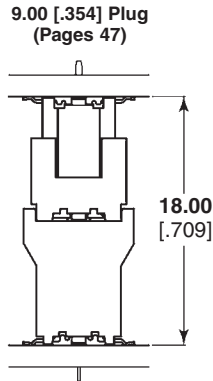
11.00 [.430] Plug  
(Pages 48)  
Standard Receptacle  
(Pages 56 and 57)



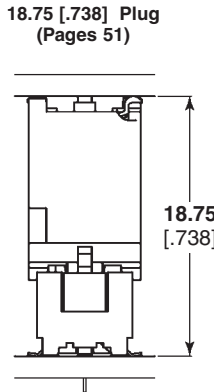
12.57 [.495] Plug  
(Pages 49)  
Standard Receptacle  
(Pages 56 and 57)



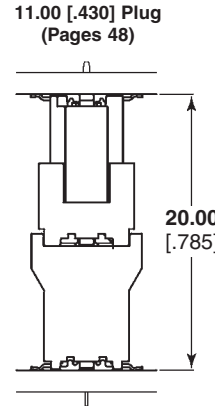
6.60 [.260] Plug  
(Pages 46)  
Raised Receptacle  
(Pages 58 and 59)



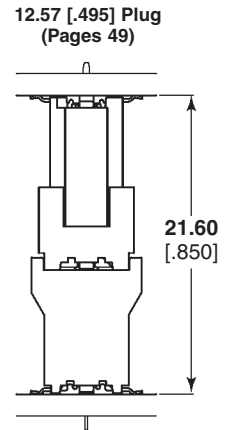
9.00 [.354] Plug  
(Pages 47)  
Raised Receptacle  
(Pages 58 and 59)



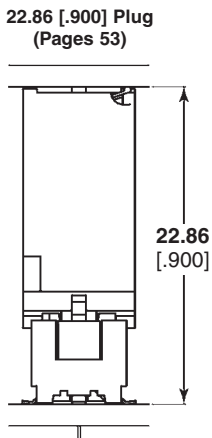
18.75 [.738] Plug  
(Pages 51)  
Standard Receptacle  
(Pages 56 and 57)



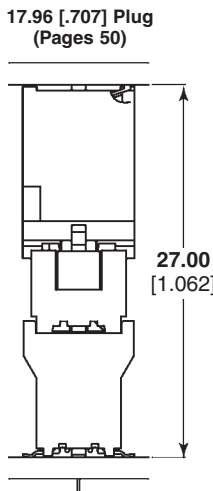
11.00 [.430] Plug  
(Pages 48)  
Raised Receptacle  
(Pages 58 and 59)



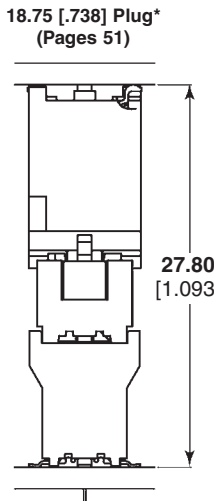
12.57 [.495] Plug  
(Pages 49)  
Raised Receptacle  
(Pages 58 and 59)



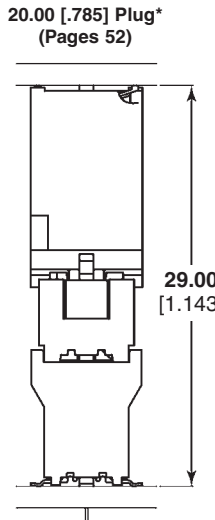
22.86 [.900] Plug  
(Pages 53)  
Standard Receptacle  
(Pages 56 and 57)



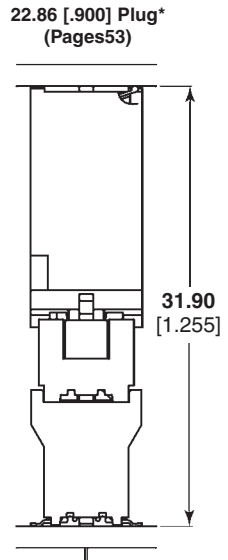
17.96 [.707] Plug  
(Pages 50)  
Raised Receptacle  
(Pages 58 and 59)



18.75 [.738] Plug\*  
(Pages 51)  
Raised Receptacle  
(Pages 58 and 59)



20.00 [.785] Plug\*  
(Pages 52)  
Raised Receptacle  
(Pages 58 and 59)



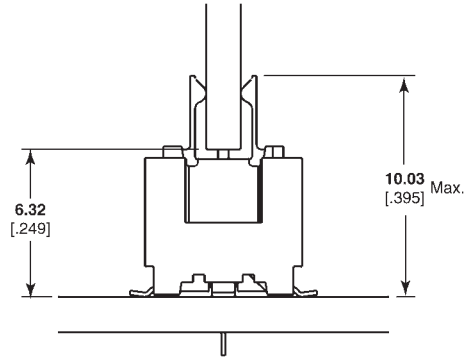
22.86 [.900] Plug\*  
(Pages 53)  
Raised Receptacle  
(Pages 58 and 59)

\*This connector not available in Palladium Nickel.

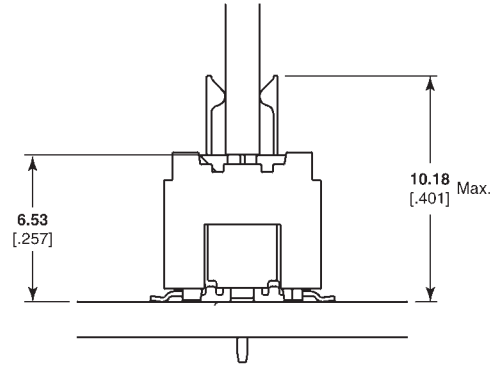
0.635mm MICTOR Connectors

## MICTOR Right Angle (Straddle Mount) Combinations

### 30 $\mu$ Gold & Palladium Nickel Connections



Vertical Receptacle with  
Right Angle Plug



Vertical Plug with  
Right Angle Receptacle

Right angle versions are designed for paddlecard type applications. It is highly recommended that customers who are considering right angle applications contact Tyco Electronics

Engineering to review their applications as the potential for tolerancing issues and/or issues of solder joint integrity can be highly application specific.



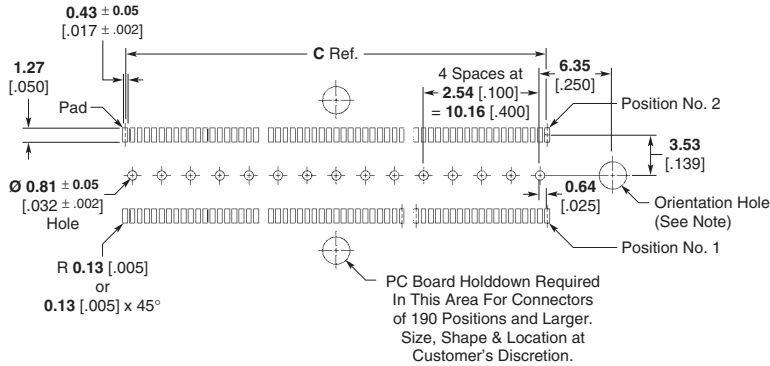
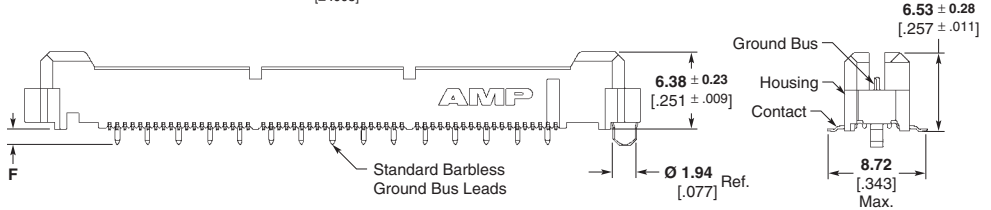
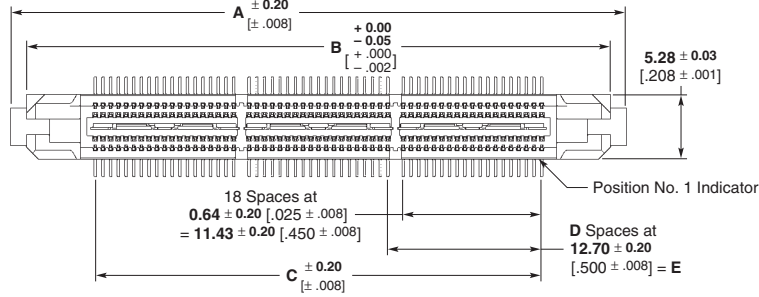
**MICTOR Vertical Plugs**

**6.60 [.260]  
Stacking Height\***

**Related Product Data**

- Material and Finish** — page 43
- Performance Characteristics** — page 43
- Mating Receptacles** — pages 56-61
- Technical Documents** — page 113

\*6.60 [.260] stack height when mated to vertical receptacle; 15.62 [.615] stack height when mated to vertical receptacle (extended height).



**Note:** For standard applications, the orientation hole must be 2.39±0.05 [.094±.002]; For slip-fit applications, the orientation hole must be 2.00±0.03 [.079±.001].

**Recommended PC Board Layout  
(Viewed from Connector Side)**

No. of Pos.	Dimensions						Part Numbers								
							Platings		Barbed G/B Leads			Barbless G/B Leads			
	A	B	C	D	E	F	Solder Tail	Contact	Tube	T&R Vacuum Caps		Tube	T&R Vacuum Caps		
										With	Without		With	Without	
38	25.40 1.000	22.81 .898	11.43 .450	0	—	1.35 [.053] 2.72 [.107] 2.64 [.104]	Sn	Gold	5767007-8	5767111-8	5767111-1	5767116-1	5767118-1	5767118-8	
									PdNi	5767056-1	—	—	—	—	—
									—	—	—	5767117-1	5767119-1	5767119-8	
76	38.10 1.500	31.70 1.248	24.13 .950	1	12.70 .500	1.35 [.053] 2.72 [.107] 2.64 [.104]	Sn	Gold	5767007-9	5767111-9	5767111-2	5767116-2	5767118-2	5767118-9	
									PdNi	5767056-2	—	—	—	—	—
									—	—	—	5767117-2	5767119-2	5767119-9	
114	50.80 2.000	48.21 1.898	36.83 1.450	2	25.40 1.000	1.35 [.053] 2.72 [.107] 2.64 [.104]	Sn	Gold	1-5767007-0	1-5767111-0	5767111-3	5767116-3	5767118-3	1-5767118-0	
									PdNi	5767056-3	—	—	—	—	—
									—	—	—	5767117-3	5767119-3	1-5767119-0	
152	63.50 2.500	60.91 2.398	49.53 1.950	3	38.10 1.500	1.35 [.053] 2.72 [.107] 2.64 [.104]	Sn	Gold	1-5767007-1	1-5767111-1	5767111-4	5767116-4	5767118-4	1-5767118-1	
									PdNi	5767056-4	—	—	—	—	—
									—	—	—	5767117-4	5767119-4	1-5767119-1	
190	76.20 3.000	73.61 2.898	62.23 2.450	4	50.80 2.000	1.35 [.053] 2.72 [.107] 2.64 [.104]	Sn	Gold	1-5767007-2	1-5767111-2	5767111-5	5767116-5	5767118-5	1-5767118-2	
									PdNi	5767056-5	—	—	—	—	—
									—	—	—	5767117-5	5767119-5	1-5767119-2	
228	88.90 3.500	86.31 3.398	74.93 2.950	5	63.50 2.500	1.35 [.053] 2.72 [.107] 2.64 [.104]	Sn	Gold	1-5767007-3	—	—	5767116-6	—	—	
									PdNi	5767056-6	—	—	—	—	—
									—	—	—	5767117-6	—	—	
266	101.60 4.000	99.01 3.898	87.63 3.450	6	76.20 3.000	1.35 [.053] 2.72 [.107] 2.64 [.104]	Sn	Gold	1-5767007-4	—	—	5767116-7	—	—	
									PdNi	5767056-7	—	—	—	—	—
									—	—	—	5767117-7	—	—	

**Note:** Part Numbers are RoHS compliant.

**MICTOR Vertical Plugs (Continued)**

**9.00 [.354]  
Stacking Height\***

**Related Product Data**

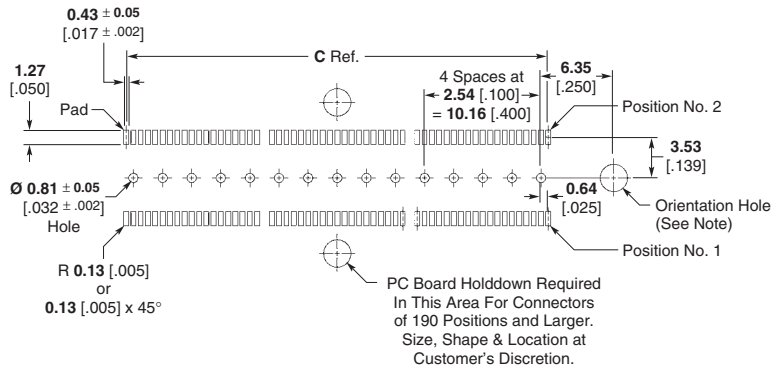
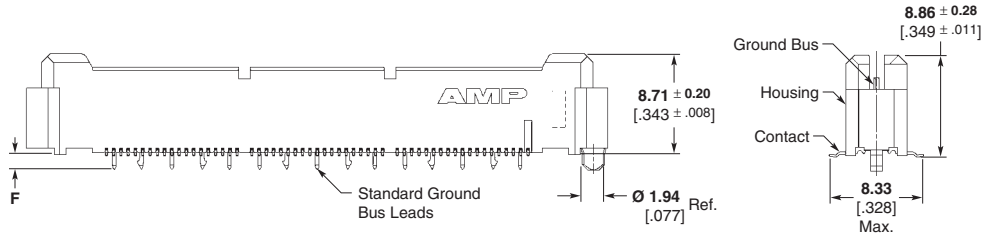
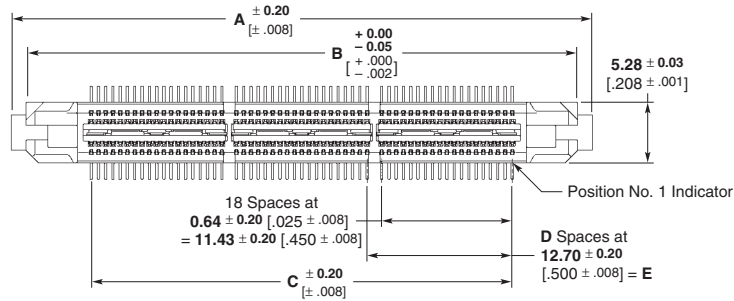
**Material and Finish** — page 43

**Performance Characteristics** — page 43

**Mating Receptacles** — pages 56-61

**Technical Documents** — page 113

\* 9.00 [.354] stack height when mated to vertical receptacle;  
18.00 [.709] stack height when mated to vertical receptacle (extended height).



**Note:** For standard applications, the orientation hole must be 2.39±0.05 [.094±.002]; For slip-fit applications, the orientation hole must be 2.00±0.03 [.079±.001].

**Recommended PC Board Layout  
(Viewed from Connector Side)**

No. of Pos.	Dimensions						Platings		Part Numbers	
	A	B	C	D	E	F	Solder Tail	Contact	Barbed G/B Leads	Tube
38	25.40	22.81	11.43	0	—	1.52 [.060]	Sn	Gold	5767139-1	
	1.000	.898	.450			2.74 [.108]		PdNi	5767140-1	
76	38.10	31.70	24.13	1	12.70	1.52 [.060]	Sn	Gold	5767139-2	
	1.500	1.248	.950			2.74 [.108]		PdNi	5767140-2	
114	50.80	48.21	36.83	2	25.40	1.52 [.060]	Sn	Gold	5767139-3	
	2.000	1.898	1.450			2.74 [.108]		PdNi	5767140-3	
152	63.50	60.91	49.53	3	38.10	1.52 [.060]	Sn	Gold	5767139-4	
	2.500	2.398	1.950			2.74 [.108]		PdNi	5767140-4	
190	76.20	73.61	62.23	4	50.80	1.52 [.060]	Sn	Gold	5767139-5	
	3.000	2.898	2.450			2.74 [.108]		PdNi	5767140-5	
228	88.90	86.31	74.93	5	63.50	1.52 [.060]	Sn	Gold	5767139-6	
	3.500	3.398	2.950			2.74 [.108]		PdNi	5767140-6	
266	101.60	99.01	87.63	6	76.20	1.52 [.060]	Sn	Gold	5767139-7	
	4.000	3.898	3.450			2.74 [.108]		PdNi	5767140-7	

**Note:** Part Numbers are RoHS compliant.

Dimensions are in millimeters and inches unless otherwise specified. Values in brackets are standard equivalents.

Dimensions are shown for reference purposes only. Specifications subject to change.

USA: 1-800-522-6752  
Canada: 1-905-470-4425  
Mexico: 01-800-733-8926  
C. America: 52-55-5-729-0425

South America: 55-11-3611-1514  
Hong Kong: 852-2735-1628  
Japan: 81-44-844-8013  
UK: 44-141-810-8967

Fine Pitch SMT Stacking Connectors  
(Parallel Board-to-Board)

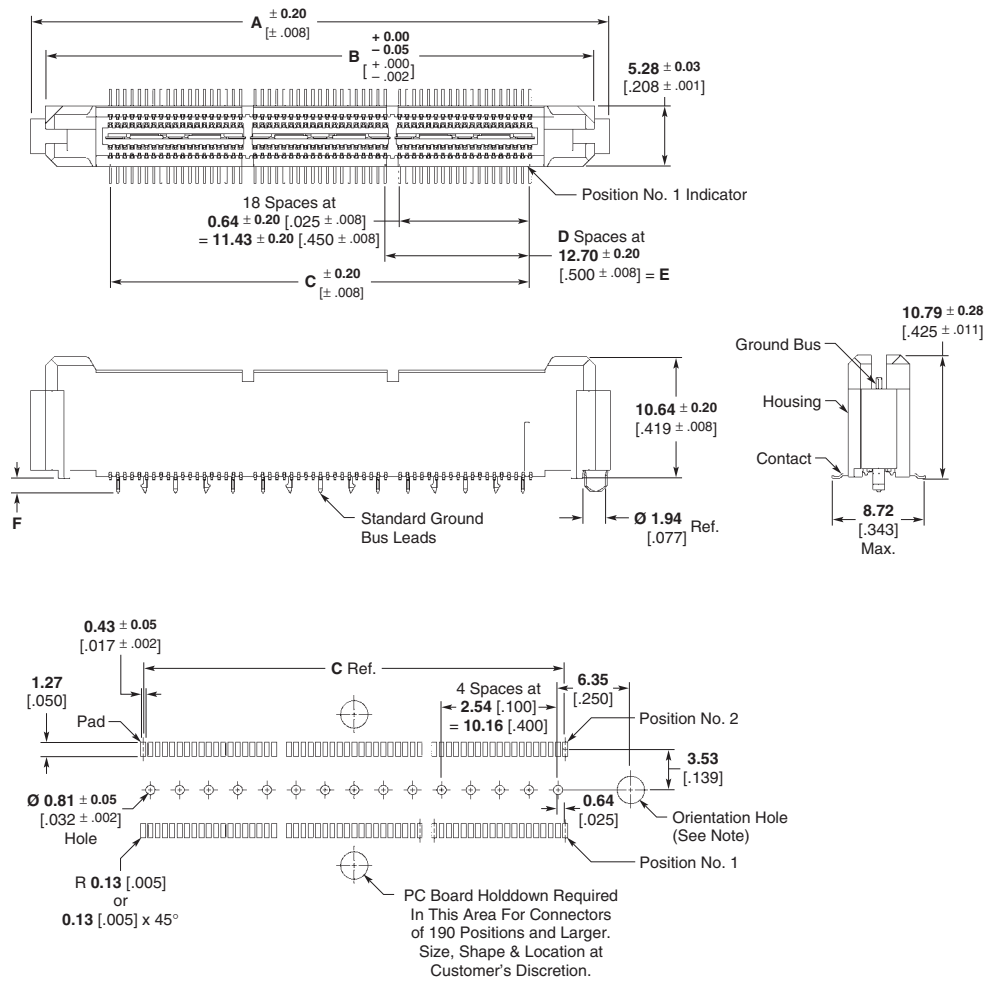
**MICTOR Vertical Plugs (Continued)**

**11.00 [.430]  
Stacking Height\***

**Related Product Data**

- Material and Finish** — page 43
- Performance Characteristics** — page 43
- Mating Receptacles** — pages 56-61
- Technical Documents** — page 113

\* 11.00 [.430] stack height when mated to vertical receptacle; 19.94 [.785] stack height when mated to vertical receptacle (extended height).



**Note:** For standard applications, the orientation hole must be 2.39±0.05 [.094±.002]; For slip-fit applications, the orientation hole must be 2.00±0.03 [.079±.001].

**Recommended PC Board Layout  
(Viewed from Connector Side)**

No. of Pos.	Dimensions						Platings		Part Numbers					
									Barbed G/B Leads		Barbless G/B Leads			
	A	B	C	D	E	F	Solder Tail	Contact	T&R Vacuum Caps		T&R Vacuum Caps			
									Tube	With	Without	Tube	With	Without
38	25.40 1.000	22.81 .898	11.43 .450	0	—	1.52 [.060] 2.64 [.104]	Sn	Gold PdNi	5767003-9	5767123-8	5767123-1	—	—	—
									5767087-1	—	—	—	—	—
76	38.10 1.500	31.70 1.248	24.13 .950	1	12.70 .500	1.52 [.060] 2.64 [.104]	Sn	Gold PdNi	1-5767003-0	5767123-9	5767123-2	—	—	—
									5767087-2	—	—	—	—	—
114	50.80 2.000	48.21 1.898	36.83 1.450	2	25.40 1.000	1.52 [.060] 2.64 [.104]	Sn	Gold PdNi	1-5767003-1	1-5767123-0	5767123-3	1-5767182-3	1-5767183-0	—
									5767087-3	—	—	—	—	—
152	63.50 2.500	60.91 2.398	49.53 1.950	3	38.10 1.500	1.52 [.060] 2.64 [.104]	Sn	Gold PdNi	5767003-8	5767003-8	—	—	—	—
									5767087-4	—	—	—	—	—
190	76.20 3.000	73.61 2.898	62.23 2.450	4	50.80 2.000	1.52 [.060] 2.64 [.104]	Sn	Gold PdNi	1-5767003-2	1-5767123-2	5767123-5	—	—	—
									5767087-5	—	—	—	—	—
228	88.90 3.500	86.31 3.398	74.93 2.950	5	63.50 2.500	1.52 [.060] 2.64 [.104]	Sn	Gold PdNi	1-5767003-3	—	—	—	—	—
									5767087-6	—	—	—	—	—
266	101.60 4.000	99.01 3.898	87.63 3.450	6	76.20 3.000	1.52 [.060] 2.64 [.104]	Sn	Gold PdNi	1-5767003-4	—	—	—	—	—
									5767087-7	—	—	—	—	—

**Note:** Part Numbers are RoHS compliant.

**MICTOR Vertical Plugs (Continued)**

**12.57 [.495]  
Stacking Height\***

**Related Product Data**

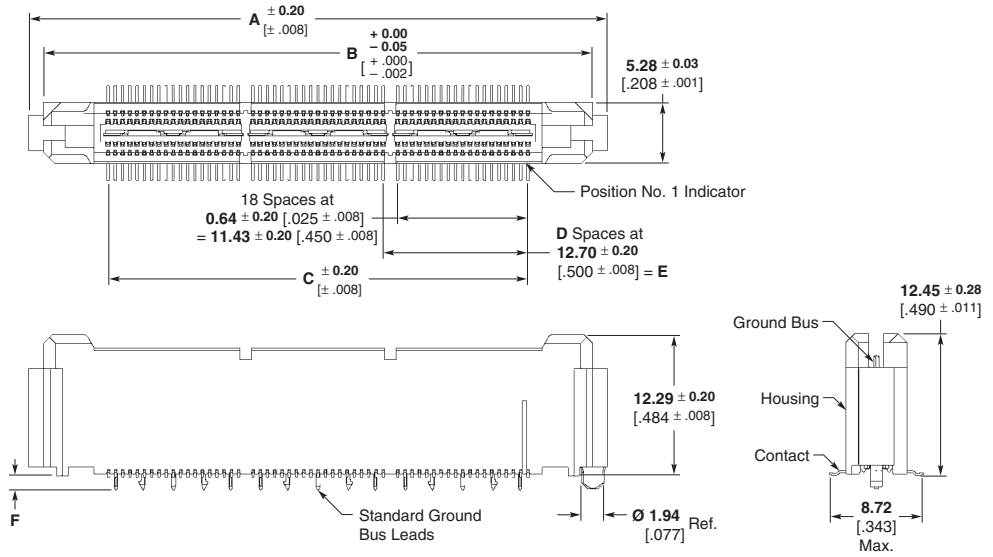
**Material and Finish** — page 43

**Performance Characteristics** — page 43

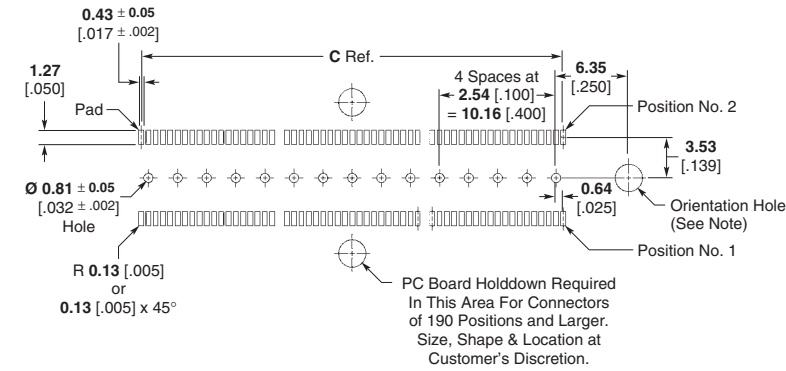
**Mating Receptacles** — pages 56-61

**Technical Documents** — page 113

\* 12.57 [.495] stack height when mated to vertical receptacle; 21.59 [.850] stack height when mated to vertical receptacle (extended height).



**Note:** For standard applications, the orientation hole must be 2.39±0.05 [.094±.002]; For slip-fit applications, the orientation hole must be 2.00±0.03 [.079±.001].



**Recommended PC Board Layout  
(Viewed from Connector Side)**

No. of Pos.	Dimensions						Platings		Part Numbers					
	A	B	C	D	E	F	Solder Tail	Contact	Barbed G/B Leads			Barbless G/B Leads		
									Tube	T&R Vacuum Caps		Tube	T&R Vacuum Caps	
										With	Without		With	Without
38	25.40 1.000	22.81 .898	11.43 .450	0	—	1.52 [.060] 2.64 [.104]	Sn	Gold	5767005-8	5767149-1	5767149-8	5767120-1	5767121-1	5767121-8
76	38.10 1.500	31.70 1.248	24.13 .950	1	12.70 .500	1.52 [.060] 2.64 [.104]	Sn	Gold	5767005-9	5767149-2	5767149-9	5767120-2	5767121-2	5767121-9
114	50.80 2.000	48.21 1.898	36.83 1.450	2	25.40 1.000	1.52 [.060] 2.64 [.104]	Sn	Gold	1-5767005-0	5767149-3	1-5767149-0	5767120-3	5767121-3	1-5767121-0
152	63.50 2.500	60.91 2.398	49.53 1.950	3	38.10 1.500	1.52 [.060] 2.64 [.104]	Sn	Gold	1-5767005-1	5767149-4	1-5767149-1	5767120-4	5767121-4	1-5767121-1
190	76.20 3.000	73.61 2.898	62.23 2.450	4	50.80 2.000	1.52 [.060] 2.64 [.104]	Sn	Gold	1-5767005-2	5767149-5	1-5767149-2	5767120-5	—	—
228	88.90 3.500	86.31 3.398	74.93 2.950	5	63.50 2.500	1.52 [.060] 2.64 [.104]	Sn	Gold	1-5767005-3	—	—	5767120-6	—	—
266	101.60 4.000	99.01 3.898	87.63 3.450	6	76.20 3.000	1.52 [.060] 2.64 [.104]	Sn	Gold	1-5767005-4	—	—	5767120-7	—	—
								PdNi	5767057-1	—	—	5767082-1	—	—
								PdNi	5767057-2	—	—	5767082-2	—	—
								PdNi	5767057-3	—	—	5767082-3	—	—
								PdNi	5767057-4	—	—	5767082-4	5767127-4	1-5767127-1
								PdNi	5767057-5	—	—	5767082-5	5767127-5	1-5767121-2
								PdNi	5767057-6	—	—	5767082-6	—	—
								PdNi	5767057-7	—	1-5767151-4	5767082-7	—	—

**Note:** Part Numbers are RoHS compliant.

Dimensions are in millimeters and inches unless otherwise specified. Values in brackets are standard equivalents.

Dimensions are shown for reference purposes only. Specifications subject to change.

USA: 1-800-522-6752  
Canada: 1-905-470-4425  
Mexico: 01-800-733-8926  
C. America: 52-55-5-729-0425

South America: 55-11-3611-1514  
Hong Kong: 852-2735-1628  
Japan: 81-44-844-8013  
UK: 44-141-810-8967

**MICTOR Vertical Plugs (Continued)**

**17.96 [.707]  
Stacking Height\***

**Related Product Data**

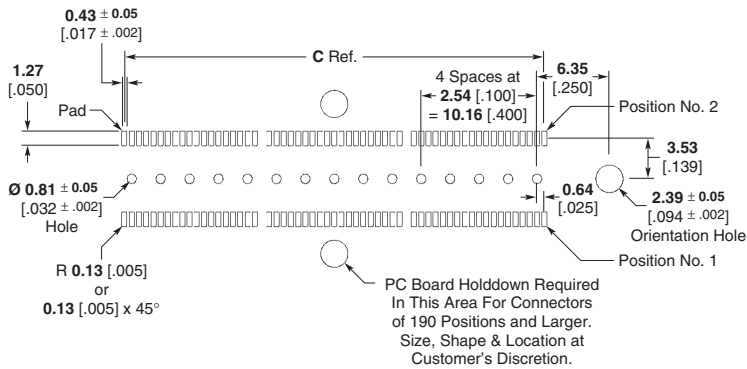
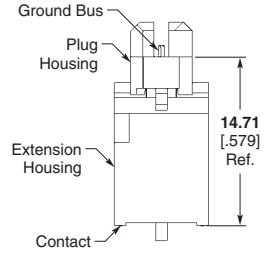
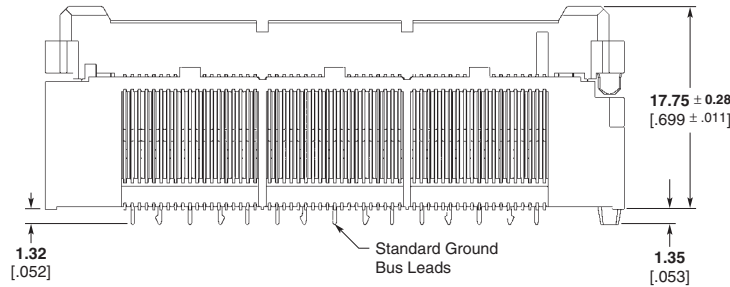
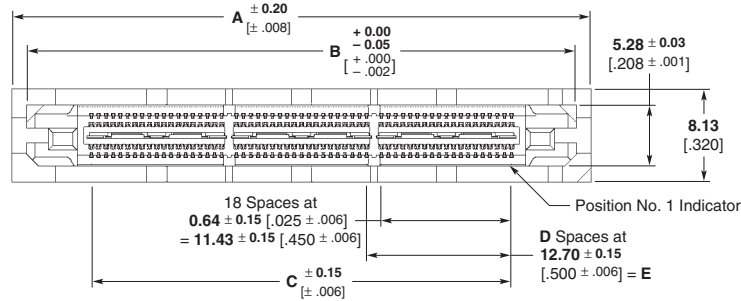
**Material and Finish** — page 43

**Performance Characteristics** — page 43

**Mating Receptacles** — pages 56-61

**Technical Documents** — page 113

\* 17.96 [.707] stack height when mated to vertical receptacle; 26.97 [1.062] stack height when mated to vertical receptacle (extended height).



- Notes:**
1. For dual application, the orientation hole must be 1.98±0.03 [.078±.001]. See Application Specification 114-11004 for details.
  2. Connectors with extended ground bus leads can be made available, consult Tyco Electronics.

**Recommended PC Board Layout  
(Connector Side of Board Shown)**

No. of Pos.	Dimensions					Part Numbers
	A	B	C	D	E	
38	25.40 1.000	22.81 .898	11.43 .450	0	0.00 .000	5767025-1
76	38.10 1.500	35.51 1.398	24.13 .950	1	12.70 .500	5767025-2
114	50.80 2.000	48.21 1.898	36.83 1.450	2	25.40 1.000	5767025-3
152	63.50 2.500	60.91 2.398	49.53 1.950	3	38.10 1.500	5767025-4
190	76.20 3.000	73.61 2.898	62.23 2.450	4	50.80 2.000	5767025-5
228	88.90 3.500	86.31 3.398	74.93 2.950	5	63.50 2.500	5767025-6
266	101.60 4.000	99.00 3.898	87.63 3.450	6	76.20 3.000	5767025-7

**Note:** Part Numbers are RoHS compliant.

**MICTOR Vertical Plugs** (Continued)

**18.75 [.738]  
Stacking Height\***

**Related Product Data**

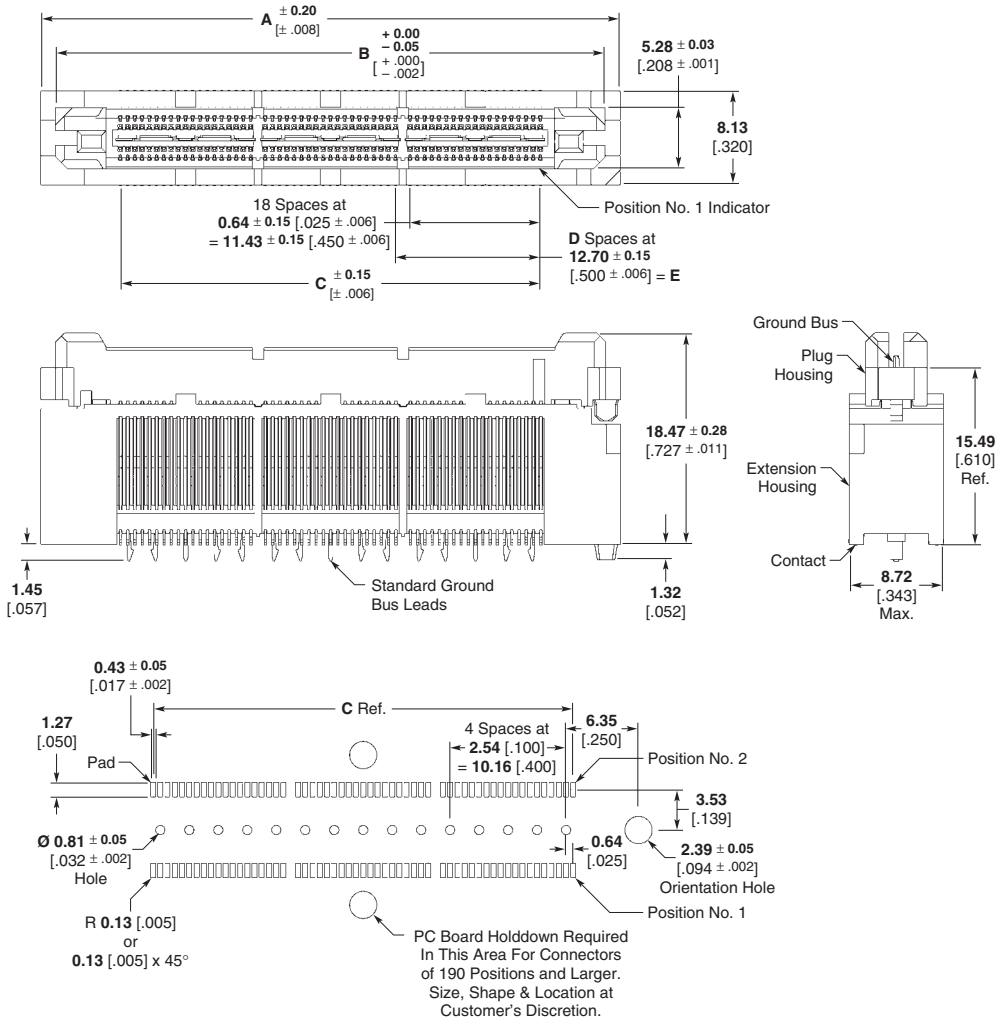
**Material and Finish** — page 43

**Performance Characteristics** — page 43

**Mating Receptacles** — pages 56-61

**Technical Documents** — page 113

\* 18.75 [.738] stack height when mated to vertical receptacle;  
27.76 [1.093] stack height when mated to vertical receptacle (extended height).



**Recommended PC Board Layout  
(Connector Side of Board Shown)**

No. of Pos.	Dimensions					Part Numbers
	A	B	C	D	E	
38	25.40 1.000	22.81 .898	11.43 .450	0	0.00 .000	5767042-1
76	38.10 1.500	35.51 1.398	24.13 .950	1	12.70 .500	5767042-2
114	50.80 2.000	48.21 1.898	36.83 1.450	2	25.40 1.000	5767042-3
152	63.50 2.500	60.91 2.398	49.53 1.950	3	38.10 1.500	5767042-4
190	76.20 3.000	73.61 2.898	62.23 2.450	4	50.80 2.000	5767042-5
228	88.90 3.500	86.31 3.398	74.93 2.950	5	63.50 2.500	5767042-6
266	101.60 4.000	99.00 3.898	87.63 3.450	6	76.20 3.000	5767042-7

**Note:** Part Numbers are RoHS compliant.

0.635mm MICTOR Connectors

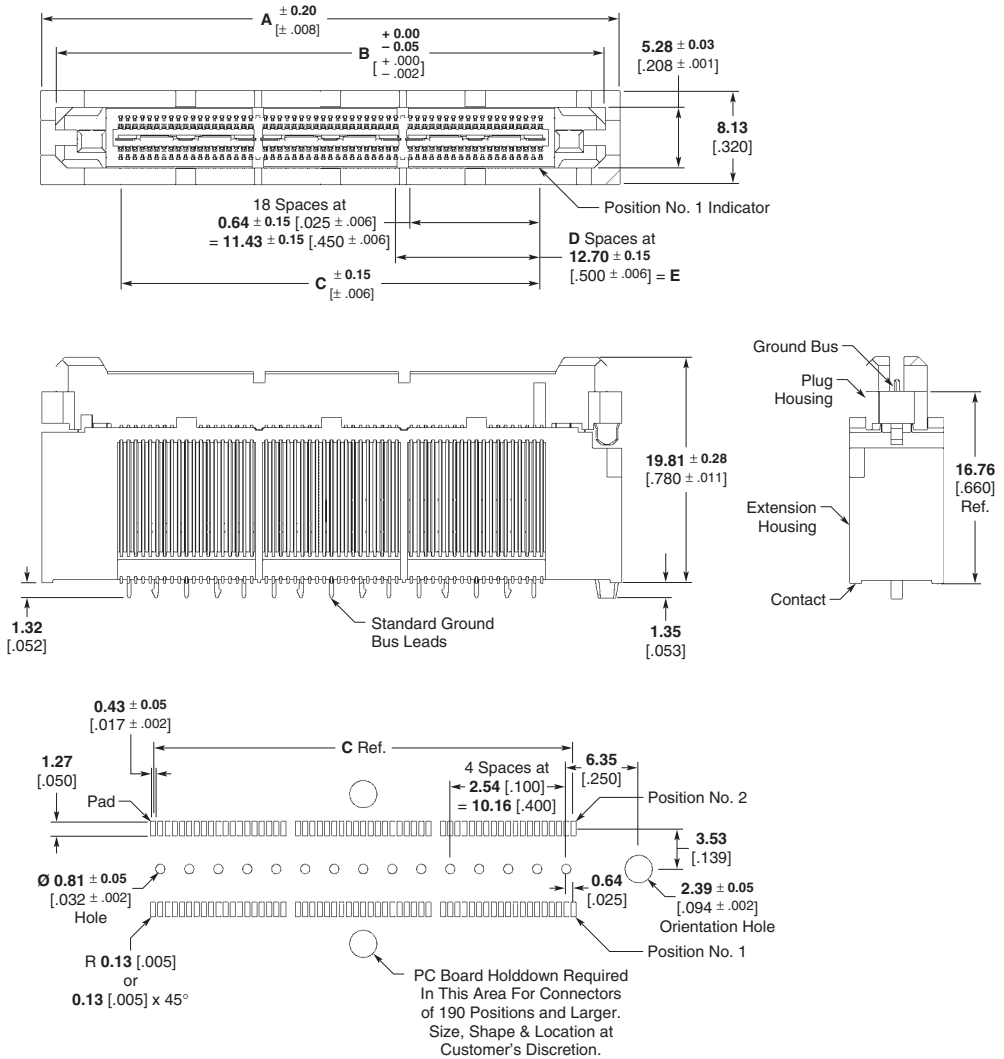
**MICTOR Vertical Plugs** (Continued)

**20.00 [.785]  
Stacking Height\***

**Related Product Data**

- Material and Finish** — page 43
- Performance Characteristics** — page 43
- Mating Receptacles** — pages 56-61
- Technical Documents** — page 113

\* 20.02 [.788] stack height when mated to vertical receptacle;  
29.03 [1.143] stack height when mated to vertical receptacle (extended height).



- Notes:**
1. For dual application, the orientation hole must be 1.98±0.03 [.078±.001]. See Application Specification 114-11004 for details.
  2. Connectors with extended ground bus leads can be made available, consult Tyco Electronics.

**Recommended PC Board Layout  
(Connector Side of Board Shown)**

No. of Pos.	Dimensions					Part Numbers
	A	B	C	D	E	
38	25.40 1.000	22.81 .898	11.43 .450	0	0.00 .000	5767032-1
76	38.10 1.500	35.51 1.398	24.13 .950	1	12.70 .500	5767032-2
114	50.80 2.000	48.21 1.898	36.83 1.450	2	25.40 1.000	5767032-3
152	63.50 2.500	60.91 2.398	49.53 1.950	3	38.10 1.500	5767032-4
190	76.20 3.000	73.61 2.898	62.23 2.450	4	50.80 2.000	5767032-5
228	88.90 3.500	86.31 3.398	74.93 2.950	5	63.50 2.500	5767032-6
266	101.60 4.000	99.00 3.898	87.63 3.450	6	76.20 3.000	5767032-7

**Note:** Part Numbers are RoHS compliant.



**MICTOR Vertical Plugs** (Continued)

**22.86 [.900]  
Stacking Height\***

**Related Product Data**

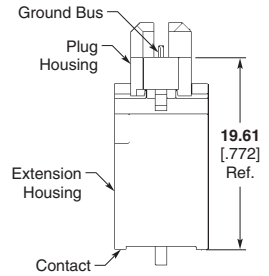
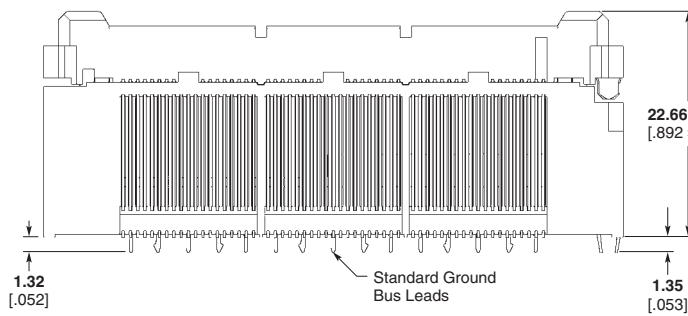
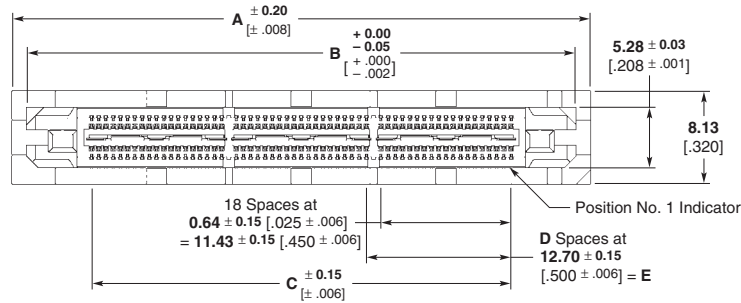
**Material and Finish** — page 43

**Performance Characteristics** — page 43

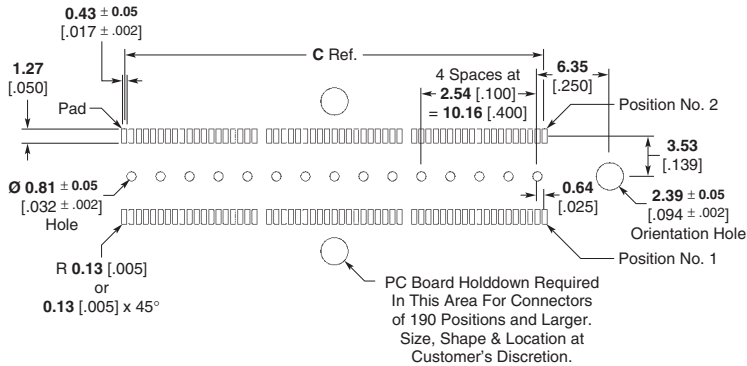
**Mating Receptacles** — pages 56-61

**Technical Documents** — page 113

\* 22.86 [.900] stack height when mated to vertical receptacle;  
31.89 [1.255] stack height when mated to vertical receptacle (extended height).



- Notes:**
1. For dual application, the orientation hole must be  $1.98 \pm 0.03$  [ $.078 \pm .001$ ]. See Application Specification 114-11004 for details.
  2. Connectors with extended ground bus leads can be made available, consult Tyco Electronics.



**Recommended PC Board Layout  
(Connector Side of Board Shown)**

No. of Pos.	Dimensions					Part Numbers
	A	B	C	D	E	
38	25.40 1.000	22.81 .898	11.43 .450	0	0.00 .000	5767017-1
76	38.10 1.500	35.51 1.398	24.13 .950	1	12.70 .500	5767017-2
114	50.80 2.000	48.21 1.898	36.83 1.450	2	25.40 1.000	5767017-3
152	63.50 2.500	60.91 2.398	49.53 1.950	3	38.10 1.500	5767017-4
190	76.20 3.000	73.61 2.898	62.23 2.450	4	50.80 2.000	5767017-5
228	88.90 3.500	86.31 3.398	74.93 2.950	5	63.50 2.500	5767017-6
266	101.60 4.000	99.00 3.898	87.63 3.450	6	76.20 3.000	5767017-7

**Note:** Part Numbers are RoHS compliant.

## MICTOR Right Angle Plugs

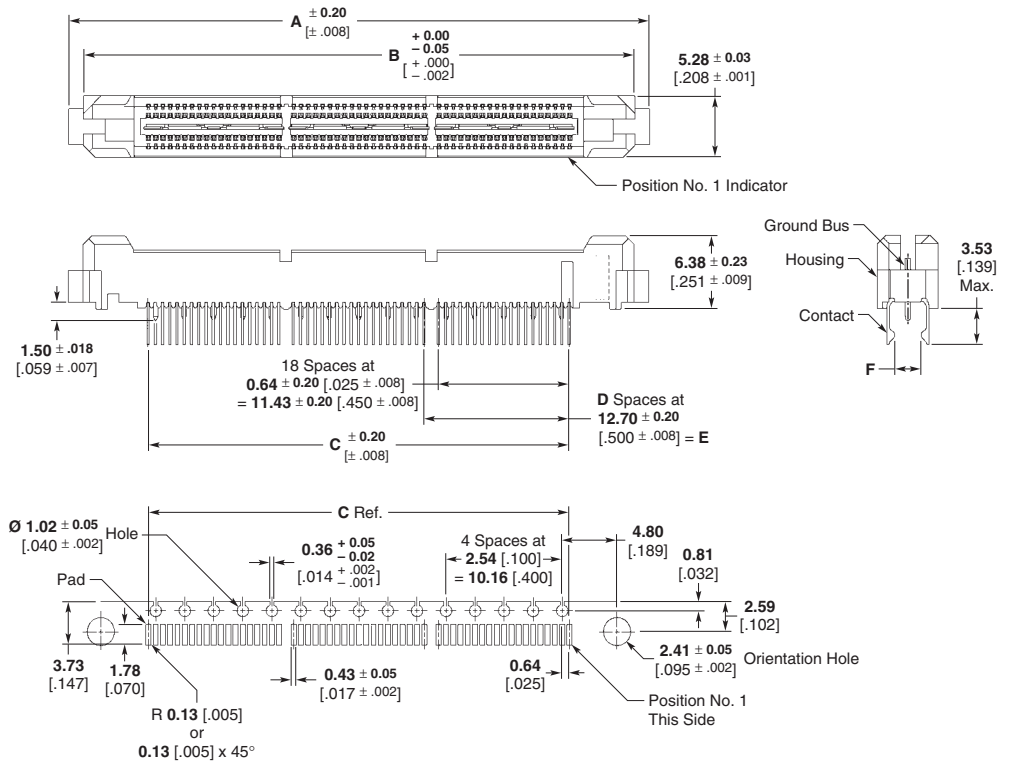
### Related Product Data

**Material and Finish** — page 43

**Performance Characteristics** —  
page 43

**Mating Receptacles** — pages 56-61

**Technical Documents** — page 113



**Recommended PC Board Layout**  
(Mirror Image on Opposite Side)

Fine Pitch SMT Stacking Connectors  
(Parallel Board-to-Board)

**MICTOR Right Angle Plugs** (Continued)

No. of Pos.	Dimensions						Platings		Part Numbers
	A	B	C	D	E	F	Solder Tail	Contact	Tube
38	25.40 1.000	22.81 .898	11.43 .450	0	0.00 .000	1.52 .060	Sn	Gold	5767006-1
						1.52 .060	Sn	PdNi	5767055-1
						2.31 .091	Sn	PdNi	5767039-1
76	38.10 1.500	35.51 1.398	24.13 .950	1	12.70 .500	1.52 .060	Sn	Gold	5767006-2
						1.52 .060	Sn	PdNi	5767055-2
						2.31 .091	Sn	PdNi	5767039-2
						2.97 .117	Sn	PdNi	5767170-2
114	50.80 2.000	48.21 1.898	36.83 1.450	2	25.40 1.000	1.52 .060	Sn	Gold	5767006-3
						1.52 .060	Sn	PdNi	5767055-3
						2.31 .091	Sn	PdNi	5767039-3
152	63.50 2.500	60.91 2.398	49.53 1.950	3	38.10 1.500	1.52 .060	Sn	Gold	5767006-4
						1.52 .060	Sn	PdNi	5767055-4
						2.31 .091	Sn	PdNi	5767039-4
190	76.20 3.000	73.61 2.898	62.23 2.450	4	50.80 2.000	1.52 .060	Sn	Gold	5767006-5
						1.52 .060	Sn	PdNi	5767055-5
						2.31 .091	Sn	PdNi	5767039-5
228	88.90 3.500	86.31 3.398	74.93 2.950	5	63.50 2.500	1.52 .060	Sn	Gold	5767006-6
						1.52 .060	Sn	PdNi	5767055-6
						2.31 .091	Sn	PdNi	5767039-6
266	101.60 4.000	99.00 3.898	87.63 3.450	6	76.20 3.000	1.52 .060	Sn	Gold	5767006-7
						1.52 .060	Sn	PdNi	5767055-7
						2.31 .091	Sn	PdNi	5767039-7

**Note:** Part Numbers are RoHS compliant.

0.635mm MICTOR Connectors

Dimensions are in millimeters and inches unless otherwise specified. Values in brackets are standard equivalents.

Dimensions are shown for reference purposes only. Specifications subject to change.

USA: 1-800-522-6752  
Canada: 1-905-470-4425  
Mexico: 01-800-733-8926  
C. America: 52-55-5-729-0425

South America: 55-11-3611-1514  
Hong Kong: 852-2735-1628  
Japan: 81-44-844-8013  
UK: 44-141-810-8967

## MICTOR Vertical Receptacles

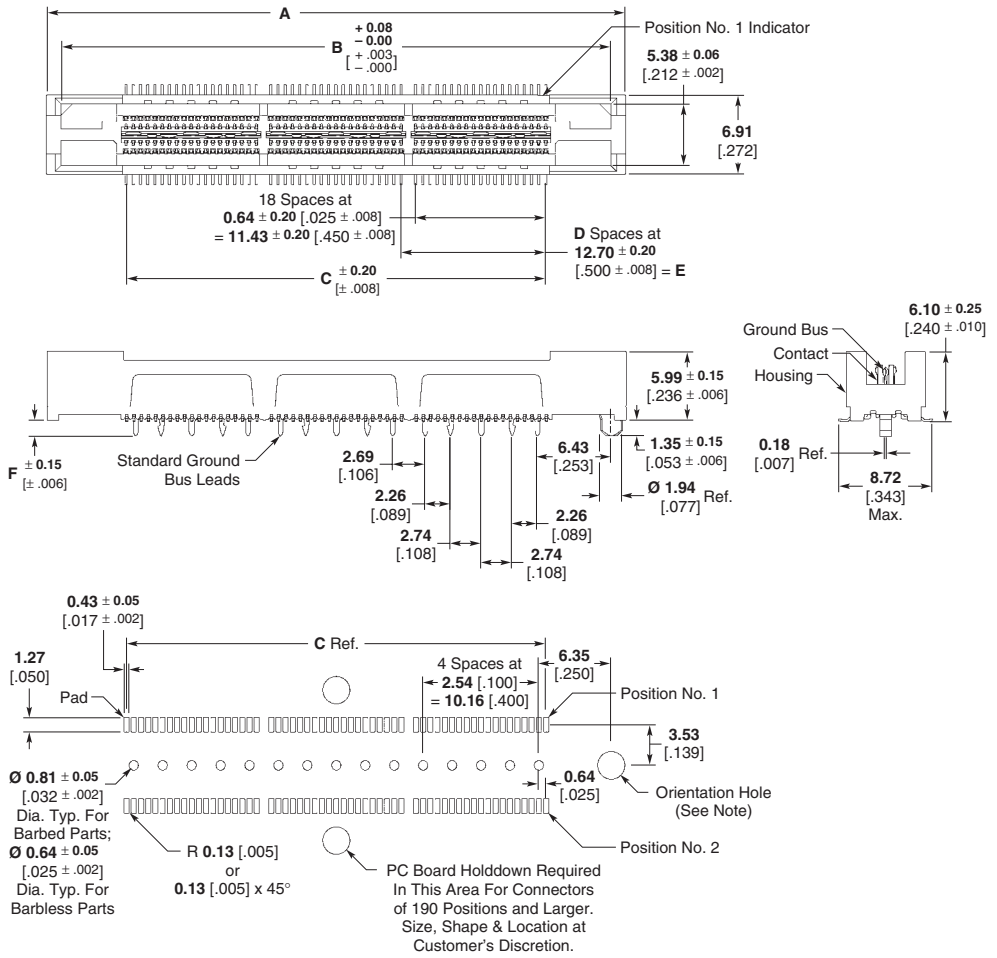
### Related Product Data

Material and Finish — page 43

Performance Characteristics —  
page 43

Mating Plugs — pages 46-55

Technical Documents — page 113



Recommended PC Board Layout  
(Connector Side of Board Shown)

**Note:** For standard applications, orientation hole to be Ø 2.39±0.05 [.094±.002]; For slip-fit applications, orientation hole to be Ø 2.00±0.03 [.079±.001].

Fine Pitch SMT Stacking Connectors  
(Parallel Board-to-Board)

**MICTOR Vertical Receptacles** (Continued)

No. of Pos.	Dimensions						Platings		Part Numbers						
									Barbed G/B Leads				Barbless G/B Leads		
	A	B	C	D	E	F	Solder Tail	Contact	Tube	T&R Vacuum Caps		Tube	T&R Vacuum Caps		
										With	Without		With	Without	
38	25.40 1.000	22.86 .900	11.43 .450	0	—	1.40 .055	Sn	Gold	2-5767004-2	5767096-8	5767096-1	5767110-1	5767114-1	5767114-8	
							Sn	Gold	5767181-1	—	—	—	—	—	
							Sn	PdNi	5767054-1	5767171-1	—	5767081-1	5767115-1	—	
76	38.10 1.500	35.56 1.400	24.13 .950	1	12.70 .500	1.40 .055	Sn	Gold	2-5767004-3	5767096-9	5767096-2	5767110-2	5767114-2	5767114-9	
							Sn	Gold	5767181-2	—	—	—	—	—	
							Sn	PdNi	5767054-2	—	—	5767081-2	5767115-2	—	
114	50.80 2.000	48.26 1.900	36.83 1.450	2	25.40 1.000	1.40 .055	Sn	Gold	2-5767004-4	1-5767096-0	5767096-3	5767110-3	5767114-3	1-5767114-0	
							Sn	Gold	5767181-3	—	—	—	—	—	
							Sn	PdNi	5767054-3	—	—	5767081-3	5767115-3	—	
152	63.50 2.500	60.96 2.400	49.53 1.950	3	38.10 1.500	1.40 .055	Sn	Gold	2-5767004-5	1-5767096-1	5767096-4	5767110-4	5767114-4	1-5767114-1	
							Sn	Gold	5767181-4	—	—	—	—	—	
							Sn	PdNi	5767054-4	—	—	5767081-4	5767115-4	—	
190	76.20 3.000	73.66 2.900	62.23 2.450	4	50.80 2.000	1.40 .055	Sn	Gold	2-5767004-6	1-5767096-2	5767096-5	5767110-5	5767114-5	1-5767114-2	
							Sn	Gold	5767181-5	—	—	—	—	—	
							Sn	PdNi	5767054-5	—	—	5767081-5	5767115-5	—	
228	88.90 3.500	86.36 3.400	74.93 2.950	5	63.50 2.500	1.40 .055	Sn	Gold	2-5767004-7	—	—	5767110-6	—	—	
							Sn	Gold	5767181-6	—	—	—	—	—	
							Sn	PdNi	5767054-6	—	—	5767081-6	—	—	
266	101.60 4.000	99.06 3.900	87.63 3.450	6	76.20 3.000	1.40 .055	Sn	Gold	2-5767004-8	—	—	5767110-7	—	—	
							Sn	Gold	5767181-7	—	—	—	—	—	
							Sn	PdNi	5767054-7	—	—	5767081-7	—	—	

Note: Part Numbers are RoHS compliant.

0.635mm MICTOR Connectors

Dimensions are in millimeters and inches unless otherwise specified. Values in brackets are standard equivalents.

Dimensions are shown for reference purposes only. Specifications subject to change.

USA: 1-800-522-6752  
Canada: 1-905-470-4425  
Mexico: 01-800-733-8926  
C. America: 52-55-5-729-0425

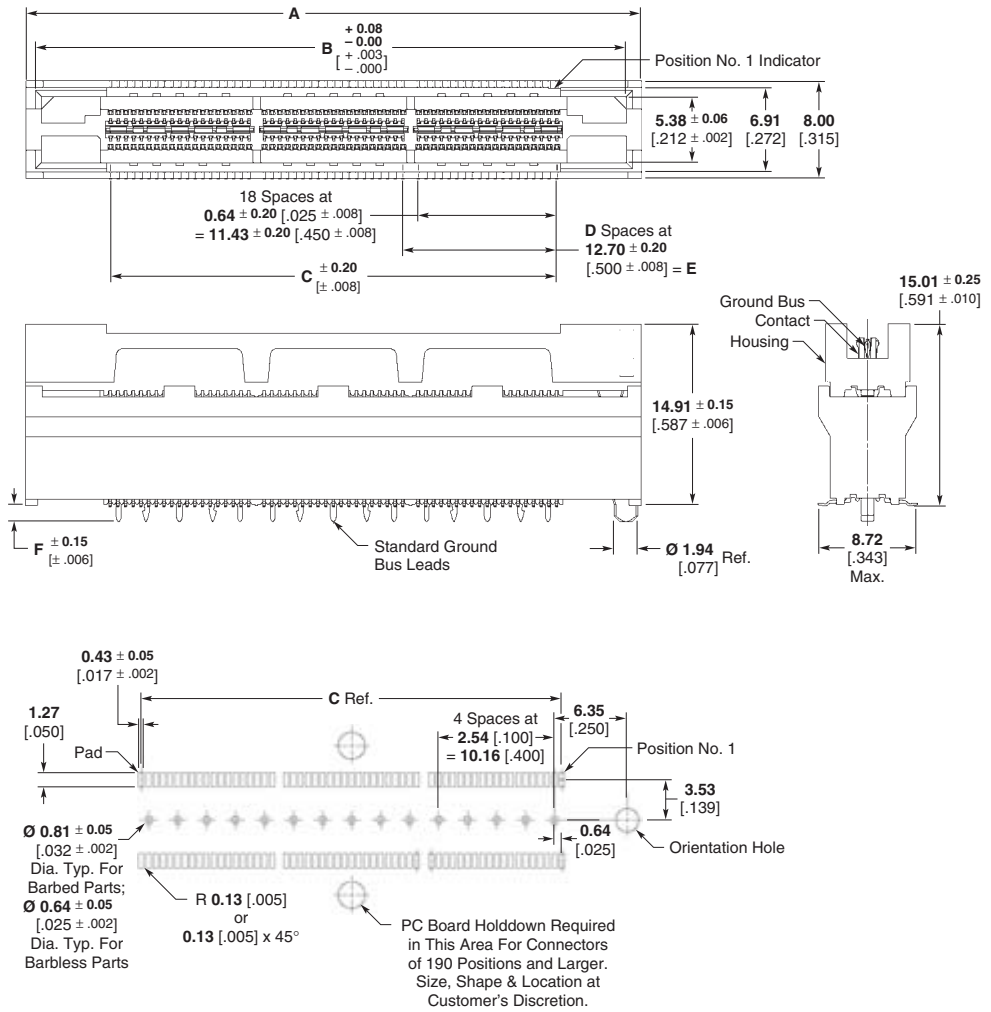
South America: 55-11-3611-1514  
Hong Kong: 852-2735-1628  
Japan: 81-44-844-8013  
UK: 44-141-810-8967

**MICTOR Vertical Receptacles (Extended Height)**

**Related Product Data**

- Material and Finish** — page 43
- Performance Characteristics** — page 43
- Mating Plugs** — pages 46-55
- Technical Documents** — page 113

When mated with a standard vertical plug, this extended height receptacle adds 9.017 [.355] to the mated stack height when compared with the standard height vertical receptacle.



**Recommended PC Board Layout  
(Connector Side of Board Shown)**

0.635mm MICTOR Connectors

Fine Pitch SMT Stacking Connectors  
(Parallel Board-to-Board)

**MICTOR Vertical Receptacles (Extended Height)** (Continued)

No. of Pos.	Dimensions						Platings		Part Numbers						
									Barbed G/B Leads			Barbless G/B Leads			
	A	B	C	D	E	F	Solder Tail	Contact	Tube	T&R Vacuum Caps		Tube	T&R Vacuum Caps		
										With	Without		With	Without	
38	25.40 1.000	22.86 .900	11.43 .450	0	—	1.37 [.054] 1.37 [.054] 2.72 [.107]	Sn	Gold	5767130-1	5767146-1	5767146-8	—	—	—	
									PdNi	5767094-1	5767178-1	6761316-8	—	—	—
										5767154-1	—	5767153-8	5767095-1	—	—
76	38.10 1.500	35.56 1.400	24.13 .950	1	12.70 .500	1.37 [.054] 1.37 [.054] 2.72 [.107]	Sn	Gold	5767130-2	5767146-2	5767146-9	—	—	—	
									PdNi	5767094-2	5767178-2	—	—	—	
										5767154-2	—	5767153-9	5767095-2	—	—
114	50.80 2.000	48.26 1.900	36.83 1.450	2	25.40 1.000	1.37 [.054] 1.37 [.054] 2.72 [.107]	Sn	Gold	5767130-3	5767146-3	1-5767146-0	—	—	—	
									PdNi	5767094-3	—	—	—	—	
										5767154-3	—	1-5767153-0	5767095-3	5767145-3	1-5767145-0
152	63.50 2.500	60.96 2.400	49.53 1.950	3	38.10 1.500	1.37 [.054] 1.37 [.054] 2.72 [.107]	Sn	Gold	5767130-4	5767146-4	1-5767146-1	—	—	—	
									PdNi	5767094-4	—	—	—	—	
										5767154-4	—	1-5767153-1	5767095-4	—	1-5767145-1
190	76.20 3.000	73.66 2.900	62.23 2.450	4	50.80 2.000	1.37 [.054] 1.37 [.054] 2.72 [.107]	Sn	Gold	5767130-5	—	—	—	—	—	
									PdNi	5767094-5	5767178-5	1-6761316-2	—	—	—
										5767154-5	—	1-5767153-2	5767095-5	—	—
228	88.90 3.500	86.36 3.400	74.93 2.950	5	63.50 2.500	1.37 [.054] 1.37 [.054] 2.72 [.107]	Sn	Gold	5767130-6	—	—	—	—	—	
									PdNi	5767094-6	—	—	—	—	
										5767154-6	—	1-5767153-3	5767095-6	—	—
266	101.60 4.000	99.06 3.900	87.63 3.450	6	76.20 3.000	1.37 [.054] 1.37 [.054] 2.72 [.107]	Sn	Gold	5767130-7	—	—	—	—	—	
									PdNi	5767094-7	—	—	—	—	
										5767154-7	—	1-5767153-4	5767095-7	—	—

Note: Part Numbers are RoHS compliant.

0.635mm MICTOR Connectors

Dimensions are in millimeters and inches unless otherwise specified. Values in brackets are standard equivalents.

Dimensions are shown for reference purposes only. Specifications subject to change.

USA: 1-800-522-6752  
Canada: 1-905-470-4425  
Mexico: 01-800-733-8926  
C. America: 52-55-5-729-0425

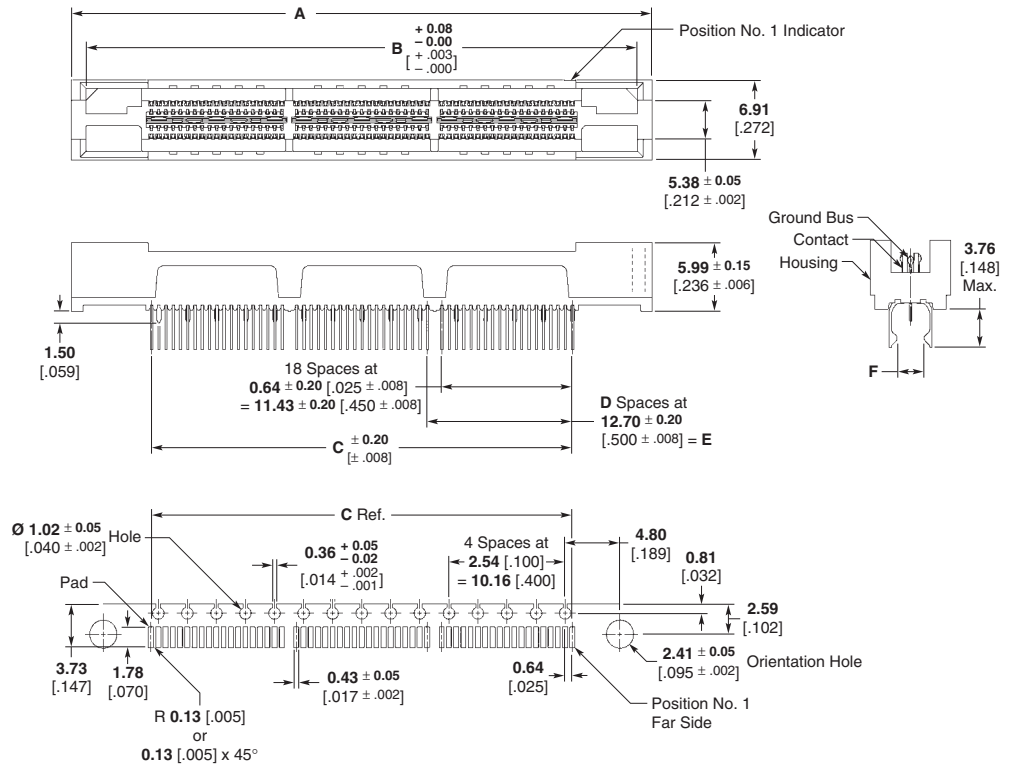
South America: 55-11-3611-1514  
Hong Kong: 852-2735-1628  
Japan: 81-44-844-8013  
UK: 44-141-810-8967



## MICTOR Right Angle Receptacles

### Related Product Data

- Material and Finish** — page 43
- Performance Characteristics** — page 43
- Mating Plugs** — pages 46-55
- Application Tooling** — page 62
- Technical Documents** — page 113



**Recommended PC Board Layout**  
(Mirror image on opposite side)  
PC Board Thickness:  $1.57$  [ $.062$ ]

Fine Pitch SMT Stacking Connectors  
(Parallel Board-to-Board)

**MICTOR Right Angle Receptacles** (Continued)

No. of Pos.	Dimensions						Platings		Part Numbers
	A	B	C	D	E	F	Solder Tail	Contact	Tube
38	25.40 1.000	22.86 .900	11.43 .450	0	0.00 .000	1.52 .060	Sn	Gold	5767143-1
						2.31 .091		PdNi	5767044-1
76	38.10 1.500	35.56 1.400	24.13 .950	1	12.70 .500	1.52 .060	Sn	Gold	5767143-2
						2.31 .091		PdNi	5767044-2
114	50.80 2.000	48.26 1.900	36.83 1.450	2	25.40 1.000	1.52 .060	Sn	Gold	5767143-3
						2.31 .091		PdNi	5767044-3
152	63.50 2.500	60.96 2.400	49.53 1.950	3	38.10 1.500	1.52 .060	Sn	Gold	5767143-4
						2.31 .091		PdNi	5767044-4
190	76.20 3.000	73.66 2.900	62.23 2.450	4	50.80 2.000	1.52 .060	Sn	Gold	5767143-5
						2.31 .091		PdNi	5767044-5
228	88.90 3.500	86.36 3.400	74.93 2.950	5	63.50 2.500	1.52 .060	Sn	Gold	5767143-6
						2.31 .091		PdNi	5767044-6
266	101.60 4.000	99.06 3.900	87.63 3.450	6	76.20 3.000	1.52 .060	Sn	Gold	5767143-7
						2.31 .091		PdNi	5767044-7

Note: Part Numbers are RoHS compliant.

0.635mm MICTOR Connectors

Dimensions are in millimeters and inches unless otherwise specified. Values in brackets are standard equivalents.

Dimensions are shown for reference purposes only. Specifications subject to change.

USA: 1-800-522-6752  
Canada: 1-905-470-4425  
Mexico: 01-800-733-8926  
C. America: 52-55-5-729-0425

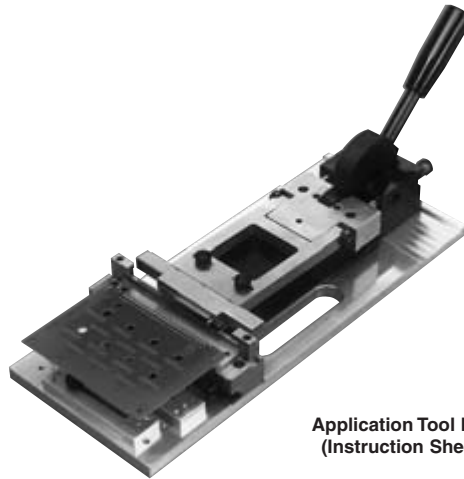
South America: 55-11-3611-1514  
Hong Kong: 852-2735-1628  
Japan: 81-44-844-8013  
UK: 44-141-810-8967

## Application Tooling for MICTOR Right Angle Connectors

Two operations must be performed so that the MICTOR right angle connector can be successfully installed on a PC board. First, the board must be slit for the ground/bus bar. At the customer's option, this operation may be done at the time of board manufacture. Second, the right angle connector must be properly placed on the board.

Tyco Electronics offers bench-mount tooling for slitting the PC board (see below) and a free-standing tool for installing the connector (shown at the right). AMP Application Specification No. 114-11004 and Instruction Sheets are available to provide the necessary instructions and recommendations for proper tool use.

Application Specification No. 114-13008 for Right Angle.



Application Tool Number 767511-1  
(Instruction Sheet No. 408-4335)

### Replacement Components for Tool Number 767511-1

Connector Size (No. of Positions)	Board Locator Pin		Plug Inserter	Receptacle Inserter	Support Pillar
	Round	Diamond			
38	767523-1	767526-1	767514-1	767570-1	767522-1
76	767523-1	767526-1	767514-2	767570-2	767522-1
114	767523-1	767526-1	767514-3	767570-3	767522-1
152	767523-1	767526-1	767514-4	767570-4	767522-1
190	767523-1	767526-1	767514-5	767570-5	767522-1
228	767523-1	767526-1	767514-6	767570-6	767522-1
266	767523-1	767526-1	767514-7	767570-7	767522-1



Slitting Tool Number 767527-1  
(Instruction Sheet No. 408-4334)

### Replacement Components for Tool Number 767527-1

Component Description	Quantity Required for Each Increment of 38 Positions (0.64 [.025] Centerline)	Part Number
Slitting Punch (Set of 35)	5	767532-1
Die Insert* (Set of 7)	1	767530-1

\* The die insert is located in the tool with a 3.18 x 28.58 [.125 x 1.125] long dowel and held in place with a 6-32 UNC-2A x 7.94 [5/16] long socket head cap screw (not included with replacement insert).

**Note:** Part Numbers are RoHS compliant.

# DATA COMMUNICATIONS

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RF CONNECTORS QUICK REFERENCE GUIDE

Browse Products: <http://www.te.com/usa-en/solutions/data-communications.html>

# RF CONNECTORS

A Full Spectrum of RF Solutions

As a leading global manufacturer of coaxial connectors, TE Connectivity (TE) is your source for rugged, high-performance RF for military and aerospace applications. From traditional Mil-Spec BNC and TNC connectors to the latest microminiature designs, you will find a wide range of industry-standard families to help meet your needs through 60 GHz.

We are also a leader in innovating new ways of bringing RF connectivity to application. Our connector modules for VITA 67, for example, provide four or eight SMPM interfaces for VPX embedded computing applications.

## Helping Maintain Signal Integrity

Our connectors are designed to provide rugged performance in harsh environments, while maintaining low insertion losses, excellent VSWR, and other electrical and mechanical characteristics.

## Harness the Performance of Cable Assemblies

Count on TE for custom cable assemblies. We build some of the most advanced RF cables available, with tight-toleranced electrical characteristics, small sizes and lighter weights, and rugged materials. Whether you need a standard RG cable-based assembly or a custom assembly to help meet the most rigorous requirements, we provide assemblies fully factory-tested and characterized.

Coupling Type	Connector Family	Reference Dia. (Inch)	Frequency Limit (GHz)
Bayonet	C Series	0.765	11
	BNC Series	0.572	4
	HN Series	0.887	4
	N Series	0.750	11
Threaded	TNC	0.640	11
	SMA	.312 hex	26.5
	SSMA	.250 hex	26.5
	OSMM	.187 hex	45
	OSP	0.300	22
Snap-On/ Slide-On	OSSP	0.210	28
	SMP	0.165	40
	SMPM	0.125	40



## Applications

- Antennas
- Avionics
- Electronic Systems
- Instrumentation
- Launch Vehicles
- Military Communications
- Missiles
- Radar Arrays
- Satellite Communications

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Consult TE for the latest dimensions and design specifications.



## QUICK REFERENCE GUIDE

### High Performance

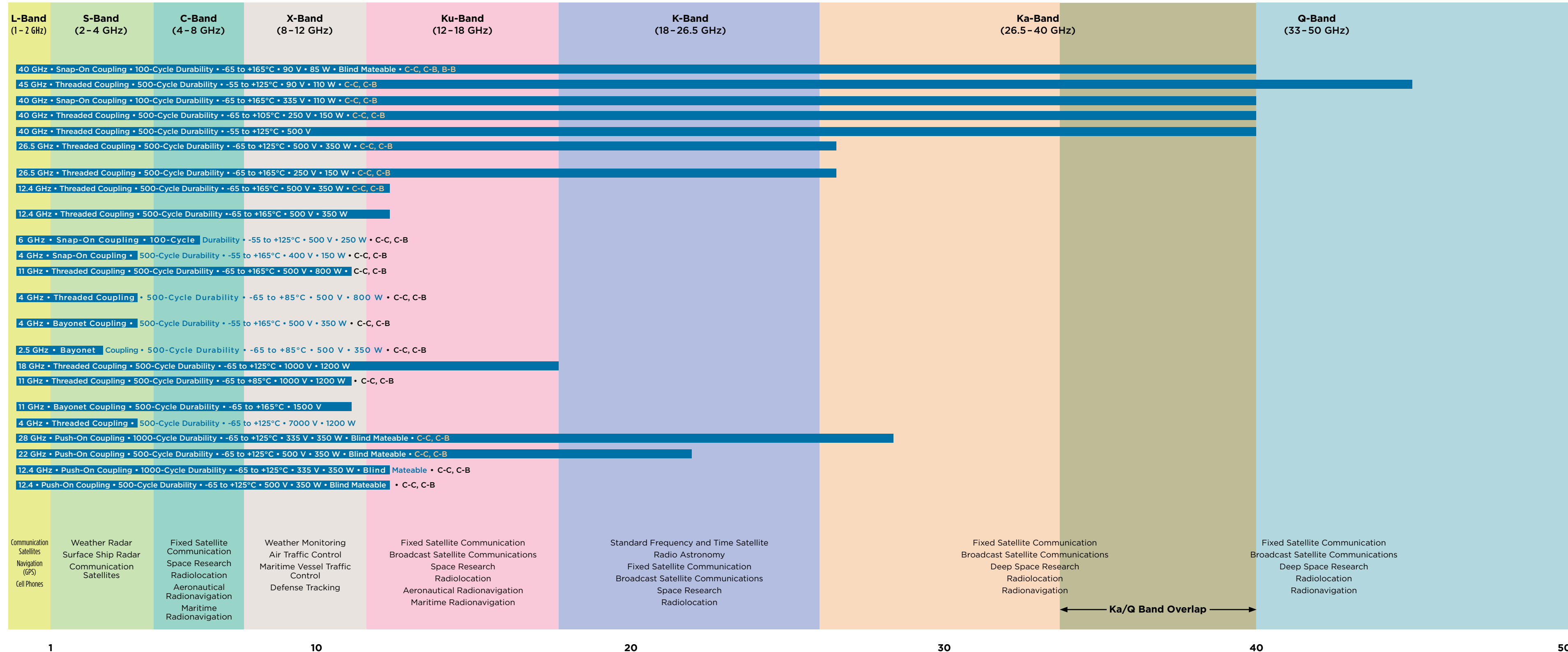
- Performance up to 60 GHz
- Wide range of connector types and sizes from standard to microminiature



# RUGGED 50-OHM RF CONNECTORS



<b>Microminiature</b>	<p><b>SMPM (GPPO)</b></p> <p><b>OSMM</b></p>
<b>Subminiature</b>	<p><b>SMP (GPO)</b></p> <p><b>SSMA Semi-Rigid</b></p> <p><b>SMK (2.92 mm)</b></p> <p><b>SMA Semi-Rigid</b> MIL-DTL-39012/ 79, 80, 81, 82, 83, 92</p> <p><b>SSMA Flexible</b></p> <p><b>SMA Flexible</b> MIL-DTL-39012/55, 56, 57, 58, 59, 60, 61</p> <p><b>SMA Edge Mount</b> MIL-DTL-83517</p> <p><b>QMA</b></p> <p><b>SMB</b></p>
<b>Miniature</b>	<p><b>TNC Dual Crimp</b> MIL-DTL-39012/26, 27, 29</p> <p><b>TNC Single Crimp</b> MIL-T-81490</p> <p><b>BNC Dual Crimp</b> MIL-DTL-39012/16, 17, 19</p> <p><b>BNC Single Crimp</b></p>
<b>Standard</b>	<p><b>High-Frequency N Series</b></p> <p><b>N Dual Crimp</b> MIL-DTL-39012/1, 2, 3, 5</p> <p><b>C</b></p> <p><b>HN (High-Voltage N)</b></p>
<b>Blind Mate</b>	<p><b>OSSP Semi-Rigid (BMMA)</b></p> <p><b>OSP Semi-Rigid (BMA)</b></p> <p><b>OSSP Flexible (BMMA)</b></p> <p><b>OSP Flexible (BMA)</b></p>



C-C: Cable to cable connectivity  
 C-B: Cable to board connectivity  
 B-B: Board-to-board connectivity

**Note:** Specifications shown are typical for the product family in military, maritime, and aerospace applications. Frequency ranges can vary with the cable used and with product application. TE offers a broad range of RF connectors with different materials and platings to meet different cost, performance, and temperature requirements. Contact your local TE representative about your specific application requirements.

Voltage is working voltage at sea level. Watts is typical average power handling at 1 GHz, sea level, and room temperature.

RF CONNECTORS

# DATA COMMUNICATIONS

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HIGH SPEED INPUT/OUTPUT SOLUTIONS QUICK REFERENCE GUIDE

Browse Products: <http://www.te.com/usa-en/solutions/data-communications.html>





# HIGH SPEED INPUT/OUTPUT SOLUTIONS

## QUICK REFERENCE GUIDE

The pluggable I/O interface offers significant advantages as a high speed I/O interconnect. With a standard equipment I/O interface and the flexibility of pluggable modules come the options for fiber and copper links, and various data rates and protocols.

TE Connectivity (TE) has always been at the forefront of development of pluggable I/O standards. TE continues to be engaged in new pluggable interface standards to support the rapidly changing market needs for higher bandwidth, and remains at the forefront with the technical expertise required to deliver superior designs for signal integrity and EMI at higher data rates.

### FEATURES AND BENEFITS

- High speed I/O solutions that support higher data rates than traditional copper interfaces (e.g. RJ45)
- Provides a standard interface at the equipment and allows customer to choose between transceiver modules and direct attach cable assemblies based on the application
- All cages are full metal shielded for grounding and EMI suppression
- Standards supported include Fibre Channel, Ethernet, and InfiniBand, and SAS

### PRODUCT APPLICATIONS

- Cellular Infrastructure
- Access Routers/ Switches
- High End Servers
- Medical Diagnostic Equipment
- Network Hubs

[www.te.com/pluggableio](http://www.te.com/pluggableio)

## High Speed I/O Solutions

### PT Connectors

SFP	SFP+	zSFP+	X2	XFP	QSFP/ QSFP+	zQSFP+	micro QSFP	CFP	CFP2	CFP4	CXP	CDFP
1367073-X 1658197-1	1888247-X 2110759-1	2170088-X	1367337-X 1658198-1	788862-1 1367500-1	1761987-9 2110819-1	1551920-2	2291538-1	2057630-1	2274845-1	2288229-1	Included in Assembly	Included in Assembly

### SFP Products

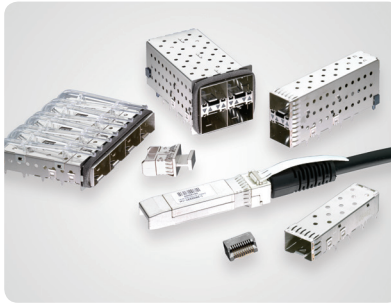


- Supports data rates up to 4 Gbps
- 20 position PT (Pluggable Transceiver) connector
- Single port, ganged, and stacked cages available
- Standard and low profile options available for stacked ports

#### Reference Part Numbers:

1367073-1  
1658391-2  
2227302-1

### SFP+ Products



- Supports data rates up to 16 Gbps
- 20 position PT connector
- EMI spring or gasket, light pipes, and heat sink options
- Connector and cable assembly are backward compatible with SFP

#### Reference Part Numbers:

2110759-1  
2007198-1  
2170680-1

### zSFP+ Products



- Supports data rates up to 28 Gbps
- 20 position PT connector
- EMI spring or gasket, light pipes and heat sinks options
- Connector and 1xN cages are backward compatible to SFP+

#### Reference Part Numbers:

2170088-X  
2274001-1  
2180324-2

### QSFP/QSFP+ Products



- Supports data rates up to 40 Gbps with 10 Gbps per channel
- Four-channel package offering 3X the density of traditional SFP ports
- 38 Position SMT connector
- Through-bezel and behind-bezel cage options available

#### Reference Part Numbers:

2110819-1  
1888631-2  
2214574-4

### zQSFP+ Products



- Supports data rates of more than 100 Gbps with 28 Gbps per channel
- New connector design to provide superior signal integrity
- Press-fit pin layout support belly-to-belly applications
- Share the same mating interface as the QSFP+ form factor

#### Reference Part Numbers:

1551920-2  
2170790-2  
2227670-1

### microQSFP Products

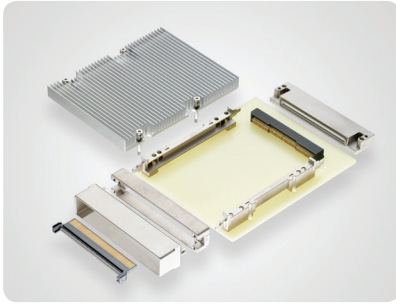


- 4 x 28 Gbps solution provides QSFP28 functionality in a smaller, generally SFP-sized form factor
- 33% higher density than QSFP to fit more ports (up to 72) on a standard line card
- 14.25mm port-to-port pitch
- Integrated module thermal solution offers significantly better thermal performance than QSFP28 solutions

#### Reference Part Numbers:

2291536-1  
2297551-1  
2297550-1

## CFP Products

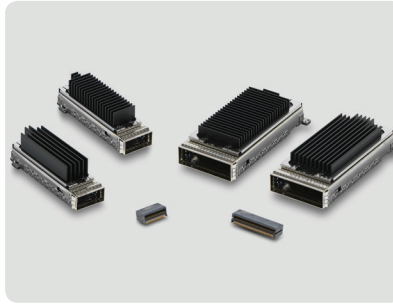


- Designed for Ethernet “long reach”
- Supports data rates up to 100 Gbps with 10 Gbps per channel
- 148 Position interconnect
- Excellent EMI shielding

### Reference Part Numbers:

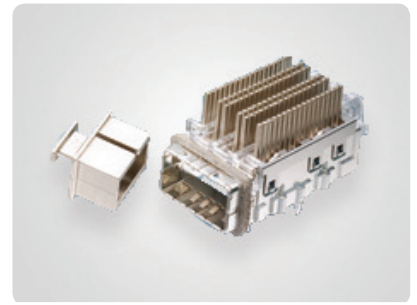
2057631-1  
2057630-1  
2057592-2

## CFP2/CFP4 Products



- Up to 28 Gbps per lane; 100 Gbps per port
- Up to 4x data rate per 19” line card vs CFP
- Up to 60% lower power consumption vs CFP
- Pin counts: 104 pins (CFP2), 56 pins (CFP4)
- Ganged configurations available:
  - 1x1 and 1x2 cages for CFP2
  - 1x1 and 1x4 cages for CFP4
- **AVAILABLE IN 2017**

## CXP Products

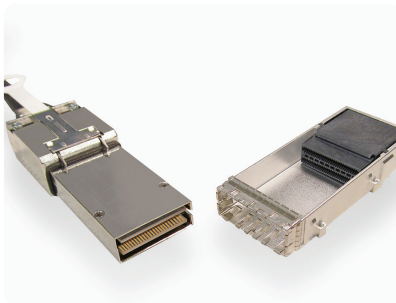


- Designed for Ethernet “short reach”
- Supports 150 Gbps solutions with 12 channels of 12.5 Gbps data
- Includes both EMI spring and an EMI gasket
- Set position integrated connector

### Reference Part Numbers:

2149701-1  
2149152-1  
2149731-1

## CDFP Products



- Up to 400 Gbps per port (16 lanes per port transfer up to 28 Gbps per lane)
- 0.75mm contact pitch
- Pre-assembled, one-piece press-fit connector and cage
- Support direct attach copper and active optical interfaces

### Reference Part Numbers:

2291931-1  
2274233-1

## XFP Products



- Supports data rates up to 10 Gbps
- 30 Position SMT connector
- Gasket EMI containment features
- Patented riding heat sink for thermal dissipation

### Reference Part Numbers:

1489951-1  
1489948-2  
2303074-1  
1367500-1

## X2 Products



- Design for a 10 Gbps solution (transmitting 4 channels of data at a rate of 3.125 Gbps each)
- TE connector and guide rails accept X2 MSA compliant module
- XAUI Interface
- 70 Position PT connector

### Reference Part Numbers:

1367337-1  
1367608-1  
1367710-1

### Mini-SAS and Mini-SAS HD Products

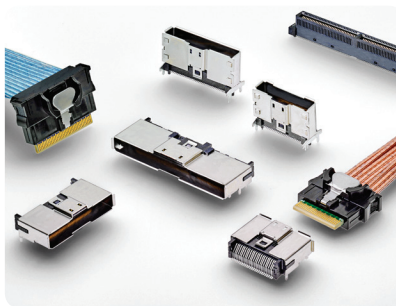


- Multi-lane solutions designed to support 6 Gbps and 12Gbps data rates
- Meet the SAS 2.0 and SAS 2.1 specifications; Mini-SAS HD products have been proposed for the SAS 3.0 specification
- Mini-SAS products support both internal and external solutions
- Reduced size of the Mini-SAS HD system provides additional space for system designers
- Mini-SAS HD is a one-piece assembly featuring a cage and integrated connector

#### Reference Part Numbers:

1888321-2  
1761987-7  
2149375-1

### Sliver Internal Cabled Interconnects



- Supports a choice of protocols (PCIe, SAS, SATA) for data rates up to 32 Gbps per channel
- 0.6mm pitch SMT connector design
- Flexible mounting and mating arrangements
- Supports present and future bandwidth needs without requiring requalification and redesign

#### Reference Part Numbers:

Vertical:	Right Angle:
2292096-1	2292055-1
2291316-1	2292069-1



## High Speed Cable Assemblies

### SFP+/QSFP+ Cable Assemblies



- MSA SFF-8431 compliant
- Supports serial data rates up to 10Gbps
- Enhanced EMI suppression
- 24AWG through 30AWG cable available
- Passive and active assemblies

#### Reference Part Numbers:

SFP+:	QSFP+:
2127931	2053638
2127932	2053453
2127934	2202165
2032757	

### SFP28/QSFP28 Cable Assemblies



- Ethernet and InfiniBand compliant
- Supports data rates up to 28 Gbps per channel
- Low cost alternative to fiber optic assemblies
- 26 AWG through 33 AWG cable available
- QSFP28 to 4x SFP28 and QSFP28 to 2x QSFP28 hybrid cables

#### Reference Part Numbers:

SFP28:	QSFP28:
2821262	2231368
2821222	2821033
2821223	2821309
2821224	2829040

### microQSFP Cable Assemblies



- Compatible with 25G/50G/100G Ethernet and InfiniBand EDR
- Supports data rates up to 28 Gbps per channel in SFP sized form factor
- 28 AWG through 33 AWG cable available
- Straight, hybrid and breakout assembly configurations available

#### Reference Part Numbers:

2821236  
2821783  
2821779

### Mini-SAS Cable Assemblies



- SFF-8088 and SAS 2.0 compliant
- Supports trained and untrained systems
- Up to 6Gbps data rate
- Universal key and standard key slots
- 24, 28 and 30AWG bulk cable

#### Reference Part Number:

1-2127833-4

### Mini-SAS HD Cable Assemblies

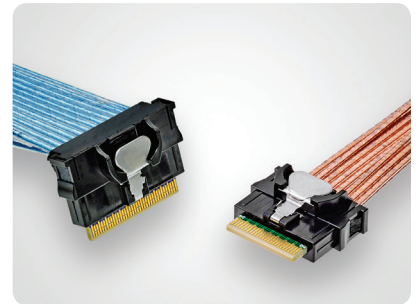


- SFF-8644 and SAS 2.1 / 3.0 compliant
- Improved cable latch design
- Scalable 4x and 8x cable plug configurations
- 26, 28 and 30AWG bulk cable

#### Reference Part Numbers:

2202503  
2202506  
2202509

### Sliver Cable Assemblies



- Supports a choice of protocols (PCIe, SAS, SATA) for data rates up to 32 Gbps per channel
- Available in discrete pair or ribbon laminated 33 AWG cable
- 8x and 12x standard configurations available
- Robust latching for secure connections

#### Reference Part Numbers:

Straight:	Right Angle:
2820397-1	2820399-1
2820396-1	2821385-1

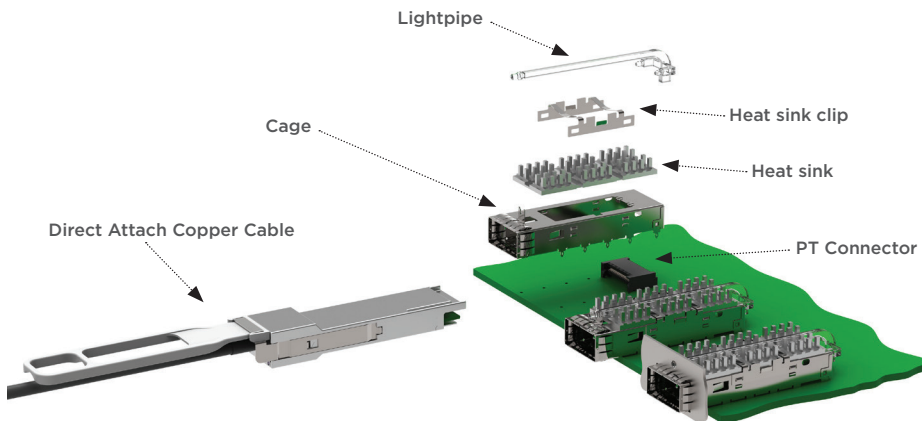
## High Speed Pluggable I/O Solutions

### STANDARDS FOR HIGH SPEED I/O INTERFACES

Standard	Data Rate	Pluggable Interface														
		XFP	X2	SFP	SFP+	zSFP+	QSFP/QSFP+	zQSFP+	micro QSFP	CFP	CFP2	CFP4	CXP	CDFP	Mini-SAS	Mini-SAS HD
Fibre Channel	1G			X	X	X										
	2G			X	X	X										
	4G			X	X	X										
	8G				X	X										
	16G*				X	X	X									
	32G					X	X	X								
	64G						X									
	128G							X								
Ethernet	1G			X	X	X										
	10G	X	X		X	X	X	X								
	25G*					X		X	X							
	40G						X	X		X						
	100G							X	X	X		X	X			
	200G										X			X		
	400G															
InfiniBand	2.5G															
	5G															
	10G															
	14G*						X	X								
	26G*						X		X							
	100G							X	X				X			
SAS	3G														X	
	6G						X								X	X
	12G															X
	24G															
<b>Copper Cable Availability</b>				X	X		X	X						X	X	X

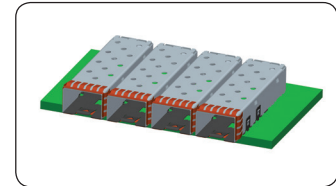
\* Data rate per lane

## Components of a High Speed I/O Interface

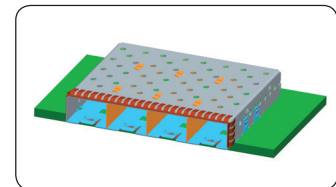


## Typical Cage Port Configurations

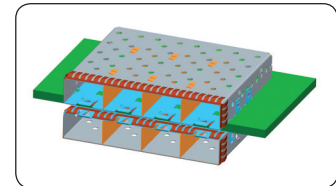
Single Port



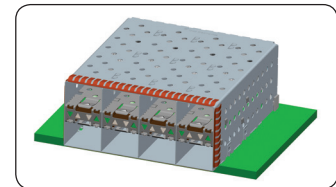
Ganged



Belly-to-Belly

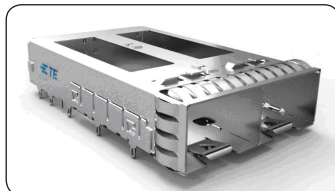


Stacked



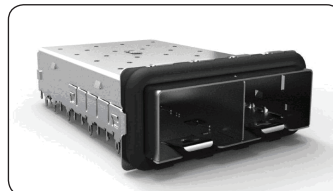
## Features

EMI Springs



- Lower cost
- Less force applied to bezel

EMI Gasket

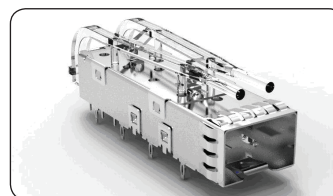


- Tighter tolerances between board edge and bezel are required
- Shielding slightly better in single row cage designs
- Less susceptible to damage

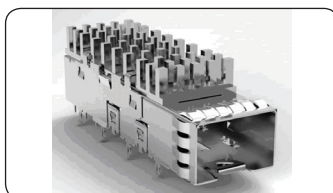
## Accessories

**Lightpipe Application:** TE provides surface mounted LED bulbs on the PCB that carry light signal through the lightpipe clipped onto the cage to the faceplate. Lightpipes are available in standard, low profile, reduced length or square.

Lightpipes



Heat Sinks



### Heat Sink Technology for Thermal Management:

The riding heat sinks use direct contact to the pluggable module to draw heat away from the source. TE heat sinks are available in three standards networking, SAN, PCI, or can be designed to customer specifications.



### Questions to Ask at Design In:

#### What standard and data rate is required?

Please reference the standards for high speed I/O interface table on page 5.

#### Does the application have specific density requirements?

Assemblies can be configured by the number of ports and to meet height/width restrictions.

#### Does the application require light pipes?

Light pipes are available for SFP, SFP+, QSFP/QSFP+ and CXP.

#### Does the application require thermal dissipation?

Heat sinks are available for SFP, SFP+, QSFP/QSFP+, XFP, CFP and CXP. There are also several thermal designs available in the SFP+, zSFP+ and the zQSFP+ product set. Please see [www.te.com/pluggableio](http://www.te.com/pluggableio) for part numbers.

#### What are your cable requirements?

Depending on the pluggable I/O interface, copper cable assemblies are available in different cable lengths and options.

### TE Technical Support Center

USA:	+1 (800) 522-6752
Canada:	+1 (905) 475-6222
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Latin/S. America:	+54 (0) 11-4733-2200
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UK:	+44 (0) 800-267666
France:	+33 (0) 1-3420-8686
Netherlands:	+31 (0) 73-6246-999
China:	+86 (0) 400-820-6015

Part numbers in this brochure are RoHS Compliant\*, unless marked otherwise.

\*as defined [www.te.com/leadfree](http://www.te.com/leadfree)

### [te.com/pluggableIO](http://te.com/pluggableIO)

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4-1773455-2 DND 02/2017

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# DATA COMMUNICATIONS

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AMPLIMITE SUBMINIATURE D CONNECTORS CATALOG



# AMPLIMITE Subminiature D Connectors

RoHS  
Ready 

## Introduction

AMPLIMITE family of Subminiature D connectors is the industry's most extensive and versatile. These subminiature D connectors have become the most popular type of input/output (I/O) connectors in use today. Established and proven, they are rugged, easily used and have been widely adopted in standards for serial communications, telecommunications and local area networks (LANS).

This family of connectors consists of:

- Standard Subminiature D Connectors, Cable Mount and Board Mount

Standard AMPLIMITE connectors come in two series, HD-20 and HD-22, each having five sizes related to the size of the shell. The shell sizes, numbering from one to five, are identical for each series, while the number of positions differ. Depending on the size of the contacts, it is possible to have different numbers of contact cavities in a given shell size.

HD-20 connectors use size 20 contacts, which are based on .040 [1.02] pin diameters with contact centerlines of .109 x .112 [2.77 x 2.85]. This size is the more common variety.

HD-22 connectors use size 22 contacts, based on .030 [0.76] pin diameters on centerlines of .090 x .078 [2.29 x 1.98] for shell sizes 1, 2 and 3; .095 x .078 [2.41 x 1.98] for shell size 4; and .095 x .082 [2.41 x 2.08] for shell size 5. The smaller pin diameter of the HD-22 series allow roughly 65% more contacts to be held in a given shell size. For example, shell size three holds 25 contacts in an HD-20 connector and 44 contacts in an HD-22 connector.

Choosing a subminiature D connector requires evaluating application requirements and deciding which of the many options available best suits your needs. It is due to this wealth of choices to satisfy and performance and costs requirements that makes the subminiature D connector family the world's most popular choice.

### Need more information?

Call Technical Support at the numbers listed below.

Technical Support is staffed with specialists well versed in all TE Connectivity products. They can provide you with:

- Technical Support
- Catalogs
- Technical Documents
- Product Samples
- TE Authorized Distributor Locations

For information on application tooling call the Tooling Assistance Hotline:  
**1-800-722-1111**

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A copy of the certificate is available upon request



### Restriction on the use of Hazardous Substances (RoHS)

At TE, we're ready to support your RoHS requirements. We've assessed more than 1.5 million end items/components for RoHS compliance, and issued new part numbers where any change was required to eliminate the restricted materials. Part numbers in this catalog are identified as:

**RoHS Compliant** — Part numbers in this catalog are RoHS Compliant, unless marked otherwise. These products comply with European Union Directive 2002/95/EC as amended 1 January 2006 that restricts the use of lead, mercury, cadmium, hexavalent chromium, PBB, and PBDE in certain electrical and electronic products sold into the EU as of 1 July 2006.

NOTE: For purposes of this Catalog, included within the definition of RoHS Compliant are products that are clearly "Out of Scope" of the RoHS Directive such as hand tools and other non-electrical accessories.

NOTE: Information regarding RoHS compliance is provided based on reasonable inquiry of our suppliers and represents our current actual knowledge based on the information provided by our suppliers. This information is subject to change. For latest compliance status, refer to our website referenced at right.

### Getting the Information You Need

Our comprehensive on-line RoHS Customer Support Center provides a forum to answer your questions and support your RoHS needs. A RoHS FAQ (Frequently Asked Questions) is available with links to more detailed information. You can also submit RoHS questions and receive a response within 24 hours during a normal work week. The Support Center also provides:

- Cross-Reference from Non-compliant to Compliant Products
- Ability to browse RoHS Compliant Products in our on-line catalog
- Downloadable Technical Data Customer Information Presentation
- More detailed information regarding the definitions used above
- So whatever your questions when it comes to RoHS, we have the answers at [www.te.com/leadfree](http://www.te.com/leadfree)

RoHS  
Customer  
Support  
Center 

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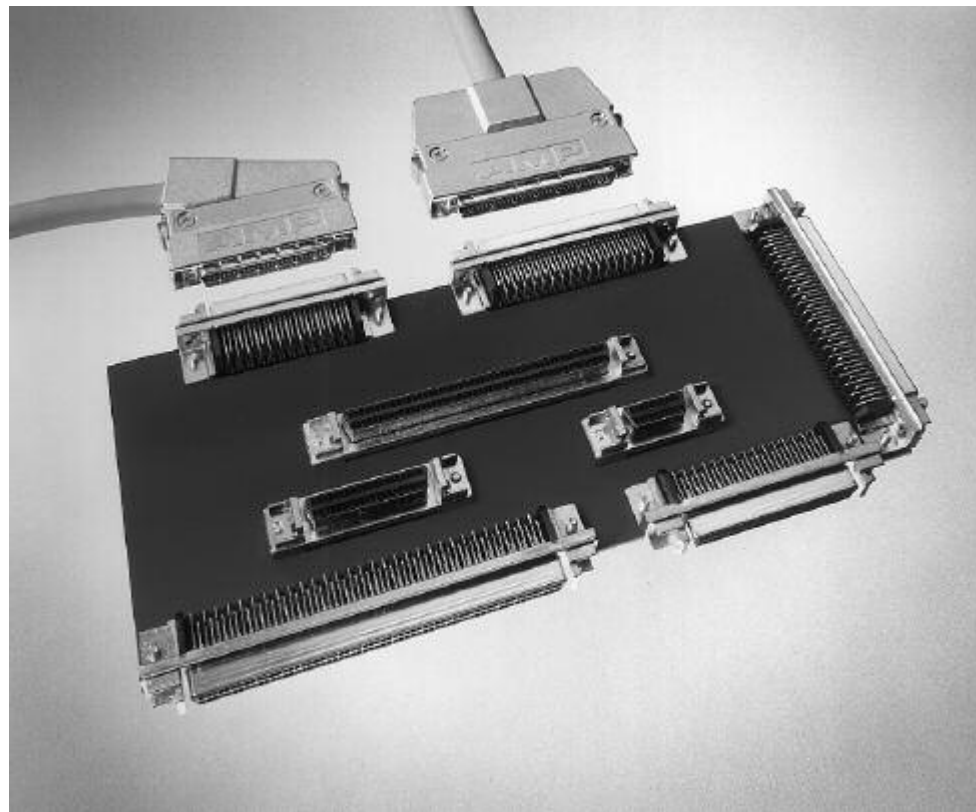
## AMPLIMITE .050 Series Connector (.050 x .100 [1.27 x 2.54] Centerline) Series III

### Product Facts

- Compatible with SCSI-2, SCSI-3, EIA RS-232, ISO-11569\*, HIPPI, IPI-2 and IEE 802.3 MII standards
- High-density D type interface
- 20 through 100 contact positions
- Tab plug contacts and tuning-fork receptacle contacts, with reliable two-point (redundant) contact; contact normal force is not dependent on plastic housing support
- Excellent EMI/RFI protection
- Shields mate before contacts, with ground mating first and breaking last
- Squeeze-to-release latches or jackscrew hardware
- Board connectors compatible with standard thru-hole flow solder and surface-mount reflow solder processes (Series III)
- Recognized under the Component Program of Underwriters Laboratories Inc.,  File No. E28476
- Listed and complies with UL 1863, Communication Circuit Accessories  File No. E81956
- Certified by Canadian Standards Association,  File No. 1088108 (LR 7189A-207)

- Produced under a Quality Management System certified to ISO 9001 

A copy of the certificate is available upon request



### Introduction

Shielded AMPLIMITE .050 Series connectors offer a high-density D type interface. Featuring .050 x .100 [1.27 x 2.54] contact centerline spacing, these compact and reliable connectors are available in 20 through 120 positions. Their construction offers exceptional EMI/RFI shielding effectiveness.

**Shielded AMPLIMITE .050 Series Connectors, Series III, are approved to SCSI-2, SCSI-3, EIA RS-232, ISO-11569\*, IPI-2, HIPPI, and IEE 802.3 MII standards.**

Connectors are available in cable-mount and panel mount versions and vertical and right-angle pcb headers plus vertical mount with ACTION PIN contacts. The headers feature high temperature housings for reflow soldering processes.

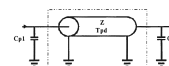
Cable and panel connectors use insulation displacement contacts for fast termination of discrete, round-to-flat laminated, and ribbon cable.

**Series I, II and III intermateability:**

**Only the 50 and 68 position sizes are intermateable between Series I, II, and III.**

Backshells are available with either a straight or angled cable exit. Hardware includes a choice of integral squeeze-to-release latches or jackscrews.

Unshielded, All-Plastic Cable Plugs are available in 50 through 100 positions and offer an economical answer to your connector needs on applications where EMI/RFI protection is not a factor.



**AMP Single Line and Multi Line Models are available for AMPLIMITE Subminiature D Type connectors at [www.te.com/simulation](http://www.te.com/simulation).**

\*26-position cable assembly with spring latches

## AMPLIMITE .050 Series Connector (.050 x .100 [1.27 x 2.54] Centerline) Series III (Continued)

### Product Facts

- **Compact design, profile for the right-angle header 1.230 x .588 [31.24 x 14.94], vertical header 1.230 x .433 [31.24 x 11.00], right-angle stacked headers 1.230 x .803 [31.24 x 20.40]**
- **Housings and covers made of UL 94V-0 rated thermoplastic**
- **Header footprint for right-angle and stacked configurations is .100 x .050 [2.54 x 1.27] staggered centerlines**
- **Header footprint for vertical configuration is .100 x .075 [2.54 x 1.90] staggered centerlines**
- **Right-angle and stacked headers feature integral boardlocks for positive board retention and grounding**
- **Vertical headers feature 8 below the board, retentive contact legs for mechanical retention before and after soldering**
- **Vertical headers feature polarized grounding posts to assure correct header-to-board orientation**
- **Stacked headers reduce overall total header volume by 48% and PC board area by 38%**
- **Stacked headers offer optional contact shield for additional EMI/RFI protection**
- **Plugs preloaded with insulation displacement contacts (IDC) provide fast, reliable and economical terminations**
- **Choice of three keying positions, plus non-keyed inserts for assurance against mismatch mating**

Shielded AMPLIMITE .050 Series, Slimline Connectors answer today's industry requirement for higher density in a smaller overall package. The present line consists of 26 position, shielded right-angle and vertical PCB receptacle headers, 26 position right-angle stacked PCB receptacle header, and mating 26 position plug connectors. All header, plug and backshell housings are made of UL 94V-0 rated thermoplastic. PCB headers are compatible with surface mount reflow solder processes. Right-angle and stacked PCB headers feature contact footprints on .100 x .050 [2.54 x 1.27] staggered centerlines and vertical header footprints are on .100 x .075 [2.54 x 1.90] staggered centerlines.

The compact design of the **right-angle header** package measures only 1.230 W x .588 D x .300 H [31.24 W x 14.94 D x 7.62 H] for maximum board real estate conservation. Right-angle PCB headers feature integral boardlocks for positive board retention and grounding.

**Vertical headers** feature 8 below the board, retentive contact legs for mechanical retention before and after soldering. Polarized grounding posts provide correct header-to-board orientation. The complete package occupies an area only 1.230 W x .325 D x .433 H [31.24 W x 8.26 D x 11.00 H].

**Right-angle stacked headers** provide 52 contacts in a package only .635 [16.13] high, allowing parallel (board-over-board) board spacing of .800 [20.32].

Centerlines between the top connector and the bottom connector measure .335 [8.51] when compared to .400 [10.06] on the standard .050 Series stacked headers. This results in an overall reduction of total header volume, in comparison to the standard AMPLIMITE .050 Series header, of 48%, and a comparative reduction in PC board area of 38%.

**Stacked header board retention and stabilization** is provided by two boardlocks and four grounding posts. In addition, an optional rear contact shield is available for additional EMI/RFI protection.

**The mating plug connector** consists of a thermoplastic housing, preloaded with insulation displacement contacts (IDC) for fast, reliable terminations that offer greater applied cost savings. TE offers a choice of termination equipment to meet your production requirements.

**The backshell hardware kit** includes a two-piece, aesthetically designed, thermoplastic cover over an inner and outer shield and two, high strength #2-56 male jackscrews with insulated heads (easy finger grip caps) to secure mated connectors.

The AMPLIMITE .050 Series, Slimline family of connectors offers **keyed coupling**. This feature reduces the problem of mismatch mating of plug and receptacle, particularly in stacked applications. There are three possible keying arrangements, plus unkeyed inserts to assure maximum options for multiple connector applications.



**AMPLIMITE .050 Series Cable Assemblies, Series III**

To meet Standard Applications the following 106 ohm, black jacketed cable assemblies are available. For AMPLIMITE .050 Series cable assemblies that meet other impedance requirements or other lengths consult TE.

AMPLIMITE .050 Series Connectors, Series III



SCSI-2



SCSI-1 to SCSI-2



RS-232 (Alternate)



RS-232 (Alternate) to RS-232



IPI-2 and HIPPI

Application	Assembly	Part Numbers		
		2 Feet	2 Meters	3 Meters
SCSI-2	50 pos. .050 Series Plug to 50 pos. .050 Series Plug	750254-1	5750254-2	750254-3
SCSI-2*	68 pos. .050 Series Plug to 68 pos. .050 Series Plug	—	5750732-2	5750732-4
RS-232 (Alternate)	26 pos. .050 Series Plug to 26 pos. .050 Series Plug	—	750255-2	750255-3

Application	Assembly	Part Numbers		
		5 Meters	15 Meters	25 Meters
IPI-2 and HIPPI	100 pos. .050 Series Plug to 100 pos. .050 Series Plug	749755-2	—	—

\*This version has spring latches. Consult TE for availability of jackscrew version.

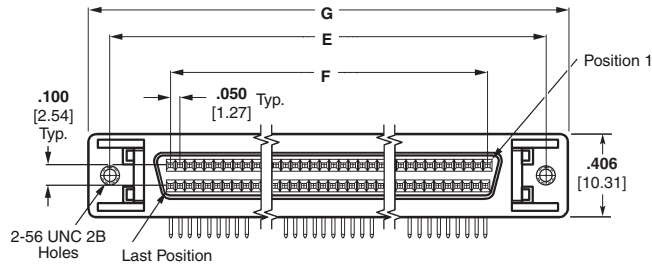
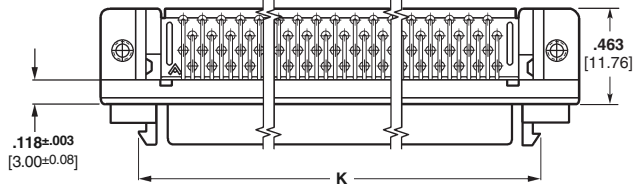
**Note:** .050 centerline ribbon cable assemblies are available in single or double ended versions. These assemblies are made using AMPLIMITE .050 Series panel mount connectors, AMPLIMITE .050 Series all-plastic connectors and AMP-LATCH Novo receptacles. Consult TE.

SCSI—Small Computer Systems Interface  
 HIPPI—High Performance Parallel Interface  
 IPI—Intelligent Peripheral Interface

**Note:** All part numbers are RoHS compliant.

**AMPLIMITE .050 Series Right-Angle Receptacle Headers, Series III**

AMPLIMITE .050 Series Connectors, Series III



**Note:** Refer to TE Customer drawings and Application Spec for PCB & panel layouts.

**Materials:**

- Housing** — Thermoplastic, 94V-0 rated, black. SMT compatible
- Shell** — Steel, plated bright nickel over copper
- Bracket** — Zinc, plated nickel over copper
- Contacts** — Phosphor bronze, duplex plated [.000030] 0.00076 min. gold on mating end; tin on solder end; all under-plated nickel

**Technical Documents:**

- Product Specifications** — 108-1228
- Application Specifications** — 114-40029



Shown With Boardlocks



Shown With Boardlocks



Shown With Boardlocks

No. of Pos.	Dimensions				Part Numbers						
	E	F	G	K	w/ Rails and Latchblocks		w/o Rails, w/ Latchblocks		w/o Rails, w/o Latchblocks		
					With .100 [2.54] Solder Tails		With .100 [2.54] Solder Tails		With .100 [2.54] Solder Tails		With .120 [3.05] Solder Tails
					Without Boardlocks	With Boardlocks	Without Boardlocks	With Boardlocks	Without Boardlocks	With Boardlocks	With Boardlocks
40	1.580 40.13	.950 24.13	1.815 46.10	1.415 35.94	—	1761028-2	—	5787082-3	—	5787170-4*	—
50	1.830 46.48	1.200 30.48	2.065 52.45	1.665 42.29	5787190-5	1761028-3	5787394-5	5787082-5	—	5787170-5*	5787362-5*
50	1.830 46.48	1.200 30.48	2.065 52.45	1.665 42.29	—	5787266-5*	—	5787395-5*	—	—	—
68	2.280 57.91	1.650 41.91	2.515 63.88	2.115 53.72	5787190-7	1761028-4	5787394-7	5787082-7	5787169-7*	5787170-7*	5787362-7*
100	3.080 78.23	2.450 62.23	3.315 84.20	2.915 74.04	—	1761028-5	—	5787082-9	5787169-9*	5787170-9*	5787362-9*

\*Has 4-40 threaded mating holes (2 places), for use with female screwlock Part No. 750644-1.

**Note:** All part numbers are RoHS compliant.



**Materials:**

**Housing**—Thermoplastic, 94V-0 rated, black. SMT compatible

**Shell**—Steel, plated bright nickel over copper

**Bracket**—Zinc, plated nickel over copper

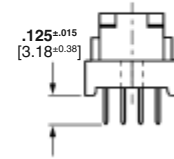
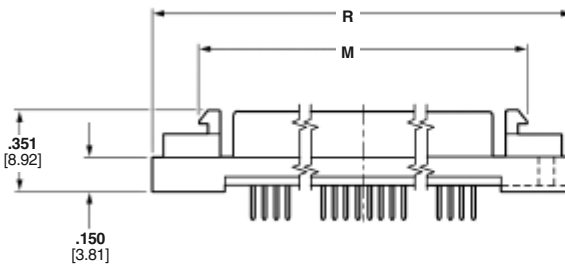
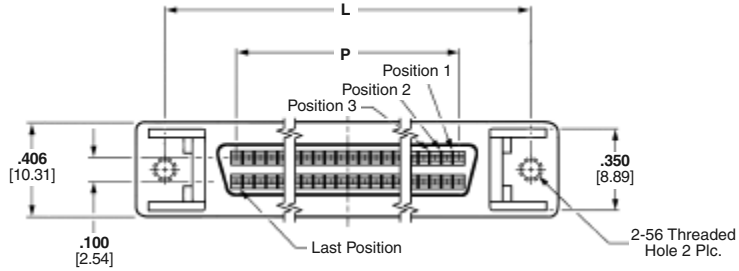
**Contacts**—Phosphor bronze, duplex plated .000030 [0.00076] min. gold on mating end; tin on solder end; all under-plated nickel

**Technical Documents:**

**Product Specifications**—108-1228

**Application Specifications**—114-40029

**Note:** Extra pin contact protection is provided by rails, which facilitate a straight-out, unmating motion. A side-to-side rocking motion should not be used to disengage the connector system.



**Note:** Refer to TE Customer drawings and Application Spec for PCB & panel layouts.



Part Number 749069-5



Part Number 749721-5



Part Number 749070-7

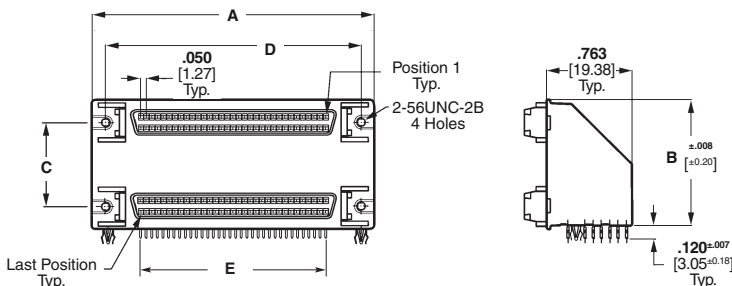
No. of Pos.	Dimensions				Part Numbers		
	L	M	P	R	w/ Rails & Latchblocks	w/ Latchblocks	Plain
20	1.080 27.43	.915 23.24	.450 11.43	1.315 33.40	5749069-1	—	—
26	1.230 31.34	1.065 27.05	.600 15.24	1.465 37.21	5749069-2	—	—
28	1.280 32.51	1.115 28.32	.650 16.51	1.515 38.48	—	5749721-3	—
40	1.580 40.13	1.415 35.94	.950 24.13	1.815 46.10	5749069-4	—	—
50	1.830 46.48	1.665 42.29	1.200 30.48	2.065 52.45	5749069-5	5749721-5	5749070-5
68	2.280 57.91	2.115 53.72	1.650 41.91	2.515 63.88	5749069-7	5749721-7	5749070-7
80	2.580 65.53	2.415 61.34	1.950 49.53	2.815 71.50	5749069-8	—	—
100	3.080 78.23	2.915 74.04	2.450 62.23	3.315 84.20	5749069-9	—	5749070-9

**Note:** All part numbers are RoHS compliant.

## AMPLIMITE .050 Series Vertical Receptacle Headers With Through-Hole Tails, Series III (Continued)

AMPLIMITE .050 Series Connectors, Series III

### .120 [3.05] Solder Tail Length



Rails and Latch Blocks

### Materials:

**Housing**—Thermoplastic, 94V-0 rated, black. SMT compatible

**Shell**—Steel, plated bright nickel over copper

**Bracket**—Zinc, plated nickel over copper

**Contacts**—Phosphor bronze, duplex plated .000030 [0.00076] min. gold on mating end; tin on solder end; all under-plated nickel

### Related Product Data:

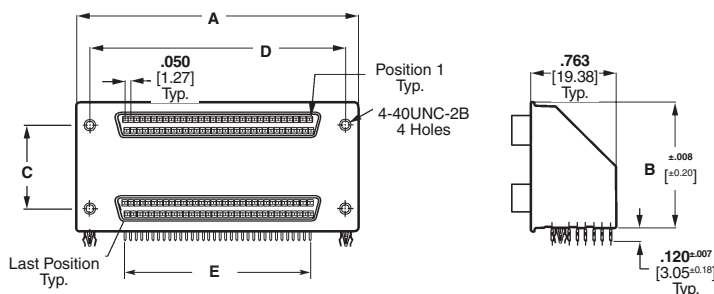
**Required Hardware**—page 26

### Technical Documents:

**Product Specifications**—108-1228-1

**Application Specifications**—114-40029

**Note:** Extra pin contact protection is provided by rails, which facilitate a straight-out unmating motion. A side-to-side rocking motion should not be used to disengage the connector system.



Flat Top Configuration

**Note:** Refer to TE Customer drawings and Application Spec for PCB & panel layouts.

No. of Pos.	Dimensions					Part No.
	A	B	C	D	E	
50/50	2.085 52.96	.874 22.20	.500 12.70	1.830 46.48	1.200 30.48	5787656-1
68/68	2.535 64.39	1.124 28.55	.750 19.05	2.280 57.91	1.650 41.91	5787678-1
68/68	2.535 64.39	1.124 28.55	.750 19.05	2.280 57.91	1.650 41.91	5787679-1*

\*Flat-top configuration.

**Note:** All part numbers are RoHS compliant.

## AMPLIMITE .050 Series Vertical Receptacle Headers, Series III, with ACTION PIN Contacts (.050 x .100 [1.27 x 2.54] Centerlines)

### Product Facts

■ Recognized under the Component Program of the Underwriters Laboratories, Inc., File No. E28476

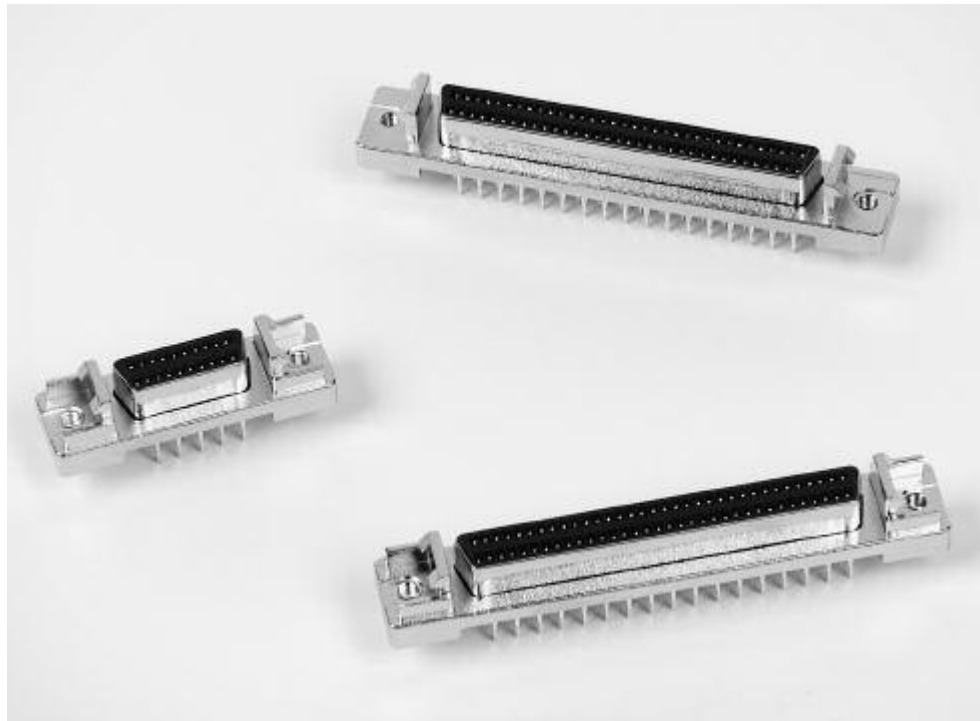


■ Certified by Canadian Standards Association, File No. 1088108 (LR 7189A-207)



■ Produced under a Quality Management System certified to ISO 9001

A copy of the certificate is available upon request



Shielded AMPLIMITE .050 Series headers with ACTION PIN contacts offer a high-density D type interface, and a solderless board-mount interconnection. These vertical mount headers are available in 20, 26, 50, 68 and 100 contact sizes. Choice of configurations includes; headers with rails and latch blocks, with latch blocks only, and without rails and latch blocks.

ACTION PIN contact tails are available in two lengths; .173 [4.39] for pc boards with a nominal thickness of .062 [1.56] to .093 [2.36], and .280 [7.11] for pc boards with a nominal thickness of .125 [3.18] to .200 [5.08].

AMPLIMITE .050 Series headers with ACTION PIN contacts are compatible with SCSI-2, SCSI-3, EIA RS-232, IPI-2 and HIPPI standards.

### Principle of the AMPLIMITE .050 Series Compliant ACTION PIN Contact

When an AMPLIMITE .050 Series compliant ACTION PIN contact is inserted into a plated-through-hole, two spring members are compressed, exerting force against the hole for a gas-tight connection. The diameter of the hole is smaller than the diagonal size of the pin.

The beam characteristics of the pin are designed so that a plastic, as well as an elastic, deformation takes place during insertion. The two spring members compress to different degrees to accommodate hole tolerances. The compliant pin also reduces strain on the board. With a rigid pin, the elastic strain energy is stored entirely in the board, leading to damage of the plated-through holes. With the

AMPLIMITE .050 Series compliant ACTION PIN contact, the residual force of the elastic deformation maintains stored energy to produce a gas-tight contact zone between the pin and the plated-through-hole. This ensures long term electrical and mechanical reliability of the interconnection.

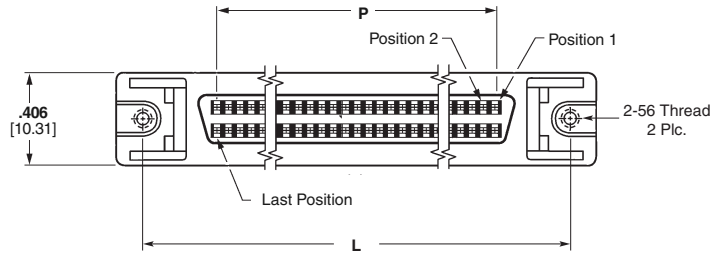
### Technical Documents:

**Product Specification—**  
108-1228-2

**Application Specification—**  
114-40029

**Instruction Sheets—**  
408 6923—AMP Manual Arbor Frame Assembly  
408 9027—AMP Adapter Kit for Greenerd Frame Assemblies 3A and 3B  
408 9757—Seating Instructions and Tooling  
408 6927—Recommendations for pc board support

## AMPLIMITE .050 Series Vertical Receptacle Headers, with ACTION PIN Tails, Series III



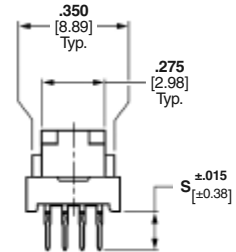
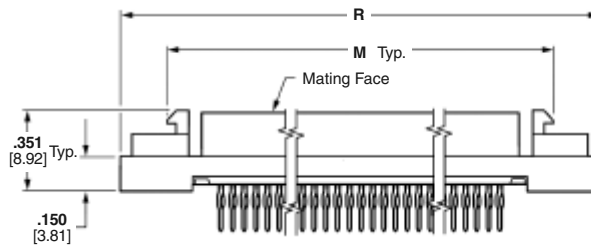
**Materials:**

**Housings**—Thermoplastic, 94V-0 rated, black, SMT compatible

**Shell**—Carbon steel, plated bright tin over copper

**Bracket**—Zinc, plated nickel over copper

**Contacts**—Phosphor bronze, duplex plated .000030 [0.00076] min. gold on mating end; tin on solder end; all under-plated nickel



**Note:** Refer to TE Customer drawings and Application Spec for PCB & panel layouts.

**Technical Documents:**

**Product Specifications**—108-1228-2

**Application Specifications**—114-40029

**Note:** Extra pin contact protection is provided by rails, which facilitate a straight-out unmating motion. A side-to-side rocking motion should not be used to disengage the connector system.



Part Number 786554-1

Part Number 786554-7

Part Number 786155-7

No. of Pos.	Dimensions					Part Numbers		
	L	M	P	R	S	w/ Rails & Latchblocks	w/ Latchblocks	Plain
20	1.080 27.43	.915 23.24	.450 11.43	1.315 33.40	.173 4.39	5786554-1	—	—
26	1.230 31.34	1.065 27.05	.600 15.24	1.465 37.21	.173 4.39	5786554-2	—	—
50	1.830 46.48	1.665 42.29	1.200 30.48	2.065 52.45	.173 4.39	5786554-5	5786155-5	5786555-5
					.280 7.11	5786556-5	—	—
68	2.280 57.91	2.115 53.72	1.650 41.91	2.515 63.88	.173 4.39	5786554-7	5786155-7	5786555-7
					.280 7.11	—	786155-7	5786557-7
100	3.080 78.23	2.915 74.04	2.450 62.23	3.315 84.20	.173 4.39	5786554-9	—	5786555-9
120	3.580 90.93	3.415 86.74	2.950 74.93	3.815 96.90	.173 4.39	1-5786554-0	—	—

**Note:** All part numbers are RoHS compliant.

**AMPLIMITE .050 Series Cable Plug Connectors, Series III**

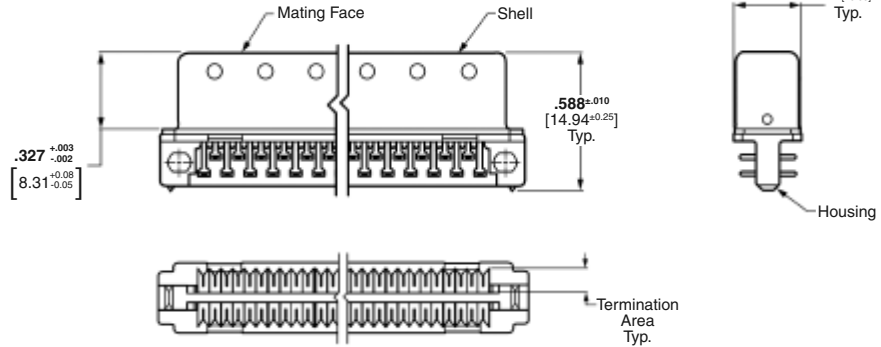
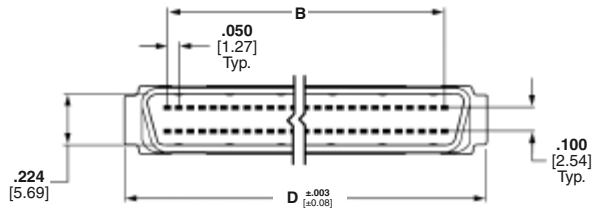
**Shielded Plugs**



Shielded Plug



Wire Lacing Termination Covers



Shielded Plug with Unassembled Wire Lacing Termination Covers

**Materials:**

**Housing and Covers**—Thermoplastic, 94V-0 rated, black or gray

**Contacts**—Phosphor bronze, duplex plated .000030 [0.00076] min. gold on mating end, tin on termination end, all underplated .nickel

**Shell**—Steel, plated tin-nickel alloy over nickel over min. copper

**Recommended wire size**—28 AWG [0.08-0.09mm<sup>2</sup>] or 30 AWG [0.05mm<sup>2</sup>], solid or 7 strand, with a .029-.036 [0.74-0.89] insulation diameter.

**Technical Documents:**  
**Product Specifications**—108-1228  
**Application Specifications**—114-40029

**Instruction Sheet**—408-9427

**Connector With Unassembled Wire Lacing Termination Covers**

No. of Pos.	Dimensions			Part Numbers	
	A	B	D	.032-.036 [0.81-0.91] Outer Wire Dia. Black	.029-.031 [0.74-0.79] Outer Wire Dia. Gray
26	.293 7.44	.600 15.24	.979 24.87	5750913-2	1-5750913-2
50	.293 7.44	1.200 30.48	1.579 40.11	5750913-5	1-5750913-5
68	.293 7.44	1.650 41.91	2.029 51.54	5750913-7	1-5750913-7
100	.373 9.47	2.450 62.23	2.829 71.86	—	1-5750913-9

- Notes:** 1. Plug connector requires backshell kit for complete assembly. Refer to pages 16-19 for backshell kit part numbers.  
 2. For termination, cover closing and wire lacing tooling, see page 14.

**Note:** All part numbers are RoHS compliant.



**AMPLIMITE .050 Series Cable Plug Connectors, Series III (Continued)**

AMPLIMITE .050 Series Connectors, Series III

**Shielded Plugs**

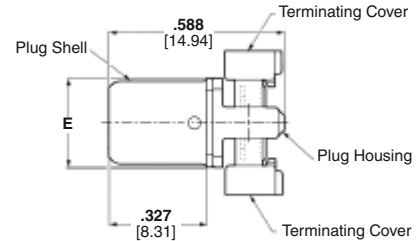
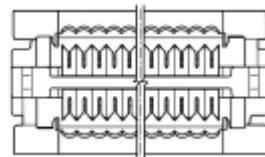
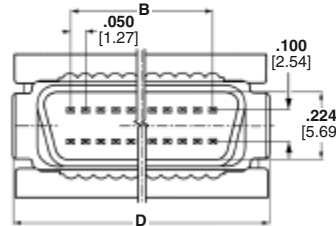
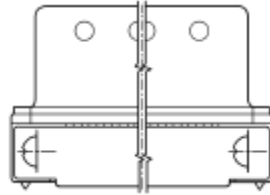
(Continued)



**Shielded Plug with Unassembled Standard Termination Covers**



**Shielded Plug with Assembled Standard Termination Covers**



**Shielded Plug with Assembled or Unassembled Standard Termination Covers**

**Materials:**

**Housing and Covers—**

Thermoplastic, 94V-0 rated, black

**Contacts—**Phosphor bronze, duplex plated .000030 [0.00076] min. gold on mating end, tin on termination end, all underplated nickel

**Shell—**Steel, plated tin-nickel alloy over nickel over copper

**Recommended wire size<sup>3</sup> —**

28 AWG [0.08-0.09mm<sup>2</sup>] or 30 AWG [0.05mm<sup>2</sup>], solid or 7 strand, with a .029-.036 [0.74-0.89] insulation diameter.

**Technical Documents:**

**Product Specifications—**108-1228

**Application Specifications—**114-40029

**Instruction Sheet—**408-9427

**Note:** Refer to TE Customer drawings and Application Spec for PCB & panel layouts.

**Connectors With Standard Termination Covers**

No. of Pos.	Dimensions			Part Numbers	
	B	D	E	w/Rails & Latchblocks	w/Latchblocks
20	.450 11.43	.829 21.06	.293 7.44	5749111-1	5749621-1
26	.600 15.24	.979 24.87	.293 7.44	1-5749111-0	5749621-2
28	.650 16.50	1.029 26.14	.293 7.44	—	5749621-3
40	.950 24.13	1.329 33.76	.293 7.44	5749111-3	5749621-4
50	1.200 30.48	1.579 40.11	.293 7.44	5749111-4	5749621-5
68	1.650 41.91	2.029 51.54	.293 7.44	5749111-6	5749621-7
80	1.950 49.53	2.329 59.16	.373 9.47	5749111-7	5749621-8
100	2.450 62.23	2.829 71.86	.373 9.47	5749111-8	5749621-9
120	2.950 74.93	3.329 84.56	.373 9.47	5749111-9	1-5749621-0

- Notes:**
1. Plug connector requires backshell kit for complete assembly and must use round jacketed cable (discrete or laminated). Refer to pages 16-19 for backshell kit part numbers.
  2. For termination tooling, see pages 28 & 29.
  3. The CHAMPOMATOR 2.5 Automatic Termination Machine will accept diameters as low as .023 [0.58].

**Note:** All part numbers are RoHS compliant.

**AMPLIMITE .050 Series Cable Plug Connectors, Series III** (Continued)

AMPLIMITE .050 Series  
Connectors, Series III

**AMPLIMITE .050 Series  
Connector Application  
Tooling for Use with Wire  
Lacing Termination Covers**

**Manual Arbor Frame  
Assembly—Part No. 58024-1**

Equipped with Cover Lacing Assembly—**Part No. 91293-1** (Includes Seating Bars for 50 and 100 Positions). See Table 3 for Seating Bar Part Numbers.

Extra Lacing Stations available for use with Lacing Assembly—**Part No. 91293-1**  
Order Lower Tooling Assembly—**Part No. 543481-1**



**Arbor Frame, Part No. 58024-1  
Equipped with  
Cover Lacing Assembly,  
Part No. 91293-1**



**Lower Tooling Assembly  
Part No. 543481-1**



**Miniature Applicator Frame Assembly  
Part No. 91295-1  
Equipped with Cover Closing Kit  
Part No. 543508-1**

**Note:** AMP Manual Miniature Applicator Frame Assembly, Cover Closing Kit, and Staple Insertion Kit each must be ordered separately by part number.



**Seatings Bars**

**Table Number 3**

No. of Pos.	Seating Bar Part No.
26	543494-2
40	543494-3
50	543494-1
68	543502-2
100	543502-1

**Note:** All Tooling must be ordered separately by part number.

**Note:** All part numbers are RoHS compliant.

**AMPLIMITE .050 Series Cable Receptacle Connectors, Series III**

**Shielded Receptacles**



**Shielded Receptacle with Assembled Termination Covers**

**Materials:**

**Housing and Covers**—Thermoplastic, 94V-0 rated, black

**Contacts**—Phosphor bronze, duplex plated .000030 [0.00076] min. gold on mating end, tin on termination end, all underplated nickel

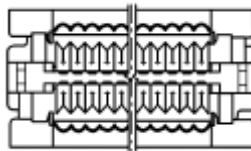
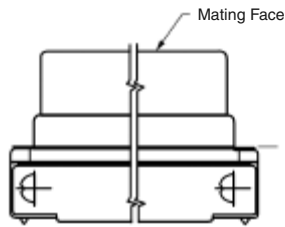
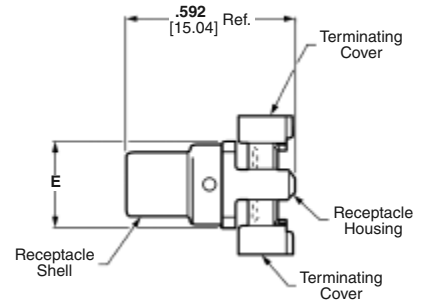
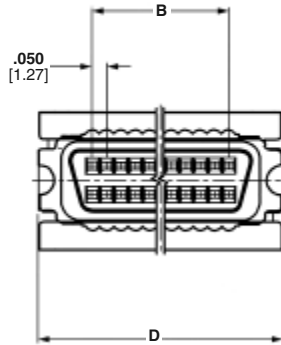
**Shell**—Steel, plated bright tin over copper

**Recommended wire size**—28 AWG [0.08-0.09mm<sup>2</sup>] or 30 AWG [0.05mm<sup>2</sup>], solid or 7 strand, with a .029-.036 [0.74-0.89] insulation diameter.

**Technical Documents:**

**Product Specifications**—108-1228

**Application Specifications**—114-40029



No. of Pos.	Dimensions			Part Numbers	
	B	D	E	Connectors With Standard Termination Covers	
				Assembled Covers	Unassembled Covers
40	.950 24.13	1.329 33.76	.293 7.44	—	—
50	1.200 30.48	1.579 40.11	.293 7.44	5749210-5	5749699-5
68	1.650 41.91	2.029 51.54	.293 7.44	5749210-7	5749699-7
100	2.450 62.23	2.829 71.86	.373 9.47	—	5749699-8

- Notes:**
1. Receptacle connector requires backshell kit for complete assembly. Refer to pages 16-19 for backshell kit part numbers.
  2. For termination, cover closing and wire lacing tooling, see page 14.
  3. For Termination Tooling other than Wire Lacing see pages 28 & 29.

**Note:** All part numbers are RoHS compliant.

## AMPLIMITE .050 Series Shielded Backshell Kits, With Jackscrews, Series III



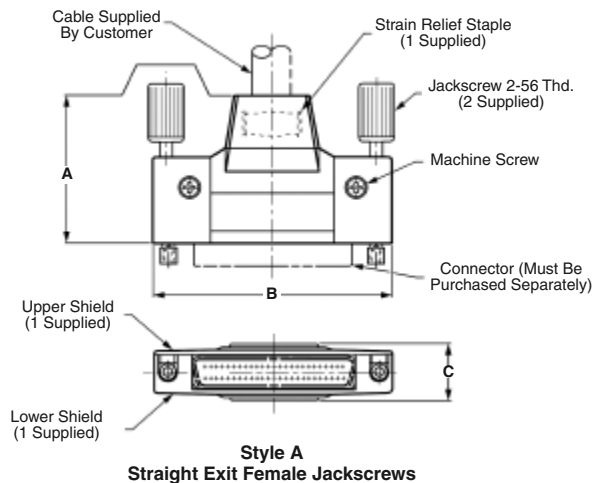
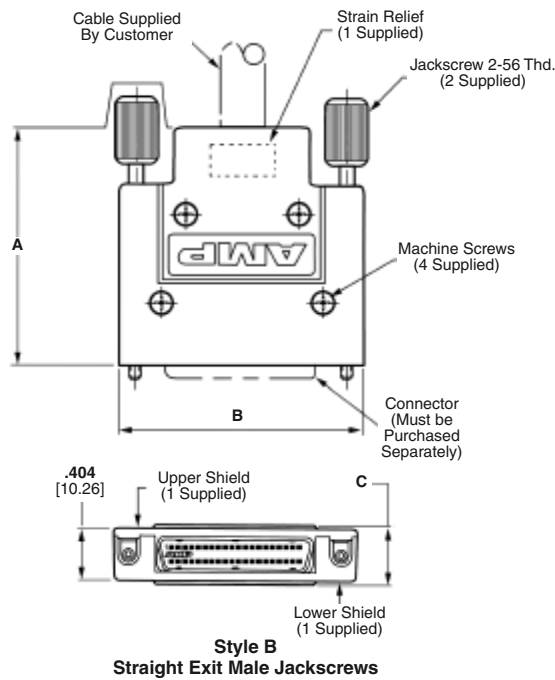
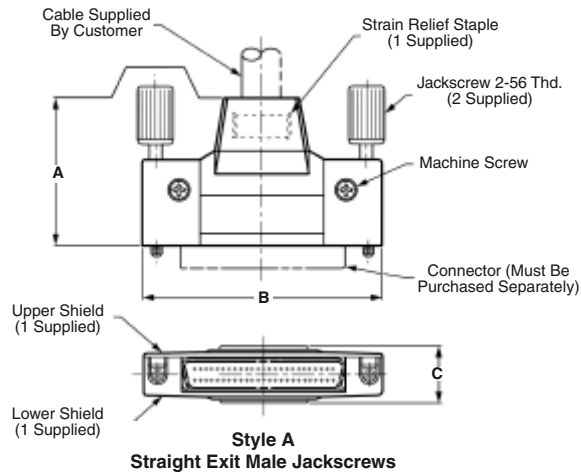
**Straight Exit Male Jackscrews Style A**



**Straight Exit Male Jackscrews Style B**



**Straight Exit Female Jackscrews Style A**



**Materials:**

**Jackscrews**—Stainless steel or steel, black electroless nickel plated

**Jackscrew Caps**—Polyolefin or PVC, black

**2-56 Screws**—Stainless steel

**Backshell**—Zinc, plated nickel over copper

**Strain Relief Staple**—Steel, plated tin over nickel

**Technical Documents:**

**Product Specifications**—108-1228

**Application Specifications**—114-40029

**Instruction Sheet**—408-9427

**AMPLIMITE .050 Series Shielded Backshell Kits, With Jackscrews, Series III** (Continued)

No. of Pos.	Style	Dimensions			Pkg.	Max. O.D.	Male with #2-56 Threads	Female with #2-56 Threads
		A	B	C				
40	B	<b>1.822</b>	<b>1.830</b>	<b>.456</b>	Bulk	<b>.450</b> 11.43	5787543-1	5787543-7
		46.25	46.48	11.58	Bulk	<b>.400</b> 10.16	5787543-2	5787543-8
					Bulk	<b>.350</b> 8.89	5787543-3	5787543-9
50	A	<b>1.270</b>	<b>2.085</b>	<b>.480</b>	Individual	<b>.400</b> 10.16	5749080-1	—
		32.26	52.96	12.19	Bulk	<b>.400</b> 10.16	5749080-2	—
68	B	<b>1.887</b>	<b>2.645</b>	<b>.660</b>	Bulk	<b>.550</b> 13.97	5750752-3	—
		47.93	67.18	16.76	Individual	<b>.550</b> 13.97	5786152-3	—
100	A	<b>1.822</b>	<b>2.525</b>	<b>.564</b>	Individual	<b>.500</b> 12.70	5749854-1	—
		46.28	64.14	14.33	Individual	<b>.500</b> 12.70	5749081-1	—
		<b>2.082</b>	<b>3.325</b>	<b>.615</b>	Individual	<b>.500</b> 12.70	5749081-1	—
		52.88	84.46	15.62	Individual	<b>.500</b> 12.70	5749081-1	—
		<b>1.695</b>	<b>3.325</b>	<b>.595</b>	Individual	<b>.500</b> 12.70	5749081-1	—
		43.05	84.46	15.11	Individual	<b>.500</b> 12.70	5749081-1	—

**Notes:** 1. Each backshell kit includes upper and lower backshells, two male or female jackscrews, one strain relief staple and two or four #2-56 screws. All are packaged unassembled.  
 2. For Staple Insertion Tooling see page 29.

AMPLIMITE .050 Series Connectors, Series III

**Note:** All part numbers are RoHS compliant.

## AMPLIMITE .050 Series Shielded Backshell Kits, With Spring Latches, Series III



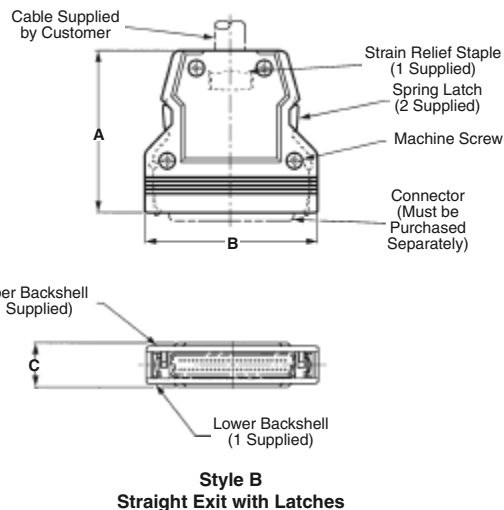
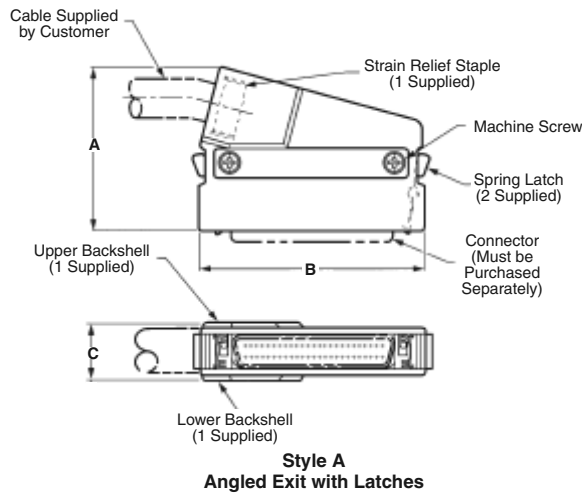
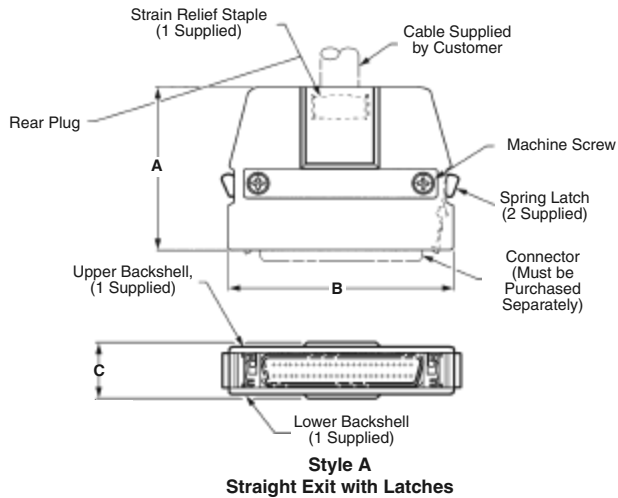
**Style A  
Straight Exit  
with Latches**



**Style A  
Angled Exit  
with Latches**



**Style B  
Straight Exit  
with Latches**



**Materials:**

**Backshell**—Zinc, plated nickel over copper

**Spring Latch**—Stainless steel

**2-56 Screws**—Stainless steel

**Strain Relief Staple**—Steel, plated tin over nickel

**Technical Documents:**

**Product Specifications**—108-1228

**Application Specifications**—114-40029

**Instruction Sheet**—408-9427

**Note:** Extra pin contact protection is provided by rails on the receptacle, which facilitate a straight-out unmating motion. A side-to-side rocking motion should not be used to disengage the connector system.

## AMPLIMITE .050 Series Shielded Backshell Kits, With Spring Latches, Series III (Continued)

No. of Pos.	Style	Dimensions			Pkg.	Max. O.D.	Straight Exit with Latches	Angled Exit with Latches
		A	B	C				
20	A	1.290 32.77	1.215 30.86	.400 10.16	Individual	.270 6.86	5749190-1	5749199-1
26	A	1.290 32.77	1.365 34.67	.400 10.16	Individual	.270 6.86	—	5749609-1
	B	1.290 32.77	1.335 33.91	.400 10.16	Individual	.270 6.86	749608-2	—
40	A	1.290 32.77	1.715 43.56	.400 10.16	Individual	.320 8.13	—	5749201-1
						.320 8.13	5749192-1	—
50	A	1.395 35.43	1.965 49.91	.480 12.19	Individual	.400 10.16	—	5749202-2
					Bulk	.400 10.16	5749202-3	—
					Individual	.355 9.02	5749193-1	—
	B	1.800 45.72	1.965 49.91	.492 12.50	Individual	.400 10.16	5749193-2	—
					Bulk	.480 12.19	5749889-3	—
					Individual	.480 12.18	5749889-4	—
68	A	1.405 35.69	2.415 61.34	.520 13.21	Individual	.400 10.16	—	5749204-1
						.440 11.18	5749195-2	5749204-2
80	A	1.600 40.64	2.715 68.96	.565 14.35	Individual	.420 10.67	—	5749205-1
						.500 12.70	749196-2	—
100	A	1.725 43.82	3.215 81.66	.615 15.62	Individual	.500 12.70	5749197-1	5749206-1
120	A	1.725 43.82	3.715 94.36	.665 16.89	Individual	.550 13.97	5749198-1	5749207-1

**Note:** All part numbers are RoHS compliant.



## AMPLIMITE .050 Series Shielded Enclosure Kits, With Male Jackscrews, Series III

### 68-Position

#### Material and Finish:

**Backshells**—Zinc

**Boot**—PVC, black

**Jackscrews**—Stainless steel and PVC, black

**Staple**—Carbon steel, plated tin over nickel

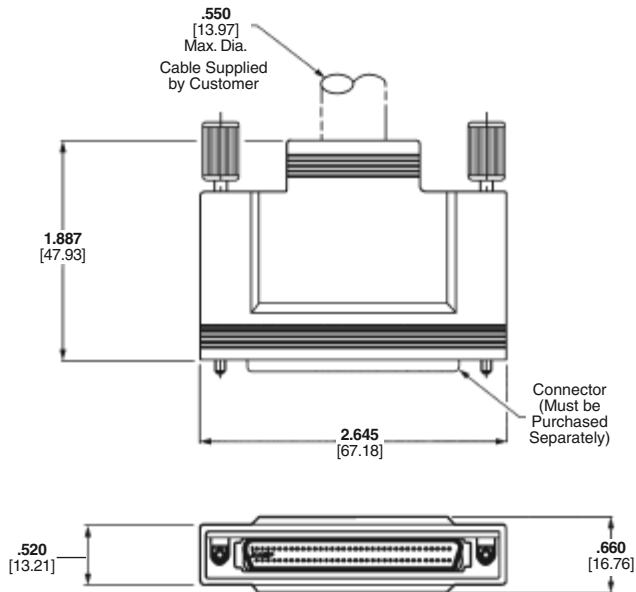
**Screws**—Stainless steel, #2-56 threads



#### Technical Documents:

**Product Specifications**—108-1228

**Application Specifications**—  
114-40029



No. of Pos.	Part Number Male 2-56 Jackscrews	Part Number Male 4-40 Jackscrews
68	5750752-1	5750752-2

- Notes:**
1. Each enclosure kit contains two backshells, one boot, two jackscrews, one staple and two screws. All are packaged unassembled.
  2. For staple insertion tooling see page 29.
  3. Meets SCSI-3 standards.

**Note:** All part numbers are RoHS compliant.

## AMPLIMITE .050 Series Panel Mount Receptacle Assemblies Without Rails, With Latch Blocks, Series III



**Materials:**

**Housing and Termination Covers**—Thermoplastic, 94V-0 rated, black

**Shell**—Steel, plated bright nickel over copper

**Bracket**—Zinc, plated nickel over copper

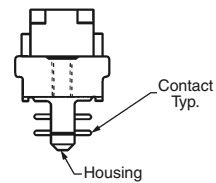
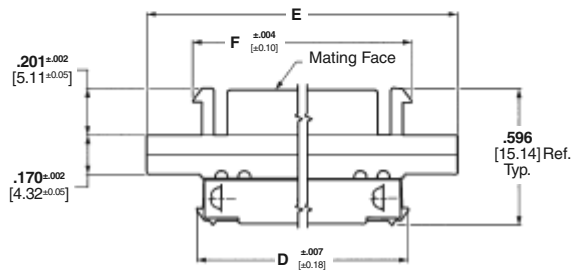
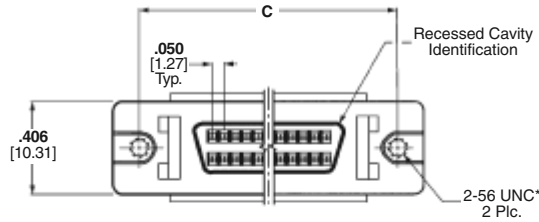
**Contacts**—Phosphor bronze, duplex plated .000030 [0.00076] min. gold on mating end, bright tin in termination area, all nickel underplated

**Recommended wire size**—28 AWG [0.08-0.09mm<sup>2</sup>] or 30 AWG [0.05mm<sup>2</sup>], solid or 7 strand, with a .029-.036 [0.74-0.89] insulation diameter or .050 [1.27] centerline, 28 AWG [0.08-0.09mm<sup>2</sup>] stranded, PVC, flat ribbon cable.

**Technical Documents:**

**Product Specifications**—108-1228

**Application Specifications**—114-40029



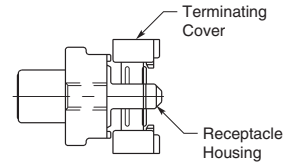
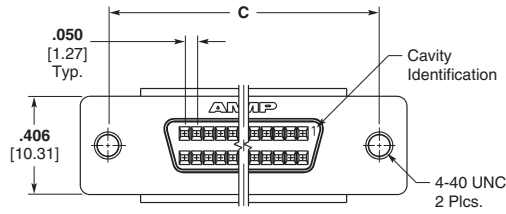
**Note:** Refer to TE Customer drawings and Application Spec for PCB & panel layouts.

No. of Pos.	Dimensions				Part Numbers		
	C	D	E	F	Connectors With Assembled Standard Termination Covers	Connectors With Unassembled Wire Lacing Termination Covers	
						.032-.036 [0.81-0.91] Outer Wire Dia.	.029-.031 [0.74-0.79] Outer Wire Dia.
50	1.830 46.48	1.629 41.38	2.065 52.45	1.665 42.29	1-749656-1	5-786862-5	6-786862-5
50	1.830 46.48	1.629 41.38	2.065 52.45	1.665 42.29	5-750640-1*	5-786865-5*	—
68	2.280 57.91	2.079 52.81	2.515 63.88	2.115 53.72	1-749656-2	—	—
120	3.580 90.93	3.379 85.83	3.815 96.90	3.415 86.74	6-749656-0	—	—

\*Part Numbers 5-750640-1 and 5-786865-5 have 4-40 threaded holes. All others have 2-56 threaded holes.  
**Note:** For termination, cover closing and wire lacing tooling, see page 14.  
 For termination tooling other than wire lacing see pages 28 & 29.

**Note:** All part numbers are RoHS compliant.

## AMPLIMITE .050 Series Panel Mount Flat Top Receptacle Assemblies Without Rails and Latch Blocks, Series III



**Materials:**

**Housing and Termination Covers—**

Thermoplastic, 94V-0 rated, black

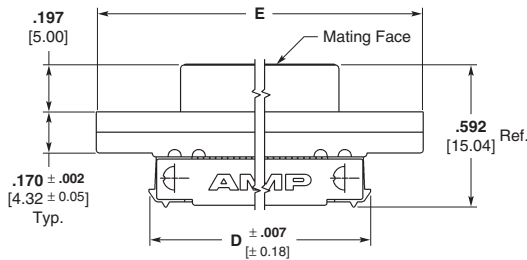
**Shell—**Steel, plated bright nickel over copper

**Bracket—**Zinc, plated nickel over copper

**Contacts—**Phosphor bronze, duplex plated .000030 [0.00076] min. gold on mating end; tin on solder end; all nickel underplated

**Recommended wire size—**

28 AWG [0.08-0.09mm<sup>2</sup>] or 30 AWG [0.05mm<sup>2</sup>], solid or 7 strand, with a .029-.036 [0.74-0.89] insulation diameter or .050 [1.27] centerline, 28 AWG [0.08-0.09mm<sup>2</sup>] stranded, PVC, flat ribbon cable



**Note:** Refer to TE Customer drawings and Application Spec for PCB & panel layouts.

**Technical Documents:**

**Product Specifications—**108-1228

**Application Specifications—**114-40029

Pos. No. of	Dimensions			Part Numbers
	C	D	E	Connectors With Assembled Standard Termination Covers
50	1.830 46.48	1.629 41.38	2.065 52.45	5-749877-5
68	2.280 57.91	2.079 52.81	2.515 63.88	5-749877-7
100	3.080 78.23	2.879 73.13	3.315 84.20	5-749877-9

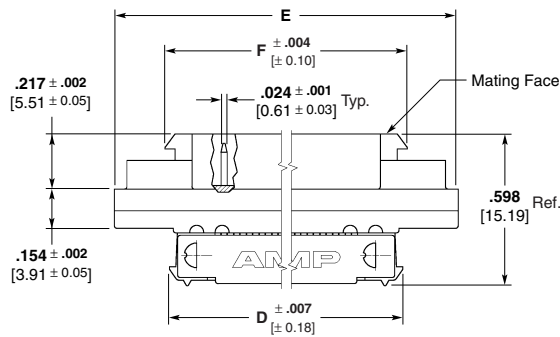
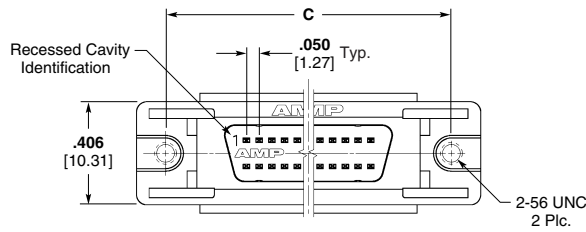
**Note:** For termination, cover closing and wire lacing tooling, see page 14. For termination tooling other than wire lacing see pages 28 & 29.

**Note:** All part numbers are RoHS compliant.

## AMPLIMITE .050 Series Panel Mount Plug Assemblies With Rails, Latch Blocks, Series III



### Plug



### Materials:

#### Housing and Termination Covers—

Thermoplastic, 94V-0 rated, black

**Bracket**—Zinc, plated nickel over copper

**Contacts**—Phosphor bronze, duplex plated .000030 [0.00076] min. gold on mating end, bright tin in termination area, all nickel underplated

#### Recommended wire size—

28 AWG [0.08-0.09mm<sup>2</sup>] or 30 AWG [0.05mm<sup>2</sup>], solid or 7 strand, with a .029-.036 [0.74-0.89] insulation diameter or .050 [1.27] centerline, 28 AWG [0.08-0.09mm<sup>2</sup>] stranded, PVC, flat ribbon cable.

### Technical Documents:

**Product Specifications**—108-1228

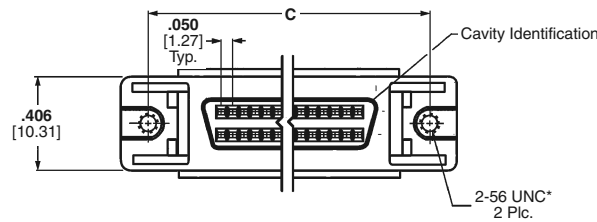
**Application Specifications**—114-40029

**Note:** Extra pin contact protection is provided by rails, which facilitate a straight-out, unmating motion. A side-to-side rocking motion should not be used to disengage the connector system.

No. of Positions	Dimensions				Part Numbers
	C	D	E	F	
50	1.830 46.48	1.629 41.38	2.065 52.45	1.665 42.29	5-749878-5
68	2.280 57.91	2.079 52.81	2.515 63.88	2.115 53.72	5-749878-7
100	3.080 78.23	2.879 73.13	3.315 84.20	2.915 74.04	5-749878-9

**Note:** All part numbers are RoHS compliant.

## AMPLIMITE .050 Series Panel Mount Plug Assemblies With Rails, Latch Blocks, Series III (Continued)



**Materials:**

**Housing and Termination Covers—**

Thermoplastic, 94V-0 rated, black

**Shell—**Steel, plated bright nickel over copper

**Bracket—**Zinc, plated nickel over copper

**Contacts—**Phosphor bronze, duplex plated .000030 [0.00076] min. gold on mating end, bright tin in termination area, all nickel underplated

**Recommended wire size—**

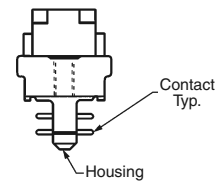
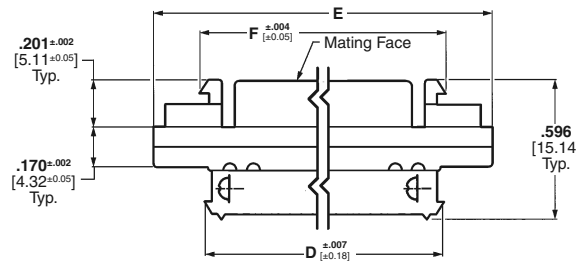
28 AWG [0.08-0.09mm<sup>2</sup>] or 30 AWG [0.05mm<sup>2</sup>], solid or 7 strand, with a .029-.036 [0.74-0.89] insulation diameter or .050 [1.27] centerline, 28 AWG [0.08-0.09mm<sup>2</sup>] stranded, PVC, flat ribbon cable.

**Technical Documents:**

**Product Specifications—**108-1228

**Application Specifications—**114-40029

**Note:** Extra pin contact protection is provided by rails, which facilitate a straight-out, unmating motion. A side-to-side rocking motion should not be used to disengage the connector system.



**Note:** Refer to TE Customer drawings and Application Spec for PCB & panel layouts.

No. of Pos.	Dimensions				Part Numbers
	C	D	E	F	Connectors With Assembled Standard Termination Covers
20	1.080 27.43	.879 22.33	1.315 33.40	.915 23.24	5-749611-2
26	1.230 31.24	1.029 26.14	1.465 37.21	1.065 27.05	5-749611-1
50	1.830 46.48	1.629 41.38	2.065 52.45	1.665 42.29	5-749611-5
50	1.830 46.48	1.629 41.38	2.065 52.45	1.665 42.29	5-750450-1*
100	3.080 78.23	2.879 73.13	3.315 84.20	2.915 74.04	5-749611-9

\*Part Number 750450-1 has 4-40 threaded holes. All others have 2-56 threaded holes.

**Note:** For termination, cover closing and wire lacing tooling, see page 14.  
For termination tooling other than wire lacing see pages 28 & 29.

**Note:** All part numbers are RoHS compliant.

## AMPLIMITE .050 Series Plug Assemblies Unshielded for .025 [0.64] Centerline Ribbon Cable, Series III

### Plug Assembly



#### Materials:

**Housing and Termination Covers**—Thermoplastic, 94V-0 rated, black

**Contacts**—Phosphor bronze, duplex plated .000030 [0.00076] min. gold on mating end, bright tin on termination end, all over nickel underplating

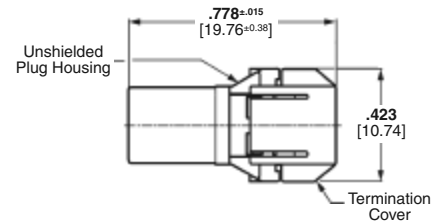
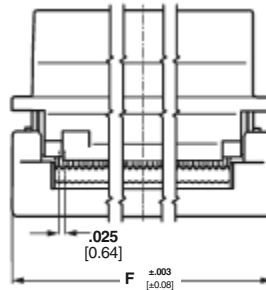
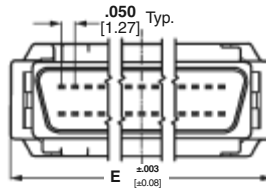
**Recommended wire size**— .025 [0.64] centerline, 30 AWG [0.05mm<sup>2</sup>] solid or 7 strand, PVC, flat ribbon cable.

**Note:** Cable must be approved by TE Engineering.

#### Technical Documents for 5786090-7 only:

**Product Specifications**—108-1359

**Application Specifications**—114-40049



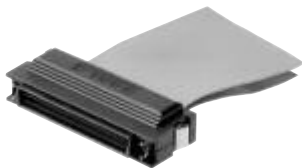
No. of Pos.	Dimensions		Part No.
	E	F	
50	1.578 40.07	1.578 40.07	5390377-5 <sup>1</sup>
68	2.029 51.54	2.023 51.30	5786090-7

**Note:** Termination Tooling: Manual Arbor Press Part No. 91085-2 or Pneumatic Press Part No. 91112-3, Universal Base Tool Part No. 768338-4, and Connector Specific Kit Part No. 679235-2. Refer to page 29.

<sup>1</sup> Accepts 32 AWG Flat Ribbon Cable. Selection of compatible ribbon cable is the responsibility of the user.

**Note:** Refer to TE Customer drawings and Application Spec for PCB & panel layouts.

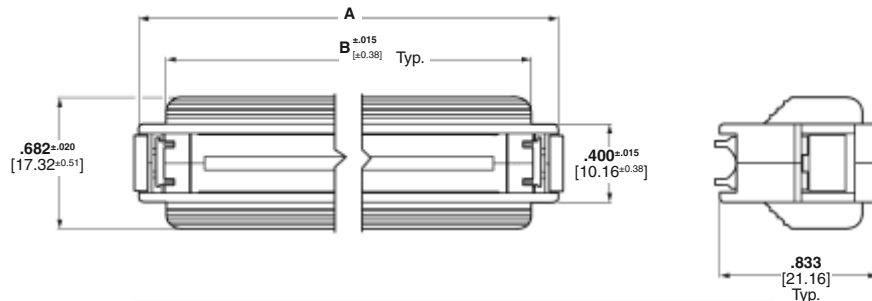
### Backshell Kit for 5786090-7 .025 [0.64] Unshielded Plug



#### Materials:

**Backshell**—Thermoplastic, 94V-0 rated, black

**Spring Latches**—Stainless steel



No. of Pos.	Kit Part No.	Dimensions	
		A	B
68	787032-7	2.415 [61.34]	2.125 [53.48]

### Strain Relief for 5786090-7 .025 [0.64] Unshielded Plug

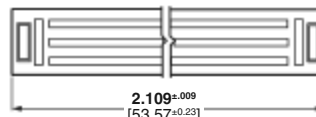
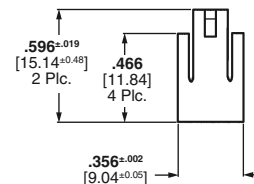
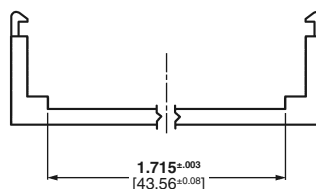
#### 68-Position

Part No. 787043-7

#### Materials:

Thermoplastic, 94V-0 rated, black

**Note:** Pull tab Part No. 88450-8 can be used with this strain relief. Must be ordered separately.



**Note:** All part numbers are RoHS compliant.

## AMPLIMITE .050 Series Hardware and Dust Covers, Series III

### Screwlock Kits

#### Materials:

Stainless steel (female)  
Steel, zinc plated black (male)

#### Related Product Data:

Used with the following connectors:

**Right-Angle Receptacle Header**—page 7

**Vertical Receptacle Header**—pages 8-11

**Panel Mount Plug and Receptacle Headers**—pages 21 & 22

#### Technical Documents:

**Product Specifications**—108-1228

**Application Specifications**—114-40029



**Male**  
Part No. 749086-1  
(Includes two screwlocks)



**Female**  
(Includes two screwlocks)

Dim. A	Dim. B	Individual Kits Part No.	Bulk Part No.
.562 14.27	.157 3.99	749087-1	—
.380 9.65	.157 3.99	749087-2 <sup>1</sup>	749087-3
.562 14.27	.165 4.19	749087-4	749087-8

<sup>1</sup> Recommended for right-angle board mount connectors.

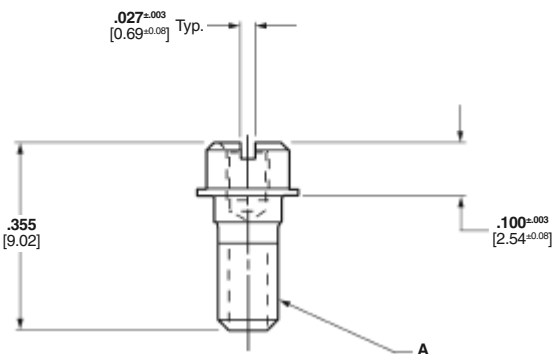
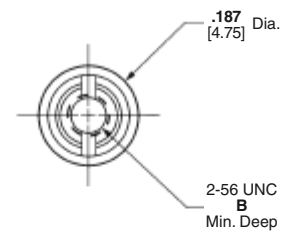
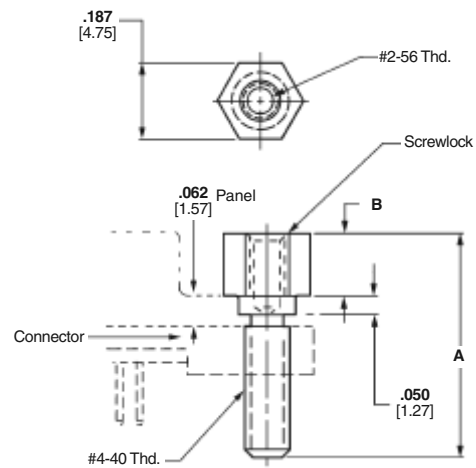
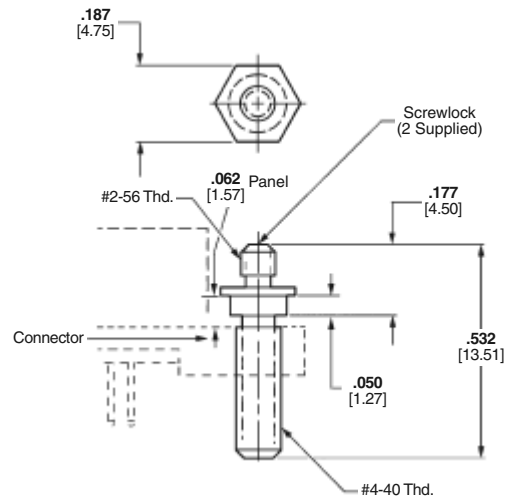


**Female**  
(Includes two screwlocks)

Thread Size		Kits Part No.	Bulk Part No.
A	B		
4-40	.110 2.79	750644-1	—
2-56	.090 2.29	786585-2	786585-3

Recommended for pc board mount of panel mount connectors with latches or latches and rails. Permits cable connectors to be spring latch-type or jackscrew-type

**Note:** All part numbers are RoHS compliant.





## AMPLIMITE .050 Series Performance Specifications and Technical Documents

### Performance Specifications for Right-Angle, Vertical and .050 Centerline Cable Products

**Mating Cycles (Durability):** 500 max.

**Current Rating (30°C T-Rise):** 1A max., 50% energized

**Termination Resistance (Mated):** 25 milliohms max.

**Insulation Resistance:** 1000 megohms min.

**Dielectric Withstanding Voltage:** 500 VAC

**Header Processing Temperature:** +220°C max. for 3 minutes

**Temperature Range:** -55°C to 105°C

### Performance Specifications for .025 [1.27] Centerline Ribbon Cable Product. Same as above except:

**Current Rating (30°C T-Rise):** 1A max. center four contacts energized (two from top row, two from bottom row)

**Termination Resistance (Mated):** 50 milliohms max.

### Product Specifications:

- 108-1228 AMPLIMITE .050 Series Printed Circuit Board Mounted and Cable Applied
- 108-1359 AMPLIMITE .050 Series .025 [0.64] Centerline Connectors
- 108-1228 AMPLIMITE .050 Series Stacked Connectors
- 108-1228-2 AMPLIMITE .050 Series ACTION PIN Connectors
- 108-1228-3 AMPLIMITE .050 Series SBus Connectors

### Application Specifications:

- 114-40029 AMPLIMITE .050 Series Printed Circuit Board Mounted and Cable Applied Connectors
- 114-40049 AMPLIMITE .050 Series .025 [0.64] Centerline Connectors

### Instruction Sheets:

- 408-6923 AMP Manual Arbor Frame Assembly
- 408-6927 TE Design Recommendations for Printed Circuit Board Support Fixture
- 408-9200 AMP Single Wire Insertion Tool
- 408-9822 Wire Termination Tooling Kit for CHAMPOMATOR 2.5 Machine
- 408-9820 AMP Cover Closing and Staple Inserter Kits
- 408-9663 AMP Mass Insertion Tool
- 408-9750 AMP Cover Lacing Fixture
- 408-9757 AMP Tooling Assembly for ACTION PIN Receptacles
- 408-9817 AMP Manual Miniature Applicator Frame Assembly
- 408-9427 Round-to-Flat Cable Termination
- 408-9875 AMP Universal Base Tool for .025 [0.64]  $\mathcal{C}$  Connectors
- 408-9892 AMP Tool Kit for .025 [0.64]  $\mathcal{C}$  Connectors

### Customer Manuals:

- 409-5839 CHAMPOMATOR 2.5 Machine
- 409-5791 Control Unit for CHAMPOMATOR 2.5 Machine

**AMPLIMITE .050 Series Application Tooling, Series III**

AMPLIMITE .050 Series  
Connectors, Series III

**Discrete Wire Application Tooling**

To meet medium to high volume production of discrete wire terminations, TE offers the following tooling:

The CHAMPOMATOR Model 2.5 Bench Terminating Machine—**Part No. 354786-1**, used in conjunction with Control Module—**Part No. 852423-□**, and Tie Bar—**Part No. 762637-□** (Table No. 1).



**Control Module**  
Part No. 852423-1 120 VAC  
852423-2 100 VAC  
852423-3 230 VAC

**CHAMPOMATOR 2.5 Machine Tool Kit**  
Part No. 354786-1

**Note:** The CHAMPOMATOR 2.5 Machine includes plug and receptacle nests, as well as wire setup gauge.

**Table Number 1**

Connector Size	Tie Bar Part No.
20 Pos.	762637-1
26 Pos.	1-762637-1
28 Pos.	1-762637-2
40 Pos.	762637-3
50 Pos.	762637-4
60 Pos.	762637-5
68 Pos.	762637-6
80 Pos.	762637-7
100 Pos.	762637-9
120 Pos.	1-762637-0

**Discrete Wire Application Tooling**

For low to medium volume production use the AMP Arbor Frame Assembly—**Part No. 58024-1** equipped with Applicator—**Part No. 91291-1** for .032-.035 [0.81-0.89] Conductor Insulation O.D. and Applicator—**Part No. 91291-2** for .029-.032 [0.74-0.81] Conductor Insulation O.D.

**Note:** AMP Arbor Frame Assembly and Applicator Kit must be ordered separately.



**Arbor Frame**  
Part No. 58024-1  
Equipped with  
Applicator Part No. 91291-□

**Note:** All part numbers are RoHS compliant.

**AMPLIMITE .050 Series Application Tooling, Series III** (Continued)

**Cover Closing/  
Termination Tooling**

**Manual Miniature Applicator  
Frame Assembly—  
Part No. 91295-1**

This Frame requires Cover Closing Kit—**Part No. 543508-1**

**Cable Staple Tooling**

To provide cable strain relief use Manual Miniature Applicator Frame Assembly—**Part No. 91295-1**. This Frame requires Staple Insertion Kit—**Part No. 543515-1** to install staples into lower backshells of connector kits and assemblies.



**Staple Insertion Kit  
Part No. 543515-1  
(For use with Miniature Applicator  
Frame Assembly  
Part No. 91295-1)**

**Miniature Applicator Frame Assembly  
Part No. 91295-1  
Equipped with Cover Closing Kit  
Part No. 543508-1**

**AMPLIMITE .050 Series  
Connector Application  
Tooling for Use with Wire  
Lacing Terminating Covers**

**Manual Arbor Frame  
Assembly—Part No. 58024-1**

Equipped with Cover Lacing Assembly—**Part No. 91293-1 (Includes Seating Bars for 50 and 100 Positions)**. See Table 3 for Seating Bar Part Numbers.

Extra Lacing Stations available for use with Lacing Assembly—**Part No. 91293-1** Order Lower Tooling Assembly—**Part No. 543481-1**



**Arbor Frame, Part No. 58024-1  
Equipped with  
Cover Lacing Assembly, Part No. 91293-1**

**Note:** AMP Manual Miniature Applicator Frame Assembly, Cover Closing Kit, and Staple Insertion Kit each must be ordered separately by part number.



**Lower Tooling Assembly  
Part No. 543481-1**



**Seating Bars**

**Table Number 3**

No. of Pos.	Seating Bar Part No.
26	543494-2
50	543494-1
68	543502-2
100	543502-1

**Notes:** All Tooling must be ordered separately by part number. Two seating bars required per tool assembly.

**Termination Tooling for  
.025 [0.64] Centerline  
Ribbon Cable**

Used with Manual Arbor Tool **Part No. 91085-2**, or Pneumatic Arbor Tool **Part No. 91112-3** and Universal Base Tool **Part No. 768338-4**.

No. of Pos.	Plug/Receptacle Upper Tooling Kit
50	679235-2
68	

**Note:** All part numbers are RoHS compliant.

## Shielded AMPLIMITE .050 Series Slimline Connectors

## Product Facts

- Compact design, profile for the right-angle header 1.230 x .588 [31.24 x 14.94], vertical header 1.230 x .433 [31.24 x 11.00], right-angle stacked headers 1.230 x .803 [31.24 x 20.40]
- Housings and covers made of UL 94V-0 rated thermoplastic
- Headers are compatible with surface mount reflow solder processes
- Header footprint for right-angle and stacked configurations is .100 x .050 [2.54 x 1.27] staggered centerlines
- Right-angle and stacked headers feature integral boardlocks for positive board retention and grounding
- Stacked headers reduce overall total header volume by 48% and PC board area by 38%
- Stacked headers offer optional contact shield for additional EMI/RFI protection
- Plugs preloaded with insulation displacement contacts (IDC) provide fast, reliable and economical terminations
- Aesthetically designed backshell kits feature easy-to-use finger grip jackscrews to secure mated connectors
- Listed and complies with UL 1863, Communication Circuit Accessories, File No. E81956
- Certified by Canadian Standards Association File No. 1088108 (LR 7189A-207)
- Produced under a Quality Management System certified to ISO 9001

A copy of the certificate is available upon request



Shielded AMPLIMITE .050 Series, Slimline Connectors answer today's industry requirement for higher density in a smaller overall package. The present line consists of 26 position, shielded right-angle, 26 position right-angle stacked PCB receptacle header, and mating 26 position plug connectors. All header, plug and backshell housings are made of UL 94V-0 rated thermoplastic. PCB headers are compatible with surface mount reflow solder processes. Right-angle and stacked PCB headers feature contact footprints on .100 x .050 [2.54 x 1.27] staggered centerlines.

The compact design of the **right-angle header** package measures only 1.230 W x .588 D x .300 H [31.24 W x 14.94 D x 7.62 H] for maximum board real estate conservation. Right-angle PCB headers feature integral

boardlocks for positive board retention and grounding.

**Right-angle stacked headers** provide 52 contacts in a package only .635 [16.13] high, allowing parallel (board-over-board) board spacing of .800 [20.32]. Centerlines between the top connector and the bottom connector measure .335 [8.51] when compared to .400 [10.16] on the standard .050 Series stacked headers. This results in an over-all reduction of total header volume, in comparison to the standard AMPLIMITE .050 Series header, of 48%, and a comparative reduction in PC board area of 38%.

**Stacked header board retention and stabilization** is provided by two boardlocks and four grounding posts. In addition, an optional rear contact shield is available for additional EMI/RFI protection.

**The mating plug connector** consists of a thermoplastic housing, preloaded with insulation displacement contacts (IDC) for fast, reliable terminations that offer greater applied cost savings. TE offers a choice of termination equipment to meet your production requirements.

**The backshell hardware kit** includes a two-piece, aesthetically designed, thermoplastic cover over an inner and outer shield and two, high strength #2-56 male jackscrews with insulated heads (easy finger grip caps) to secure mated connectors.

The AMPLIMITE .050 Series, Slimline family of connectors offers **keyed coupling**. This feature eliminates the problem of mismatch mating of plug and receptacle, particularly in stacked applications.

**Shielded AMPLIMITE .050 Series Slimline Connectors** (Continued)

AMPLIMITE .050 Series Connectors, Series III

**Right-Angle Header, Receptacle**



**Part No. 750823-1**

**Material and Finish**

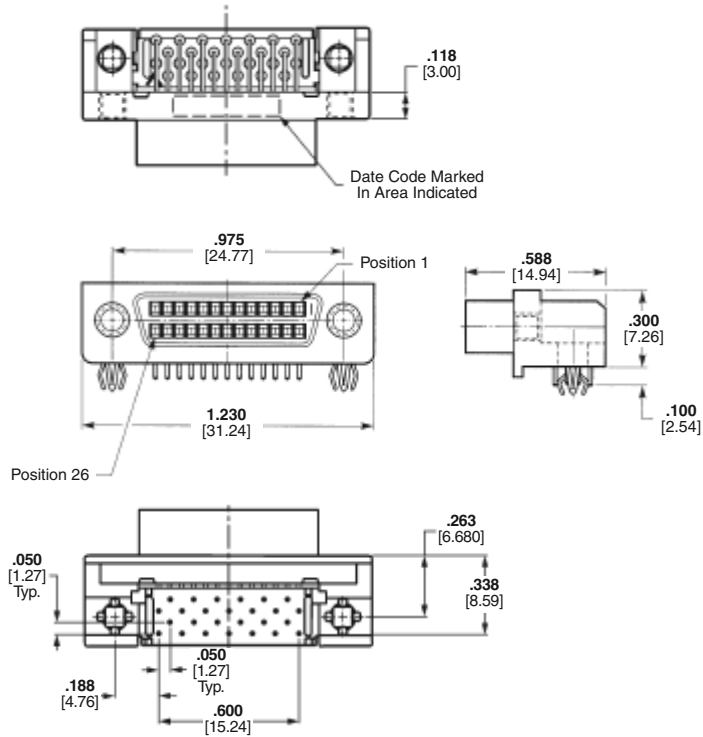
**Housing**—UL 94V-0 rated thermo-plastic, black

**Bracket**—Zinc, plated tin or tin over copper

**Metal-Shell**—Carbon steel, plated tin over copper

**Boardlocks**—Copper alloy, tin plated

**Contacts**—Phosphor bronze, duplex plated .000030 [0.00076] min. gold on mating end, tin plated on solder end, all over nickel



**Notes:**

1. Rear panel mounting only.
2. Female screwlocks to be used with connectors mounted to panels having a thickness of .047 [1.19].
3. **See Application Specification 114-40036 for the most up-to-date detailed panel cutout and recommended PC Board hole pattern.**
4. Female screwlocks are not included with receptacles and must be ordered separately. See page 33 for screwlock kit information.

**Note:** All part numbers are RoHS compliant.

**Shielded AMPLIMITE .050 Series Slimline Connectors** (Continued)

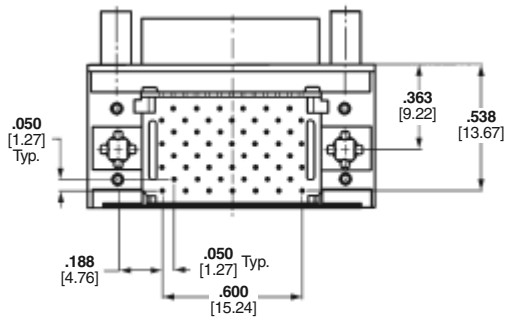
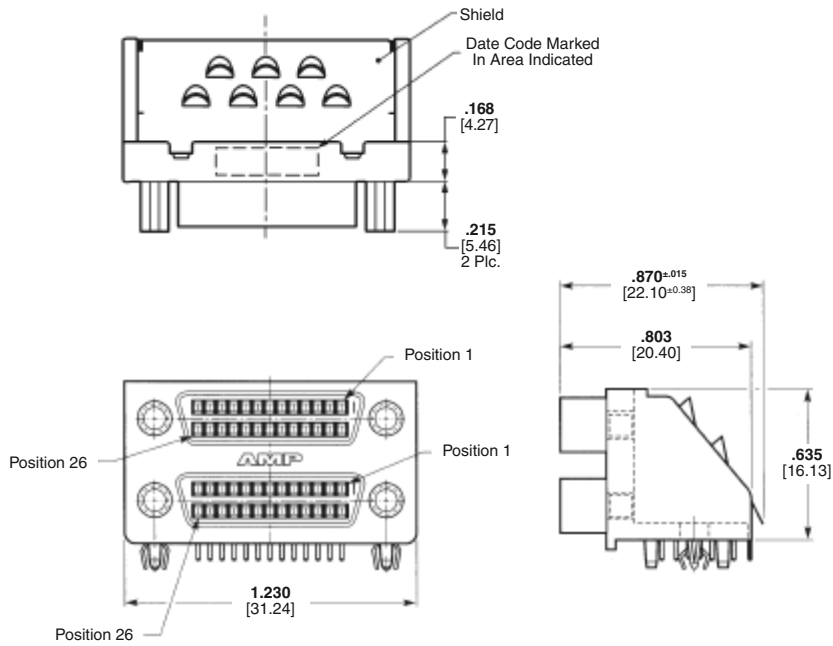
**Shielded Right-Angle Stacked Header, Receptacle**



With Shielding



Without Shielding



Shielded Header with Rear Contact Shield

**Material and Finish:**

- Housing**—UL 94V-0 rated thermo-plastic, black
- Bracket**—Zinc, plated tin over copper
- Metal-Shell**—Carbon steel, plated tin over copper
- Boardlocks**—Copper alloy, tin plated
- Contact Shield**—Phosphor bronze, plated tin
- Contacts**—Phosphor bronze, duplex plated .000030 [0.00076] min. on mating end, tin plated on solder end, all over nickel

No. of Positions	Part Numbers			
	Std. Rcpt. without Rear Contact Shield		Rcpt. with Rear Contact Shield <sup>3</sup>	
	Keyed <sup>1</sup>	Unkeyed <sup>2</sup>	Keyed <sup>1</sup>	Unkeyed <sup>2</sup>
26/26	—	5786200-1	5750821-1	5750820-1

<sup>1</sup>Lower header unkeyed with 4-40 threaded holes, upper header keyed in keying position 1. See page 33 for keying code.  
<sup>2</sup>Both headers unkeyed with 4-40 threaded holes.  
<sup>3</sup>Receptacle includes a metal contact shield for added RFI protection to the rear of the receptacle assembly.

**Note:** See Application Specification 114-40036 for the most up-to-date detailed panel cutout and recommended PC Board hole pattern.

**Note:** All part numbers are RoHS compliant.

**Shielded AMPLIMITE .050 Series Slimline Connectors** (Continued)

**Cable Connector, Plug**



**Part No. 750833-1**

**Material and Finish:**

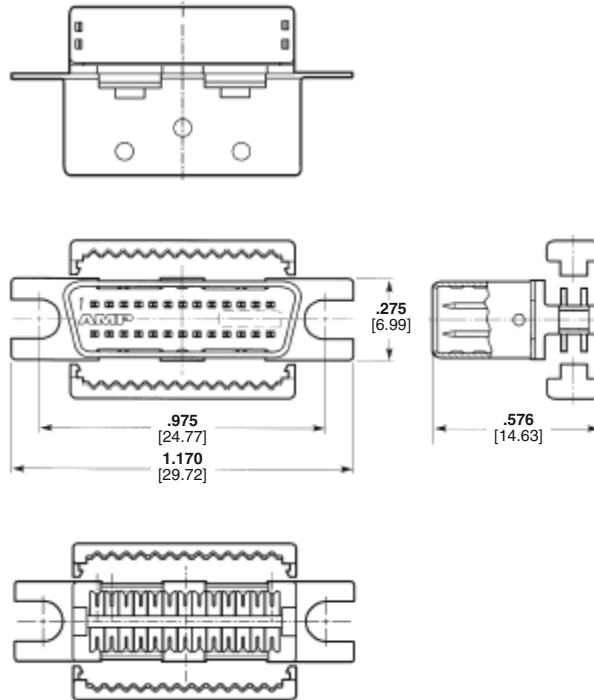
**Housing and Termination Covers**—UL 94V-0 rated thermoplastic, black

**Shell**—Steel, plated bright tin over copper

**Contacts**—Phosphor bronze, duplex plated .000030 [0.00076] min. gold on mating end, bright tin on termination end, all underplated nickel

**Bracket**—Zinc, plated nickel over copper

**Recommended Wire Size**—28 AWG [0.08 mm<sup>2</sup>] with max. O.D. .032 [0.813]. PVC or polyolefin insulation.



**Note:** Cable Connectors must be used with Backshell Kits. See page 34.

**Keying Code, Receptacle**



**Keying Code, Plug**



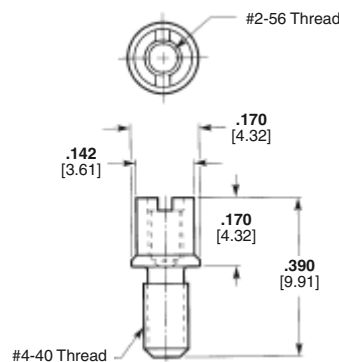
**Position 1 (Up)**

**Accessories**

**Female Screwlock Kit**

**Material**—Stainless Steel

**Note:** Female screwlocks to be used with connectors mounted to panels having a thickness of .047 [1.19]



Part No.	Packaging
750831-1	Individually Packed Kit (2 Screwlocks per kit)

\*Minimum order is 510 kits.

**Note:** All part numbers are RoHS compliant.



**Shielded AMPLIMITE .050 Series Slimline Connectors** (Continued)

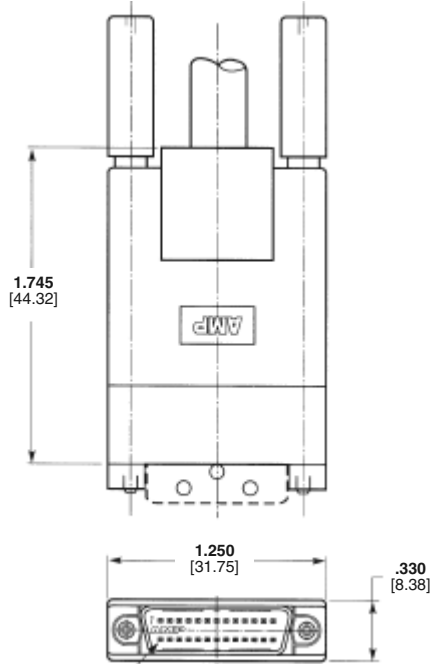
AMPLIMITE .050 Series Connectors, Series III

**Backshell Kits**

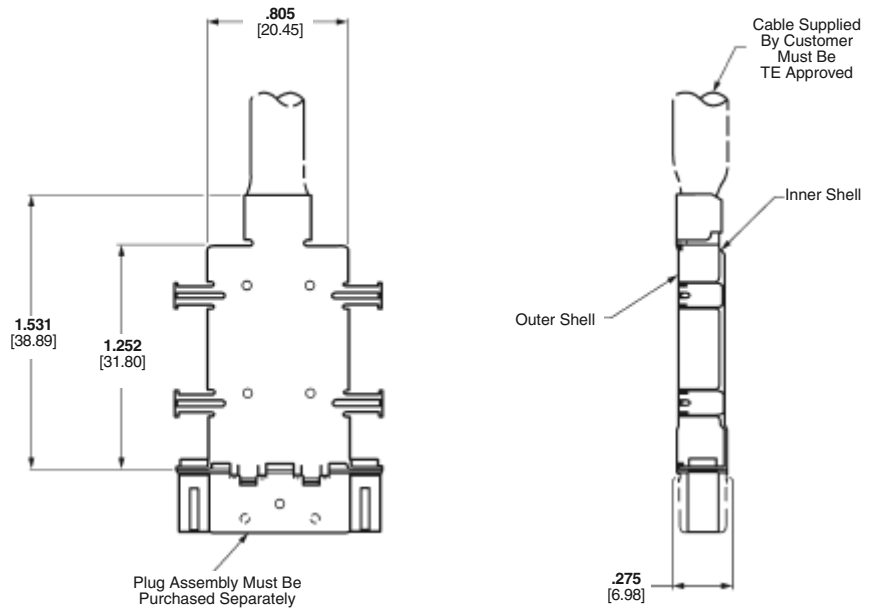


**Material and Finish:**

- Backshells**—Copper-nickel alloy
- Jackscrews**—Steel, plated tin over copper, handles covered with ABS, gray
- Keyed and Unkeyed Inserts**—Zinc, plated tin over copper
- Outside Covers**—ABS, gray



Connector shown for illustration purposes only, must be purchased separately.



**Backshell Kits**

Unkeyed Kit Part No.	Cable Dia.	Packaging*
750850-1	.250-.280	Individually Packed Kit
750850-2	6.35-7.11	Bulk Packed Kit
750850-3	.280-.310	Individually Packed Kit

\*Bulk packaging—100 kits per box.

**Note:** All part numbers are RoHS compliant.

## Shielded AMPLIMITE .050 Series Slimline Connectors, Application Tooling

### Discrete Wire Application Tooling

To meet medium to high volume production of discrete wire terminations, TE offers the following tooling:

The CHAMPOMATOR Model 2.5 Bench Terminating Machine—**Part No. 354786-1**, used in conjunction with Control Module—**Part No. 852423-□**, and Tie Bar—**Part No. 1-762637-3**.

**Note:** CHAMPOMATOR 2.5 Machine and Control Module must be ordered separately by part number.



**Control Module**  
Part No. 852423-1 120 VAC  
852423-2 100 VAC  
852423-3 230 VAC

**CHAMPOMATOR 2.5 Machine**  
Part No. 354786-1

**26 Position Tie Bar**  
1-762637-3

### Wire Setup Gauge

Wire Insulation Dia.		Part No.
in.	mm	
.026-.028	0.66-0.71	763382-3
.029-.031	0.74-0.79	763382-4
.032-.035	0.81-0.89	763382-5

### Discrete Wire Application Tooling

For low to medium volume production use the TE Arbor Tool—**Part No. 58024-1** equipped with Applicator—**Part No. 91291-1** and Special Locator—**Part No. 543506-1**.



**Arbor Tool**  
Part No. 58024-1  
Equipped with  
Applicator Part No.  
91291-1



**Miniature Applicator Frame Assembly**  
Part No. 91295-1  
Equipped with Cover Closing Kit  
Part No. 543508-1



**Staple Insertion Kit**  
Part No. 543515-1  
(For use with Miniature Applicator  
Frame Assembly  
Part No. 91295-1)

### Cable-to-Shell Staple Tooling (For discrete wire jacketed cable only)

To meet medium to high volume production use TE Pneumatic Crimper—**Part No. 312522-3** equipped with Die Holder Assembly—**Part No. 58449-1** and Die—**Part No. 90437-1** to crimp outer backshells onto inner backshells of connector kits and assemblies.

For low volume use Manual Arbor Tool—**Part No. 91085-2**, equipped with Backshell Crimper Assembly Tool—**Part No. 856684-1**.



**Pneumatic Bench Tool**  
No. 312522-3  
(Requires Die Set Holder  
No. 58449-1)

### Backshell Tooling and Cover Tooling

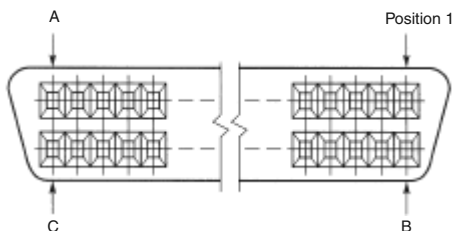
To assemble backshell into plastic housing use Manual Miniature Applicator Frame Assembly—**Part No. 91295-1** equipped with **Part No. 543521-1**. To assemble upper cover on lower cover use **Part No. 91295-1** equipped with **Part No. 543522-1**.

For tooling information call  
Tooling Assistance Center  
1-800-722-1111.

**Note:** All part numbers are RoHS compliant.

## Shielded AMPLIMITE .050 Series Contact Arrangements, Performance Specifications, Technical Documents—Slimline Connectors

### Contact Arrangements



Note: Mating face of receptacle is shown, plug is mirror image.

No. of Pos.	Position No.		
	A	B	C
26	13	14	26

### Performance Specifications

**Mating Cycles (Durability):** 500 max.  
**Current Rating (30°C T-Rise):** 1A max., 50% loading  
**Termination Resistance (Mated):** 25 milliohms max.  
**Insulation Resistance:** 1000 megohms min.  
**Dielectric Withstanding Voltage:** 500 VAC  
**Header Processing Temperature:** +220°C max. for 3 minutes  
**Temperature Range:** -55°C to +105°C

### Technical Documents

**Product Specifications** describe technical performance characteristics and verification tests. They are intended for the Design, Component and Quality Engineer.

108-1366 Shielded AMPLIMITE .050 Series, Slimline Connectors

**Application Specifications** describe requirements for using the product in its intended application and/or termination information. They are intended for the Packaging and Design Engineer and the Setup person.

114-40036 Shielded AMPLIMITE .050 Series, Slimline Connectors

**Instruction Sheets** provide instructions for assembling or applying product. They are intended for Manufacturing Assembler or Operator.

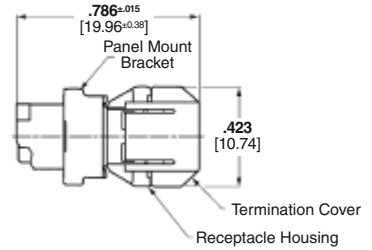
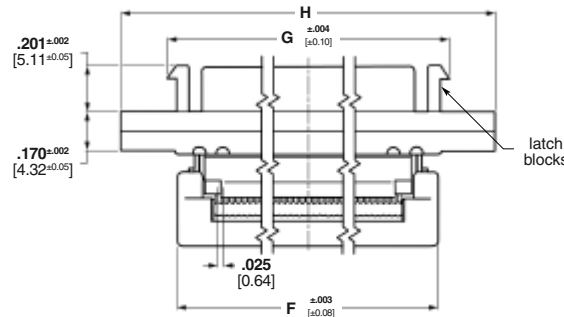
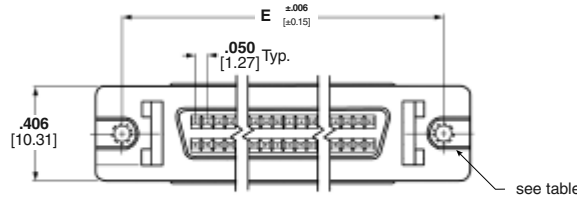
408-9663 Mass Insertion Tooling—**Part No. 91291-□**  
 408-6923 AMP Manual Arbor Frame—**Part No. 58024-1**  
 408-9701 Wire Termination Tooling Kit for CHAMPOMATOR 2.5 Machine—**Part No. 1-762661-4**  
 408-7777 AMP Manual Arbor Frame w/Slide—**Part No. 91085-2**  
 408-9746 Crimper Assembly—**Part No. 856684-1**  
 408-9200 Single Wire Insertion Tool—**Part No. 58430-1**  
 408-9721 Die Holder Assembly for Pneumatic Crimper—**Part No. 58449-□**  
 408-9788 Die Assembly—**Part No. 90437-1**  
 408-9898 Backshell and Cover Tooling Assemblies—**Part No. 543521-1** and **543522-1**

**Customer Manuals** provide information on TE termination equipment. They are intended for Manufacturing Assemblers or Operators.

409-5786 CHAMPOMATOR 2.5 Machine  
 409-5791 CHAMPOMATOR 2.5 Control Module—**Part No. 852423-□**  
 409-5822 Pneumatic Crimper—**Part No. 312522-3**  
 409-5843 Pneumatic Power Unit

Note: All part numbers are RoHS compliant.

## AMPLIMITE .050 Series Panel Mount Receptacle Assemblies for .025 [0.64] Centerline Ribbon Cable, Series III



**Materials:**

**Housing and Termination Covers—**

Thermoplastic, 94V-0 rated, black

**Shell—**Steel, plated bright tin over copper

**Bracket—**Zinc, plated nickel over copper

**Contacts—**Phosphor bronze, duplex plated .000030 [0.00076] min. gold on mating end; tin on solder end; all nickel underplated

**Recommended wire size—**  
 .025 [0.64] centerline, 30 AWG [0.05mm<sup>2</sup>] and 32 AWG [0.03mm<sup>2</sup>] solid or 7 strand, PVC, flat ribbon cable. Selection of compatible ribbon cable is the responsibility of the user.

**Technical Documents:**

See customer drawings for Product Performance criteria.

■ **Recognized under the Component Program of Underwriters Laboratories, Inc., File No. E28476**



■ **Certified by Canadian Standards Association, File No. LR 7189**



No. of Pos.	Dimensions				Gold Plating	Mating Hardware	Part No.
	E	F	G	H			
50	1.831 46.50	1.602 40.70	N/A	2.066 52.47	15μ	w/ 4-40 threaded holes	1-5390378-5
	1.831 46.50	1.602 40.70	N/A	2.066 52.47	30μ	w/ 4-40 threaded holes	5390378-5
	1.831 46.50	1.602 40.70	1.664 42.27	2.066 52.47	flash	w/ latch blocks and 4-40 threaded holes	2-5390399-5
	1.831 46.50	1.602 40.70	1.664 42.27	2.066 52.47	15μ	w/ latch blocks and 4-40 threaded holes	1-5390399-5
	1.831 46.50	1.602 40.70	1.664 42.27	2.066 52.47	30μ	w/ latch blocks and 4-40 threaded holes	5390399-5
	1.831 46.50	1.602 40.70	1.664 42.27	2.066 52.47	30μ	w/ latch blocks and 2-56 threaded holes	5390379-5
68	2.281 57.93	2.018 51.50	N/A	2.516 63.90	15μ	w/ 4-40 threaded holes	1-5390378-7
	2.281 57.93	2.018 51.50	N/A	2.516 63.90	30μ	w/ 4-40 threaded holes	5390378-7
	2.281 57.93	2.018 51.50	2.114 53.70	2.516 63.90	flash	w/ latch blocks and 4-40 threaded holes	2-5390399-7
	2.281 57.93	2.018 51.50	2.114 53.70	2.516 63.90	15μ	w/ latch blocks and 4-40 threaded holes	1-5390399-7
	2.281 57.93	2.018 51.50	2.114 53.70	2.516 63.90	30μ	w/ latch blocks and 4-40 threaded holes	5390399-7
	2.281 57.93	2.018 51.50	2.114 53.70	2.516 63.90	30μ	w/ latch blocks and 4-40 threaded holes	5390399-7

**Note:** Termination Tooling: Manual Arbor Press Part No. 91085-2 or Pneumatic Press Part No. 91112-3, Universal Base Tool Part No. 768338-4, and Connector Specific Kit Part No. 1490479-1.

**Note:** All part numbers are RoHS compliant.

**Right-Angle Posted Connectors**

Right-Angle Posted Connectors



Connector Density	Type	Style and Shell Finish	No. of Contact Positions	Footprint	Mating Hardware	Board Mounting	Contact Plating (Mating Area/Solder Tails)	Post Length
HD-22	Plug and Receptacle	Front Metal-Shell, Tin Plated (Pg. 52)	15	<b>.350</b> [8.89]	Threaded Inserts	Boardlocks	Duplex (0.000030 [0.00076] Gold/Tin)	<b>.125</b> [3.18]
			26		Female Screwlocks		Duplex (Gold Flash/Tin)	
			44		Standard Screws		Duplex (.000030 [0.00076] Gold/Tin)	
			62		Female Screwlocks		Duplex (Gold Flash/Tin)	
HD-20	Plugs and Receptacles	Full Metal-Shell With and Without Grounding Indents, Tin Plated (Pgs. 71, 139, 155)	9	<b>.454</b> [11.53]	Standard Screws	.120 [3.05] Dia. Holes	Duplex (.000030 [0.00076] Gold/Tin)	<b>.125</b> [3.18]
			15		Female Screwlocks		Duplex (Gold Flash/Tin)	
			25		Female Screwlocks		Duplex (Gold Flash/Tin)	
			37		Female Screwlocks		Duplex (Gold Flash/Tin)	
			50		Female Screwlocks		Duplex (Gold Flash/Tin)	
		Front Metal-Shell With Grounding Indents, Tin Plated (Pgs. 55-58, 60-63, 65-67, 131, 134, 138, 143, 150)	9	<b>.318</b> [8.08]	.120 [3.05] Dia. Holes	.125 [3.18] Dia. Holes	Duplex (.000030 [0.00076] Gold/Tin)	<b>.125</b> [3.18]
			15		Threaded Inserts		Duplex (Gold Flash/Tin)	
			25		Threaded Inserts		Duplex (Gold Flash/Tin)	
			37		Female Screwlocks		Duplex (Gold Flash/Tin)	
			37		Female Screwlocks		Duplex (Gold Flash/Tin)	
All-Plastic (Pgs. 68-70, 132, 133, 135, 136)	9	<b>.318</b> [8.08]	.120 [3.05] Dia. Holes	.125 [3.18] Dia. Holes	Duplex (.000030 [0.00076] Gold/Tin)	<b>.125</b> [3.18]		
	15		Threaded Inserts		Duplex (Gold Flash/Tin)			
	25		Threaded Inserts		Duplex (Gold Flash/Tin)			
	37		Female Screwlocks		Duplex (Gold Flash/Tin)			

**Right-Angle Posted Connectors (Continued)**

**Product Facts:**

- Flame retardant thermoplastic housing material, UL 94V-0 rated
- HD-20 right-angle connectors are available in 9, 15, 25 and 37 positions (Shell Sizes 1 thru 4) in both plug and receptacle versions; some versions available in 50 position, (Shell Size 5)
- HD-20 stacked connectors are available in 9/9, 15/15, 25/25, and 37/37 positions (Shell Sizes 1 thru 4) in receptacle over receptacle, plug over plug and combination versions
- HD-22 right-angle receptacle connectors are available in 15, 26, 44, 62 and 78 positions (Shell Sizes 1 thru 5)
- Low cost front metal-shell design compatible with full metal-shell connectors
- Integral boardlock versions secure posted connectors to pc boards prior to soldering

- HD-20 and HD-22 connector contacts are available in plating types to satisfy different applications
- HD-22 right-angle posted connectors are designed for high temperature applications
- Integral fixed 4-40 threaded inserts and screwlocks are available in both HD-20 and HD-22 connectors
- Connectors are intermate-able with any size 20 or 22 subminiature D connectors dimensionally complying with MIL-C-24308

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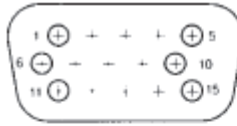
**Right-Angle Stacked Connectors (Centerline-to-centerline height .750 [19.05])**

Connector Density	Type	Style and Shell Finish	No. of Contact Positions	Footprint	Mating Hardware	Board Mounting	Contact Plating (Mating Area/Solder Tails)	Post Length
HD-20	Receptacle over Receptacle							
	Plug over Plug	Front Metal-Shell, Tin Plated (Pgs. 144-149, 151)	9/9 15/15 25/25 37/37 (Std.)	See Customer Drawings	Threaded Inserts	.120 [3.05] Dia. Holes	Duplex (.000030 [0.00076] Gold/Tin) Gold/Tin	.125 [3.18]
	Receptacle over Plug				Female Screwlocks	Boardlocks	Duplex (Gold Flash/Tin)	
	Plug over Receptacle							

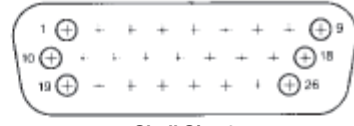
**HD-22 and HD-20 Commercial Connectors (AMPLIMITE)**

**Contact Arrangements**

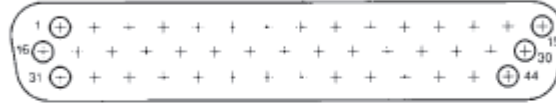
**HD-22 Inserts**



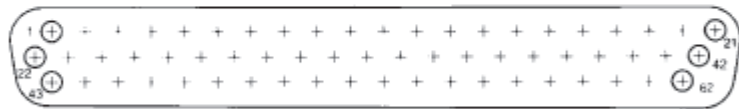
Shell Size 1  
(15 Position)



Shell Size 2  
(26 Position)



Shell Size 3  
(44 Position)

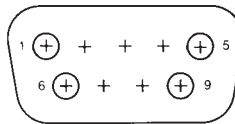


Shell Size 4  
(62 Position)

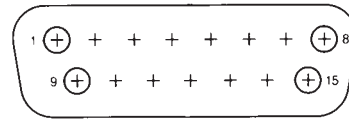


Shell Size 5  
(78 Position)

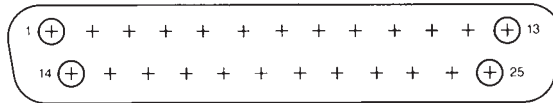
**HD-20 Inserts**



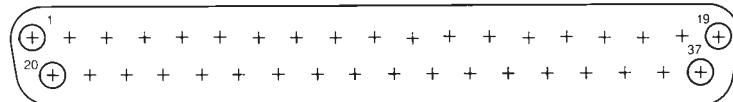
Shell Size 1  
(9 Position)



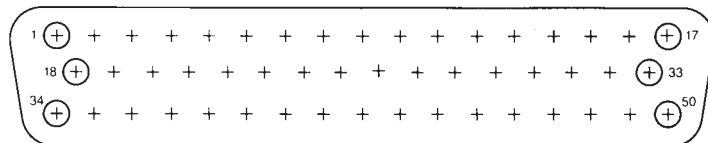
Shell Size 2  
(15 Position)



Shell Size 3  
(25 Position)



Shell Size 4  
(37 Position)



Shell Size 5  
(50 Position)

**Note:** Mating face of plug is shown, receptacle is mirror-image.



## HD-22 and HD-20 Connectors Performance Characteristics

### Cable Connectors

	Connector Type		
	HDP-22	HDE-20	HDP-20
<b>Electrical Characteristics</b>			
Contact Current Rating (One pair of contacts)	22 AWG [0.4mm <sup>2</sup> ] Wire 5.0 amperes	20 AWG [0.6mm <sup>2</sup> ] 3 amperes	20 AWG [0.6mm <sup>2</sup> ] 7.5 amperes
Termination Resistance	15 milliohms (max.)	30 milliohms (max.)	15 milliohms (max.)
Dielectric Withstanding Voltage	1000 VAC min.	1000 VAC min.	1000 VAC min.
Insulation Resistance	5000 megohms min.	5000 megohms min.	5000 megohms min.
<b>Mechanical Characteristics</b>			
Contact Insertion Force	3 lb. max. [13.34 N max.]	N/A	3 lb. max. [13.34 N max.]
Contact Retention	5 lb. min. [22.24 N min.]	7 lb. min. [31.14 N min.]	10 lb. min. [44.48 N min.]
Contact Mating Force (Per contact circuit pair)	8 oz. max. [2.22 N max.]	8 oz. max. [2.22 N max.]	8 oz. max. [2.22 N max.]
Contact Unmating Force (Per contact circuit pair)	.75 oz. min. [0.209 N min.]	.75 oz. min. [0.209 N min.]	.75 oz. min. [0.209 N min.]
Tensile Strength	22 AWG—12 lb. [0.4mm <sup>2</sup> —53.4 N] 24 AWG—8 lb. [0.2mm <sup>2</sup> —35.6 N] 26 AWG—4.5 lb. [0.15mm <sup>2</sup> —20.02 N] 28 AWG—2.7 lb. [0.08mm <sup>2</sup> —12.01 N]	20 AWG—9.5 lb. [0.6mm <sup>2</sup> —42.3 N] 22 AWG—6 lb. [0.4mm <sup>2</sup> —26.7 N] 24 AWG—4 lb. [0.2mm <sup>2</sup> —17.79 N] 26 AWG—2.5 lb. [0.15mm <sup>2</sup> —11.12 N] 28 AWG—2.5 lb. [0.08mm <sup>2</sup> —11.12 N] 30 AWG—1 lb. [0.05mm <sup>2</sup> —4.45 N]	20 AWG—20 lb. [0.6mm <sup>2</sup> —89 N] 22 AWG—12 lb. [0.4mm <sup>2</sup> —53.4 N] 24 AWG—8 lb. [0.2mm <sup>2</sup> —35.6 N] 26 AWG—4.5 lb. [0.15mm <sup>2</sup> —20.02 N] 28 AWG—2.7 lb. [0.08mm <sup>2</sup> —12.01 N]
Durability	.000030 [0.00076] gold—500 cycles Gold Flash— 100 cycles	.000030 [0.00076] gold—500 cycles Gold Flash— 100 cycles	.000030 [0.00076] gold—500 cycles Gold Flash— 100 cycles
<b>Environmental Characteristics</b>			
Vibration	Random 20 G's rms max.	Random 20 G's rms max.	Random 20 G's rms max.
Physical Shock	50 G's Duration 11 ms	50 G's Duration 11 ms	50 G's Duration 11 ms

### Board Mount Connectors

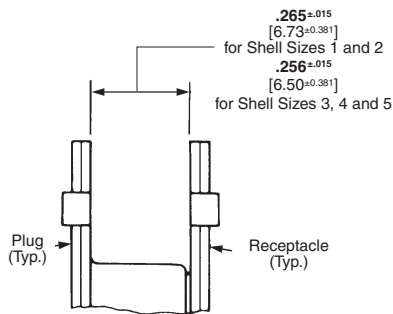
	Connector Type
	HD-20
<b>Electrical Characteristics</b>	
Single Contact Current Rating (30°C Rise) Duration 11 ms	18 AWG 6.0 amperes 24 AWG 4.3 amperes 28 AWG 2.9 amperes
Termination Resistance	15 milliohms* (max.)
Dielectric Withstanding Voltage	1000 VAC min.**
Insulation Resistance	5000 megohms min.

\*Stacked Connectors—30 milliohms (max.)  
\*\*Stacked Connectors—500 VAC min.

	Connector Type		
	HD-20		
<b>Mechanical Characteristics</b>			
Durability	.000030 [0.00076] gold—500 cycles Gold Flash—100 cycles		
Connector Mating and Unmating Force (lbs. max. over [N max.])	Size	HD-20 Without Grounding Indents	HD-20 With Grounding Indents
	1	4.5 [20.02]	30.0 [133.5]
	2	7.5 [33.4]	33.0 [146.8]
	3	12.5 [55.6]	37.0 [164.6]
	4	18.5 [82.3]	40.0 [177.9]
5	25.0 [111.2]	44.0 [195.7]	

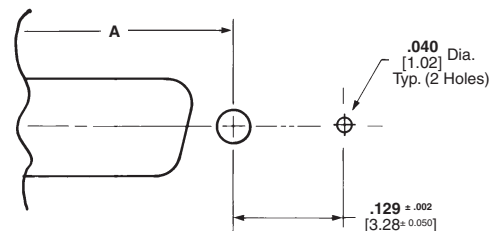
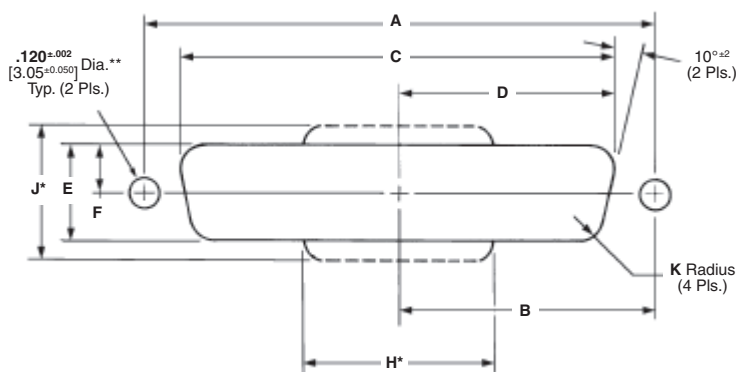
## Plug/Receptacle Mating and Panel Mounting Specifications

### Plug/Receptacle Mating



The .265 [6.73] dimension is required to assure full mating of connector halves. This dimension must be taken into consideration when determining the method of mounting, panel thickness, etc.

### Panel Mounting



Cutout for Rear Mount and Short Latching Block

Note: Cutouts are for either plug or receptacle, front or rear panel mount.

Most plugs and receptacles can be mounted to a panel from either the front or rear, using a variety of accessory hardware. Posted receptacles are rear panel mounted only. Typical examples are shown below.

Shell Size (Pos.)	Mounting Method Front/Rear Panel	Dimensions								
		A	B	C	D	E	F	H*	J*	K
1 (9)	Front	.984	.492	.874	.437	.513	.257	—	—	.083
	Rear	.984	.492	.806	.403	.449	.225	.550	.750	.132
2 (15)	Front	1.312	.656	1.202	.601	.513	.257	—	—	.083
	Rear	1.312	.656	1.134	.567	.449	.225	.730	.750	.132
3 (25)	Front	1.852	.926	1.743	.872	.513	.257	—	—	.083
	Rear	1.852	.926	1.674	.837	.449	.225	1.275	.750	.132
4 (37)	Front	2.500	1.250	2.391	1.196	.513	.257	—	—	.083
	Rear	2.500	1.250	2.326	1.163	.449	.225	1.920	.750	.132
5 (50)	Front	2.406	1.203	2.297	1.149	.623	.312	—	—	.083
	Rear	2.406	1.203	2.218	1.109	.555	.278	1.753	.750	.132

\*Panel cutout configuration with H and J dimensions provides clearance for mounting connectors with cable clamps.  
 \*\*This dimension is .190<sup>+0.002</sup> [4.83<sup>+0.05</sup>] when posted connectors with fixed female screwlocks are rear-panel mounted.





Typical Front-Panel Mounted Subminiature D Plug



Typical Rear-Panel Mounted Subminiature D Receptacle

## AMPLIMITE HD-20 Subminiature D Stacked PCB Connectors Hybrid and Mixed Styles

### Product Facts

- Stacked pcb connectors save board real estate
- Wide choice of configurations available
- Front Metal-Shells for EMI/RFI shielding
- Housings made of UL 94V-0 rated thermoplastic
- Plug connectors have built-in grounding indents
- Choice of 4-40 threaded insert or female screwlock mating hardware
- Hybrid styles provide maximum selectivity and permit mixing of signal speeds
- Packaged in plastic trays for ease of handling
- Recognized under the Component Program of the Underwriters Laboratories, Inc.  File No. 28476
- Certified by Canadian Standards Association, File No. LR 7189 

See customer drawings for pcb layouts.



AMPLIMITE HD-20 Subminiature D Stacked PCB Connectors are members of the complete line of AMPLIMITE Subminiature D Connector family which has been accepted by the electronic industry for their rugged design and ease of application.

Stacked connectors add the advantage of reducing overall board real estate normally consumed by individual pcb connectors. The versatility of the AMPLIMITE HD-20 line enables you to select the stacked connector best suited for your specific application.

AMPLIMITE HD-20 Stacked Connectors, Series II offer a high degree of performance and a reduced cost. The line consists of:

- Receptacle over Receptacle in 9/9, 15/15, 25/25 and 37/37 contact positions

- Plug over Plug in 9/9, 15/15, 25/25 and 37/37 contact positions
- Receptacle over Plug in 9/9, 15/15, 25/25 and 37/37 contact positions
- Plug over Receptacle in a total of 9/9, 15/15, 25/25 and 37/37 contact positions

Configurations are available with a choice of mounting hardware—4-40 threaded inserts and female screwlocks.

### Hybrid and Mixed Styles

AMPLIMITE Hybrid and Mixed Stacked Connectors combine a variety of subminiature D connector configurations into a single connector. This permits mixing signal speeds with a substantial reduction in pc board real estate.

All AMPLIMITE Stacked and Mixed PCB Connectors fea-

ture front metal-shells for EMI/RFI shielding, with housings made of UL 94V-0 approved material. The series offers gold plating in 30µ", 10µ" and gold flash on the mating end and tin plating on the termination end, with the entire contact nickel underplated.

Due to the versatility of the AMPLIMITE Hybrid and Mixed lines of connectors any combination with an AMPLIMITE HD-20 Connector as the top connector, HD-22 High Density, and AMPLIMITE .050 Series as the bottom connector can be provided based on your application requirements. Contact TE for additional information.

## AMPLIMITE HD-20 Subminiature D Stacked PCB Connectors Hybrid and Mixed Styles (Continued)

**Material and Finish:**

**Housing**—94V-0 rated thermoplastic, black

**Shell**—Steel, tin plated

**Contacts:**

**Pins**—Brass

**Sockets**—Phosphor bronze

**Contact Plating:**

**A**—Gold flash on mating end, tin on solder tails with overall nickel plating underneath

**B**—.000010 [0.00025] gold on mating end, tin on solder tails with overall nickel underplate

**C**—.000030 [0.00076] gold on mating end, tin on solder tails with overall nickel underplate

**Boardlocks**—Brass, tin plated

**Female Screwlocks**—Brass, nickel plated

**Threaded Inserts**—Brass, tin plated

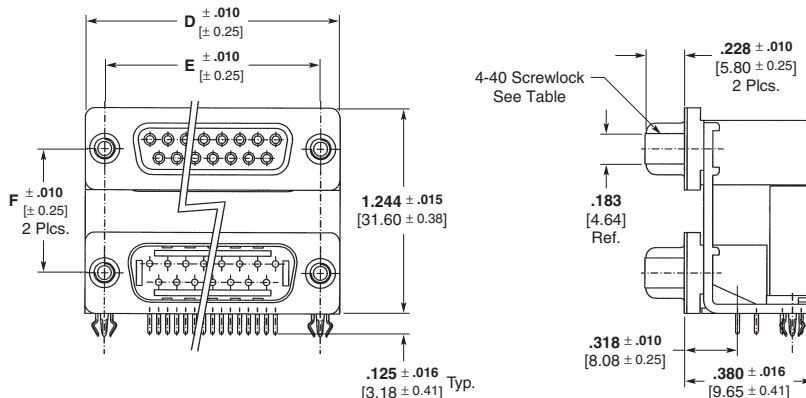
**Brackets**—Zinc

**Technical Documents:**

**Product Specification**

108-57517

See customer drawings for printed circuit board layouts.



Upper D-Sub	Lower D-Sub	Dimensions			Contact Finish	Mounting Hardware	Part Number
		D	E	F			
9p Plug / 9p Plug	9p Plug	1.22	.984	.750	A	4-40 inserts	1734279-1
		30.95	24.99	19.05	B	4-40 inserts	1734279-2
		1.22	.984	.750	C	4-40 inserts	1734279-3
	9p Rcpt.	1.22	.984	.750	A	4-40 fem s/l	1734280-1
		30.95	24.99	19.05	C	4-40 fem s/l	1734280-3
		1.22	.984	.750	A	4-40 inserts	1734282-1
9p Plug / 9p Rcpt.	9p Plug	1.22	.984	.750	B	4-40 inserts	1734282-2
		30.95	24.99	19.05	C	4-40 inserts	1734282-3
		1.22	.984	.750	A	4-40 inserts	1734285-1
	9p Rcpt.	1.22	.984	.750	B	4-40 inserts	1734285-2
		30.95	24.99	19.05	C	4-40 inserts	1734285-3
		1.22	.984	.750	A	4-40 fem s/l	1734286-1
9p Rcpt. / 9p Rcpt.	9p Rcpt.	1.22	.984	.750	B	4-40 fem s/l	1734286-2
		30.95	24.99	19.05	C	4-40 fem s/l	1734286-3
		1.22	.984	.750	A	4-40 inserts	1734207-1
	9p Plug	1.22	.984	.750	B	4-40 inserts	1734207-2
		30.95	24.99	19.05	C	4-40 inserts	1734207-3
		1.55	1.31	.750	A	4-40 inserts	1-1734279-1
15p Plug / 15p Plug	15p Plug	1.55	1.31	.750	B	4-40 inserts	1-1734279-2
		39.30	33.30	19.05	C	4-40 inserts	1-1734279-3
		1.55	1.31	.750	A	4-40 inserts	1-1734282-1
	15p Rcpt.	1.55	1.31	.750	B	4-40 inserts	1-1734282-2
		39.30	33.30	19.05	C	4-40 inserts	1-1734282-3
		1.55	1.31	.750	A	4-40 inserts	1-1734282-1

Continued on next page

**Note:** All part numbers are RoHS compliant.

## AMPLIMITE HD-20 Subminiature D Stacked PCB Connectors Hybrid and Mixed Styles

Upper D-Sub	Lower D-Sub	Dimensions			Contact Finish	Mounting Hardware	Part Number
		D	E	F			
15p Rcpt.	/ 15p Rcpt.	1.55	1.31	.750	A	4-40 inserts	1-1734285-1
		39.30	33.30	19.05			
		1.55	1.31	.750	B	4-40 inserts	1-1734285-2
		39.30	33.30	19.05			
		1.55	1.31	.750	C	4-40 inserts	1-1734285-3
		39.30	33.30	19.05			
1.55	1.31	.750	A	4-40 fem s/l	1-1734286-1		
39.30	33.30	19.05					
15p Rcpt.	/ 15p Plug	1.55	1.31	.750	B	4-40 fem s/l	1-1734286-2
		39.30	33.30	19.05			
		1.55	1.31	.750	C	4-40 fem s/l	1-1734286-3
		39.30	33.30	19.05			
		1.55	1.31	.750	A	4-40 inserts	1-1734207-1
		39.30	33.30	19.05			
1.55	1.31	.750	B	4-40 inserts	1-1734207-2		
39.30	33.30	19.05					
25p Plug	/ 25p Plug	1.55	1.31	.750	C	4-40 inserts	1-1734207-3
		39.30	33.30	19.05			
		2.09	1.85	.750	A	4-40 inserts	2-1734279-1
		53.10	47.04	19.05			
		2.09	1.85	.750	B	4-40 inserts	2-1734279-2
		53.10	47.04	19.05			
2.09	1.85	.750	C	4-40 inserts	2-1734279-3		
53.10	47.04	19.05					
25p Plug	/ 25p Rcpt.	2.09	1.85	.750	A	4-40 inserts	2-1734282-1
		53.10	47.04	19.05			
		2.09	1.85	.750	B	4-40 inserts	2-1734282-2
		53.10	47.04	19.05			
		2.09	1.85	.750	C	4-40 inserts	2-1734282-3
		53.10	47.04	19.05			
2.09	1.85	.750	A	4-40 inserts	2-1734285-1		
53.10	47.04	19.05					
25p Rcpt.	/ 25p Rcpt.	2.09	1.85	.750	B	4-40 inserts	2-1734285-2
		53.10	47.04	19.05			
		2.09	1.85	.750	C	4-40 inserts	2-1734285-3
		53.10	47.04	19.05			
		2.09	1.85	.750	A	4-40 fem s/l	2-1734286-1
		53.10	47.04	19.05			
2.09	1.85	.750	B	4-40 fem s/l	2-1734286-2		
53.10	47.04	19.05					
25p Rcpt.	/ 25p Plug	2.09	1.85	.750	C	4-40 fem s/l	2-1734286-3
		53.10	47.04	19.05			
		2.09	1.85	.750	A	4-40 inserts	2-1734207-1
		53.10	47.04	19.05			
		2.09	1.85	.750	B	4-40 inserts	2-1734207-2
		53.10	47.04	19.05			
2.09	1.85	.750	C	4-40 inserts	2-1734207-3		
53.10	47.04	19.05					
37p Plug	/ 37p Plug	2.73	2.500	.750	A	4-40 inserts	3-1734279-1
		69.34	63.50	19.05			
		2.73	2.500	.750	B	4-40 inserts	3-1734279-2
		69.34	63.50	19.05			
		2.73	2.500	.750	C	4-40 inserts	3-1734279-3
		69.34	63.50	19.05			
2.73	2.500	.750	A	4-40 inserts	3-1734282-1		
69.34	63.50	19.05					
37p Plug	/ 37p Rcpt.	2.73	2.500	.750	B	4-40 inserts	3-1734282-2
		69.34	63.50	19.05			
		2.73	2.500	.750	C	4-40 inserts	3-1734282-3
		69.34	63.50	19.05			

Continued on next page

**Note:** All part numbers are RoHS compliant.

**AMPLIMITE HD-20 Subminiature D Stacked PCB Connectors**  
**Hybrid and Mixed Styles** (Continued)

Upper D-Sub	Lower D-Sub	Dimensions			Contact Finish	Mounting Hardware	Part Number
		D	E	F			
37p Rcpt. / 37p Rcpt.		2.73 69.34	2.500 63.50	.750 19.05	A	4-40 inserts	3-1734285-1
		2.73 69.34	2.500 63.50	.750 19.05	B	4-40 inserts	3-1734285-2
		2.73 69.34	2.500 63.50	.750 19.05	C	4-40 inserts	3-1734285-3
		2.73 69.34	2.500 63.50	.750 19.05	A	4-40 fem s/l	3-1734286-1
		2.73 69.34	2.500 63.50	.750 19.05	B	4-40 fem s/l	3-1734286-2
		2.73 69.34	2.500 63.50	.750 19.05	C	4-40 fem s/l	3-1734286-3
37p Rcpt. / 37p Plug		2.73 69.34	2.500 63.50	.750 19.05	A	4-40 inserts	3-1734207-1
		2.73 69.34	2.500 63.50	.750 19.05	B	4-40 inserts	3-1734207-2
		2.73 69.34	2.500 63.50	.750 19.05	C	4-40 inserts	3-1734207-3

HD-20 Subminiature D Stacked PCB Connectors

**Note:** All part numbers are RoHS compliant.

## AMPLIMITE HD-20 Subminiature D Stacked PCB Connectors Hybrid and Mixed Styles

### HD-20 Front Metal Shell, Right-Angle AMPLIMITE Connectors

**Material and Finish:**

**Housings and Pin Spacer**—94V-0 rated thermoplastic, black

**Contacts:**

**Sockets**—Phosphor bronze or brass

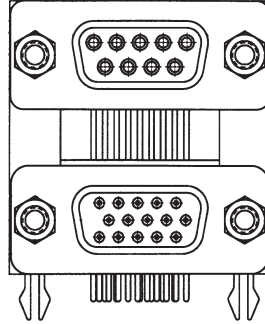
**Contact Plating**—

Gold flash on mating end, tin on termination end, with entire contact nickel underplated

**Shell**—Steel, tin plated

**Boardlocks**—Copper alloy, plated tin

**Bracket**—Steel



9 Position HD-20 Receptacle over  
15 Position HD-22 Receptacle  
Part No. 1734870-1 (without Female Screwlocks)  
Part No. 1-1734870-1 (as shown, with Female Screwlocks)

**Note:** All part numbers are RoHS compliant.



**AMPLIMITE HD-20 Subminiature D Stacked PCB Connectors**  
**Hybrid and Mixed Styles** (Continued)

HD-20 Subminiature D Stacked PCB Connectors

**HD-20 Front Metal Shell, Right-Angle Connectors**

**Material and Finish:**

**Housing**—94V-0 rated PBT, see table

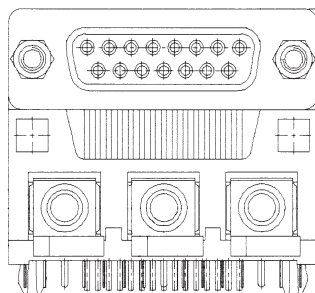
**Contacts**—Phosphor bronze or brass

**HD22 Receptacle**

**Contact Plating**—

Gold flash on contact area, tin on solder tail area, all over nickel underplated

**Audio Jack**—.000100 [.00254] min. tin over nickel underplate



**15 Position HD-20 Receptacle over 3 Position Audio Plug**

Description	Part Number	PC 99
With female screwlocks & color-coded audio <sup>1</sup>	1734287-2	—
With color-coded audio <sup>1</sup>	1-1734287-2	—
With color-coded audio <sup>1</sup>	—	1-1734287-3
With female screwlocks & back cover & color-coded audio <sup>1</sup>	—	2-1734287-3
With female screwlocks & color-coded audio <sup>1</sup>	—	3-1734287-3

<sup>1</sup> Color coded audio:  
 Audio line in — light blue  
 Audio line out — lime  
 Microphone — pink

**High-Rise Connectors**

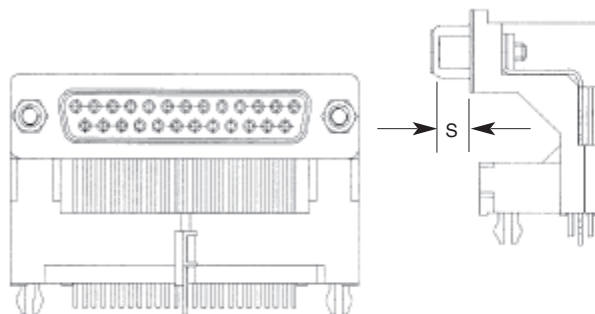
**Material and Finish:**

**Housing**—94V-0 rated thermoplastic, burgundy

**Contacts**—Phosphor bronze

**Contact Plating:**

**A**—.000010 [.000254] gold on mating area, tin on solder tails, all over nickel




**High-Rise 25 Position HD-20 Receptacle**

Dimension S	Plating Code	Part Number	PC 99
.236 6.00	A	—	2-1734024-3

**Note:** All part numbers are RoHS compliant.

## AMPLIMITE 2000 Subminiature D Connectors

### Product Facts

- Flame retardant housings, rated up to 105°C
- Front metal-shell design
- Duplex plated gold flash or .000015 [0.00038] min. gold on mating end, tin on solder end, all over nickel underplate
- With boardlocks and 4-40 threads or female screwlocks
- Designed to Office Class II
- 9, 15 & 25 right-angle plugs and receptacles
- Recognized under the Component Program of the Underwriters Laboratories, Inc.  File No. E28476

See customer drawings for circuit board layout.



### AMPLIMITE 2000

Subminiature D connectors represent the latest breakthrough in economical Subminiature D connector design.

Presently available in the more popular sizes — 9-, 15- and 25-receptacles and plugs with a .318 [8.08] printed circuit board footprint, the AMPLIMITE 2000 connector line features front metal-shell RFI/EMI protection, flame retardant housings with integral 4-40 threads, boardlocks, and duplex plated gold-over-nickel contacts.

**AMPLIMITE 2000 Subminiature Connectors** (Continued)

**HD-20 Front Metal Shell Right-Angle Connectors**

**Material and Finish:**

**Housing**—94V-0 rated thermoplastic, black

**Shell**—Steel, nickel plated

**Contacts:**

**Pins**—Brass

**Sockets**—Phosphor bronze

**Contact Plating:**

**A**—Gold flash on mating end, tin on solder tails with overall nickel underplate

**B**—.00015 [0.00038] gold on mating end, tin on solder tails with overall nickel underplate

**Boardlocks**—Brass, tin or tin plated

**Female Screwlocks**—Brass, nickel plated

**Threaded Inserts**—Brass, nickel plated

**Technical Documents:**

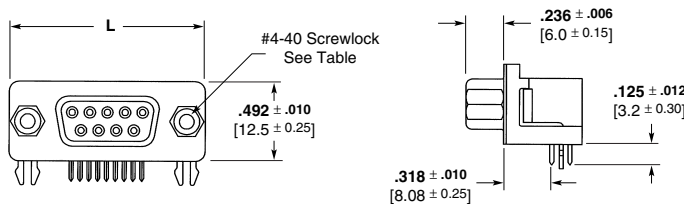
**Product Specification**

108-57541



Typical Plug

Shell Size	Contact Finish	Dimension L Ref.	With Female Screwlocks	With 4-40 Threaded Inserts
9	A	1.210	1734351-1	1734352-1
	B	30.80	1734351-2	1734352-2
15	A	1.540	—	1734360-1
	B	39.20	—	1734360-2
25	A	2.090	Pending Obs.	Pending Obs.
	B	53.10	Pending Obs.	Pending Obs.



Typical Receptacle

Shell Size	Contact Finish	Dimension L Ref.	With Female Screwlocks	With 4-40 Threaded Inserts
9	A	1.210	1734354-1	1734348-1
	B	30.80	1734354-2	1734348-2
15	A	1.540	1734357-1	1734355-1
	B	39.20	1734357-2	1734355-2
25	A	2.090	1734349-1	1734350-1
	B	53.10	1734349-2	1734350-2

**Note:** All part numbers are RoHS compliant.

## HD-20 and HD-22 Slimline Connectors

### 2 Rows of Solderetails

**Material and Finish:**

**Housing**—94V-0 rated thermoplastic, black

**Shell**—Low carbon steel, nickel plated

**Contacts**—Phosphor bronze or brass

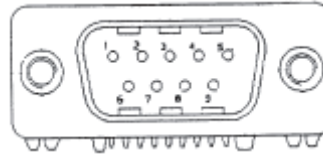
**Contact Plating**—Gold flash on mating area; .000100 [0.00254] min. tin on solder tail area; overall .000050 [0.00127] min. nickel underplate

**Boardlocks**—Brass, tin plated over nickel underplate

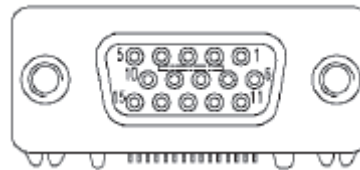
**Threaded Inserts**—Brass, nickel plated

**Technical Documents:**

**Product Specification**  
108-57541



**9 Position Plug**  
Part Number 1734340-1



**15 Position VESA Receptacle HD-22**  
Part Number 1734341-1

### 1 Row of Solderetails

**Material and Finish:**

**Housing**—94V-0 rated thermoplastic, black

**Shell**—Low carbon steel, nickel plated

**Contacts**—Brass

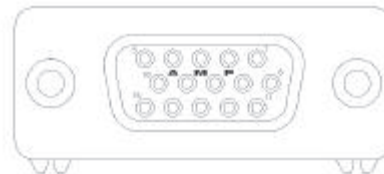
**Contact Plating**—.000015 [0.00038] min. gold on mating area; .000100 [0.00254] min. tin on solder tail area; overall .000050 [0.00127] min. nickel underplate

**Boardlocks**—Brass, tin plated over nickel underplate

**Threaded Inserts**—Brass, nickel plated

**Technical Documents:**

**Product Specification**  
108-57541



**15 Position VESA Receptacle HD-22**  
Part Number 1734335-1

**Note:** All part numbers are RoHS compliant.

## HD-22 Right-Angle Posted Subminiature D Connectors

### Product Facts

- Flame retardant thermoplastic housing material, UL94V-0 rated
- Low cost front metal shell design compatible with full metal-shell connectors
- Integral boardlock versions secure connectors to pc boards prior to soldering
- Contacts available in platings to satisfy different applications
- Integral threaded inserts and screwlocks available
- Recognized under the Component Program of Underwriters Laboratories, Inc., File No. E28476



### HD-22 Front Metal Shell .350 [8.89] PCB Footprint



Plug



Receptacle

**HD-22 Right-Angle Posted Subminiature D Connectors** (Continued)

**Material and Finish:**

**Housing**—94V-0 rated thermoplastic, black

▲ VESA Std. 15-position Receptacle Housing Material—Thermoplastic 94V-0 blue per VESA Std.

**Shell**—Steel, nickel plated

**Contacts**

**Pins**—Brass

**Sockets**—Phosphor bronze

**Contact Plating**—

Gold flash, .000010 [0.00025] or .000030 [0.00076] on mating end, tin on solder tails with overall nickel underplate

**Boardlocks**—Brass, tin plated

**Female Screwlocks**—Brass, nickel plated

**Threaded Inserts**—Brass, nickel plated

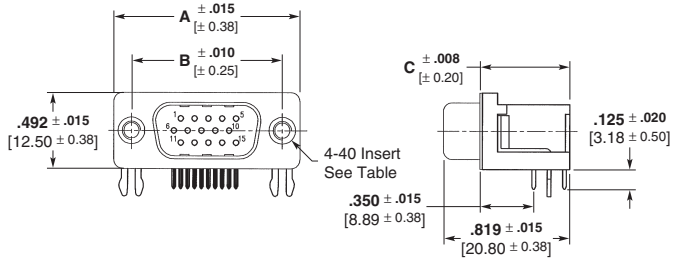
**Technical Documents:**

**Product Specification**—108-1092

**Application Specification**—114-13198

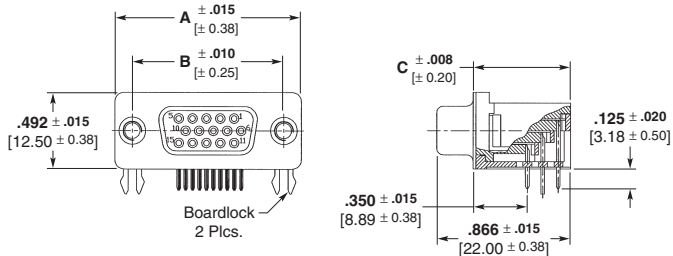
See customer drawings for printed circuit board layouts.

■ **Recognized under the Component Program of Underwriters Laboratories, Inc., File No. E28476**



**Right-Angle Plug**

No. of Contact Positions	Dimensions			Mounting Hardware	PCB Mounting Style	Part Numbers		
	A	B	C			Gold Flash	15µ" Gold	30µ" Gold
15	1.212	.984	.582	4-40 inserts	board locks	—	5749767-2	5749767-1
	30.81	24.99	14.80	4-40 screw locks	board locks	5749768-3	5749768-2	5749768-1
26	1.543	1.312	.583	4-40 inserts	board locks	5749769-3	5749769-2	5749769-1
	39.20	33.32	14.81	4-40 screw locks	board locks	5749771-3	5749771-2	5749771-1
44	2.089	1.852	.593	4-40 inserts	board locks	5749639-3	5749639-2	5749639-1
	53.05	47.04	15.06	4-40 screw locks	board locks	5749234-3	5749234-2	—
62	2.732	2.500	.593	4-40 inserts	board locks	5749234-3	5749234-2	—
	69.40	63.50	15.06	4-40 screw locks	board locks	5749234-3	5749234-2	—
78	2.638	2.400	.693	4-40 inserts	board locks	5749234-3	5749234-2	—
	67.00	61.00	17.60	4-40 screw locks	board locks	5749234-3	5749234-2	—



**Right-Angle Receptacle**

No. of Contact Positions	Dimensions			Mounting Hardware	PCB Mounting Style	Part Numbers		
	A	B	C			Gold Flash	15µ" Gold	30µ" Gold
15	1.212	.984	.630	4-40 inserts	board locks	1-1734530-1	1-1734530-2	1-1734530-3
	30.81	25.00	16.00	4-40 screw locks	board locks	1734530-1	1734530-2	1734530-3
▲ 15 VESA	1.212	.984	.630	4-40 inserts	board locks	1734344-1	—	2-1734344-3
	30.81	25.00	16.00	4-40 screw locks	board locks	Pending Obs.	Pending Obs.	Pending Obs.
26	1.543	1.311	.593	4-40 inserts	board locks	2-5748481-3	2-5748481-2	5748481-5
	39.20	44.32	15.06	4-40 screw locks	board locks	2-5748481-5	2-5748481-4	5748481-6
44	2.089	1.852	.583	4-40 inserts	board locks	2-5748482-4	2-5748482-3	5748482-5
	53.05	47.04	14.81	4-40 screw locks	board locks	—	2-5748482-5	—
62	2.732	2.500	.583	4-40 inserts	board locks	2-5748394-4	2-5748394-3	5748394-5
	69.40	63.50	14.81	4-40 screw locks	board locks	2-5748394-6	2-5748394-5	5748394-6
78	2.638	2.400	.693	4-40 inserts	board locks	2-5748483-1	2-5748483-0	5748483-5
	67.00	61.00	17.60	4-40 screw locks	board locks	—	2-5748483-2	5748483-6

**Note:** All part numbers are RoHS compliant.

## HD-20 Front Metal-Shell Right-Angle Posted Connectors 318 Mount

Post Size—.026 [0.66] Dia. Plug



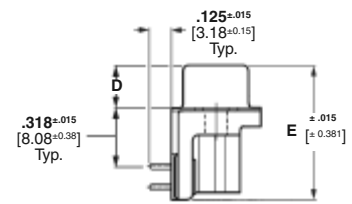
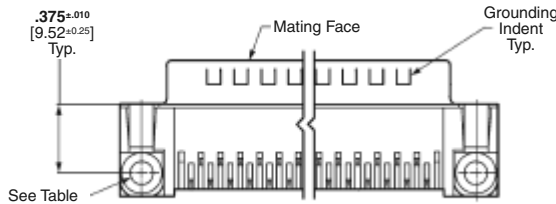
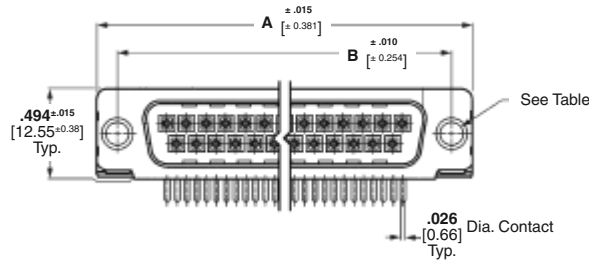
With Grounding Indents and Grounding Straps



With Threaded Insert



With Fixed Female Screwlock



**Material and Finish:**

- Front Shell**—Steel, tin plated
- Housing**—94V-0 rated thermoplastic, black
- Eyelets**—Brass, tin plated
- Threaded Inserts**—Zinc
- Female Screwlock**—Zinc
- Boardlocks**—Copper alloy, tin plated
- Pin Contacts (Posted)**—Brass, duplex plated as follows:  
**A**—.000030 [0.00076] gold on mating end, tin on termination end, with entire contact nickel underplated  
**B**—Gold flash on mating end, tin on termination end, with entire contact nickel underplated

**Technical Documents:**

- Product Specification**—108-40025
- Application Specification**—114-40010
- See customer drawings for printed circuit board layouts.

- **Recognized under the Component Program of Underwriters Laboratories, Inc., File No. E28476**
- **Certified by Canadian Standards Association, File No. LR 7189**



Shell Size	No. of Contact Positions	Dimensions				Contact Finish (Plating Code)	Plug Part Numbers					
							Without Boardlocks			With Boardlocks		
							With Standard Mounting Holes	With Threaded Inserts	With Fixed Female Screwlocks	With Standard Mounting Holes	With Threaded Inserts	With Fixed Female Screwlocks
1	9	1.213 30.81	.984 24.99	.235 5.97	.733 18.62	A	5747250-2	5747250-4	5747250-6	5747840-2	5747840-4	5747840-6
						B	—	5747250-3	—	5747840-3	5747840-5	
2	15	1.541 39.14	1.312 33.33	.235 5.97	.733 18.62	A	5747236-2	5747236-4	5747236-6	5747841-2	5747841-4	5747841-6
						B	—	5747236-4	—	5747841-3	—	
3	25	2.088 53.04	1.852 47.04	.230 5.84	.738 18.75	A	5747238-2	5747238-4	5747238-6	5747842-2	5747842-4	5747842-6
						B	5747238-2	5747238-3	—	5747842-3	5747842-5	
4	37	2.729 69.32	2.500 63.50	.230 5.84	.740 18.80	A	—	5747252-4	—	5747843-2	5747843-4	5747843-6
						B	—	—	—	5747843-3	—	

**Notes:** 1. All plug connectors are preloaded with size 20 DF posted pin contacts.  
 2. Recommended pc board thickness is .062 [1.58] for connectors with boardlocks and .093 [2.36] max. for all others.  
 3. Male screw retainers are used as mating hardware for connectors with 4-40 female screwlocks.

**Note:** All part numbers are RoHS compliant.

**HD-20 Front Metal-Shell Right-Angle Posted Connectors 318 Mount (Continued)**

**Post Size— .026 [0.66] Dia.**

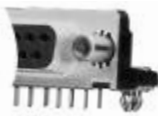
**Receptacle**



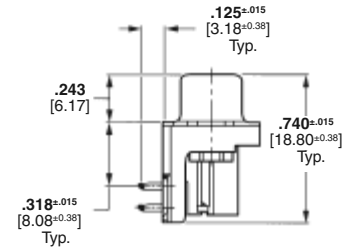
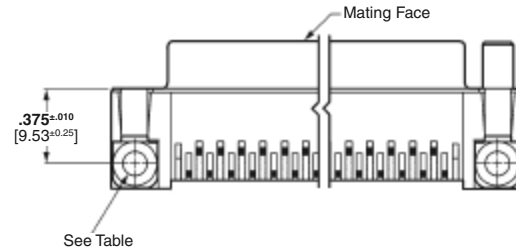
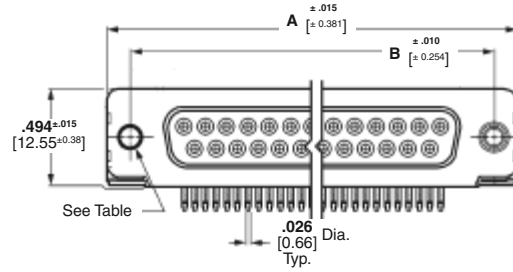
With Grounding Straps



With Threaded Insert



With Fixed Female Screwlock



**Material and Finish:**

- Front Shell**—Steel, tin plated
- Housing**—94V-0 rated thermoplastic, black
- Eyelets**—Brass, tin plated
- Threaded Inserts**—Zinc
- Female Screwlock**—Zinc
- Boardlocks**—Copper alloy, tin plated
- Socket Contacts (Posted)**—Phosphor bronze, duplex plated as follows:
  - A**—.000030 [0.00076] gold on mating end, tin on termination end, with entire contact nickel underplated
  - B**—Gold flash on mating end, tin on termination end, with entire contact nickel underplated

**Technical Documents:**

- Product Specification**—108-40025
- Application Specification**—114-40010

Shell Size	No. of Contact Positions	Dimensions		Contact Finish (Plating Code)	Receptacle Part Numbers					
					Without Boardlocks			With Boardlocks		
					With Standard Mounting Holes	With Threaded Inserts	With Fixed Female Screwlocks	With Standard Mounting Holes	With Threaded Inserts	With Fixed Female Screwlocks
1	9	1.213 30.81	.984 24.99	A	5745781-2	5745781-4	5745781-6	5747844-2	5747844-4	5747844-6
				B	—	5745781-3	—	—	5747844-3	5747844-5
2	15	1.541 39.14	1.312 33.33	A	5745782-2	5745782-4	5745782-6	—	5747845-4	5747845-6
				B	—	—	—	—	5747845-3	5747845-5
3	25	2.088 53.04	1.852 47.04	A	5745783-2	5745783-4	5745783-6	5747846-2	5747846-4	5747846-6
				B	—	5745783-3	5745783-5	—	5747846-3	5747846-5
4	37	2.729 69.32	2.500 63.50	A	5745784-2	5745784-4	5745784-6	—	5747847-4	5747847-6

- Notes:**
- All receptacle connectors are preloaded with size 20 DF posted socket contacts.
  - Recommended pc board thickness is .062 [1.58] for connectors with boardlocks and .093 [2.36] max. for all others.
  - Male screw retainers are used as mating hardware for connectors with 4-40 female screwlocks.

**Note:** All part numbers are RoHS compliant.



**HD-20 Front Metal-Shell Right-Angle Posted Connectors 318 Mount (Continued)**

Post Size—.026 [0.66] Dia.

Plug



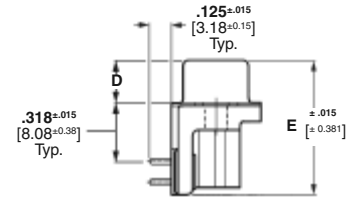
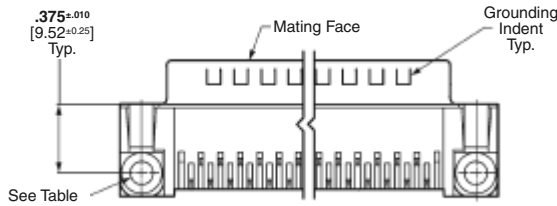
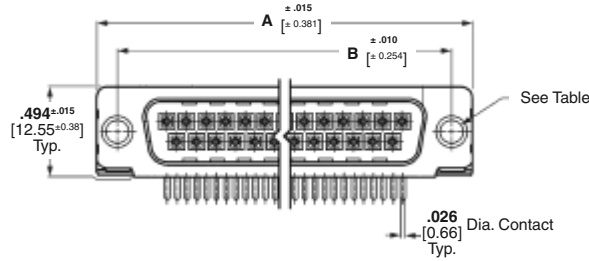
With Grounding Indents and Grounding Straps



With Threaded Insert



With Fixed Female Screwlock



**Material and Finish:**

- Front Shell**—Steel, tin plated
- Housing**—94V-0 rated thermoplastic, compatible with standard wave, vapor phase, and infra-red reflow (SMT) soldering, black
- Eyelets**—Brass, tin plated
- Threaded Inserts**—Zinc
- Female Screwlock**—Zinc
- Boardlocks**—Copper alloy, tin plated
- Pin Contacts (Posted)**—Brass, duplex plated as follows:  
**A**—.000030 [0.00076] gold on mating end, tin on termination end, with entire contact nickel underplated  
**B**—Gold flash on mating end, tin on termination end, with entire contact nickel underplated

- Technical Documents:**
- Product Specification**—108-40025
- Application Specification**—114-40010

Shell Size	No. of Contact Positions	Dimensions				Contact Finish (Plating Code)	Plug Part Numbers With Boardlocks	
		A	B	D	E		With Threaded Inserts	With Fixed Female Screwlocks
1	9	1.213	.984	.235	.733	A	5788792-1	5788793-1
		30.81	24.99	5.97	18.62	B	5788792-2	5788793-2
3	25	2.088	1.852	.230	.738	A	5788794-1	5788795-1
		53.04	47.04	5.84	18.75	B	5788794-2	—

- Notes:**
1. All plug connectors are preloaded with size 20 DF posted pin contacts.
  2. Recommended pc board thickness is .062 [1.58] for connectors with boardlocks and .093 [2.36] max. for all others.
  3. Male screw retainers are used as mating hardware for connectors with 4-40 female screwlocks.

**Note:** All part numbers are RoHS compliant.

.318 [8.08] Board Mount Footprint

**HD-20 Front Metal-Shell Right-Angle Posted Connectors 318 Mount (Continued)**

**Post Size— .026 [0.66] Dia.**

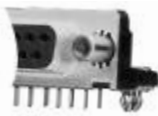
**Receptacle**



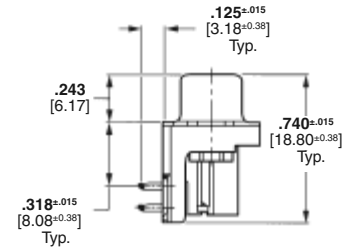
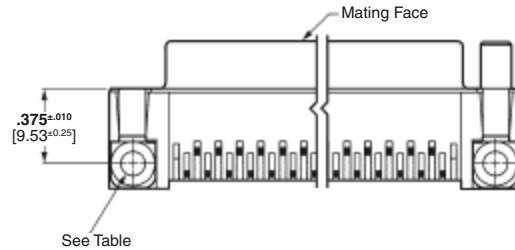
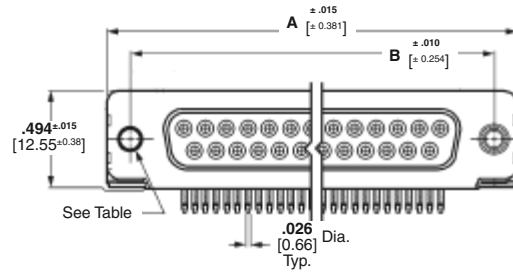
With Grounding Straps



With Threaded Insert



With Fixed Female Screwlock



**Material and Finish:**

- Front Shell**—Steel, tin plated
- Housing**—94V-0 rated thermoplastic, compatible with standard wave, vapor phase, and infra-red reflow (SMT) soldering, black
- Eyelets**—Brass, tin plated
- Threaded Inserts**—Zinc
- Female Screwlock**—Zinc
- Boardlocks**—Copper alloy, tin plated
- Socket Contacts (Posted)**—Phosphor bronze, duplex plated as follows:
  - A**—.000030 [0.00076] gold on mating end, tin on termination end, with entire contact nickel underplated
  - B**—Gold flash on mating end, tin on termination end, with entire contact nickel underplated

- Technical Documents:**
- Product Specification**—108-40025
- Application Specification**—114-40010

Shell Size	No. of Contact Positions	Dimensions		Contact Finish (Plating Code)	Receptacle Part Numbers		
		A	B		Without Boardlocks		With Boardlocks
					With Fixed Female Screwlocks	With Threaded Inserts	With Fixed Female Screwlocks
1	9	1.213 30.81	.984 24.99	A	5788803-1	5788796-1	5788797-1
				B	—	5788796-2	5788797-2
2	15	1.541 39.14	1.312 33.33	A	—	5788798-1	5788799-1
				B	—	5788798-1	—
3	25	2.088 53.04	1.852 47.04	A	—	5788800-1	5788801-1
				B	—	5788800-2	5788801-2
4	37	2.729 69.32	2.500 63.50	A	—	5788802-1	—

- Notes:**
1. All receptacle connectors are preloaded with size 20 DF posted socket contacts.
  2. Recommended pc board thickness is .062 [1.58] for connectors with boardlocks and .093 [2.36] max. for all others.
  3. Male screw retainers are used as mating hardware for connectors with 4-40 female screwlocks.

**Note:** All part numbers are RoHS compliant.

## HD-20 Full Metal-Shell Right-Angle Posted Connectors 454 Mount

Post Size—.025 [0.64] Sq.

Receptacle



**Material and Finish:**

**Shell**—Steel, tin plated  
**Insert**—94V-0 rated thermoplastic, black

**Contacts (Posted):**

**Pin**—Brass  
**Socket**—Phosphor bronze

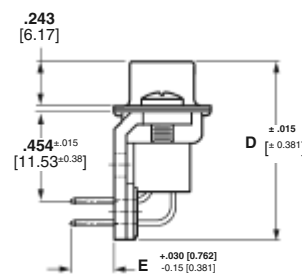
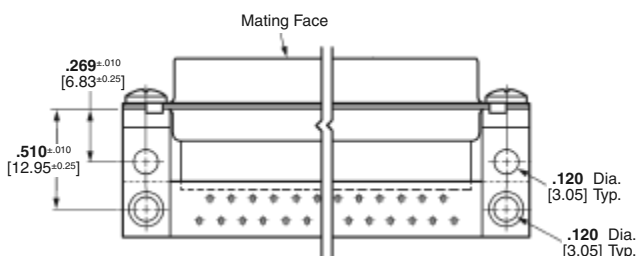
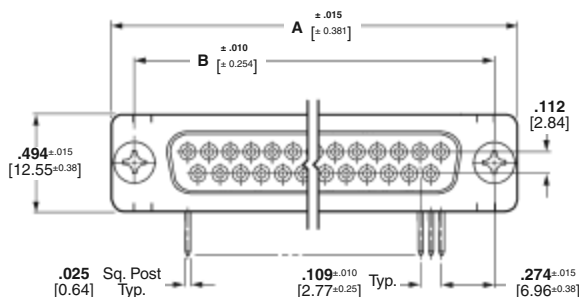
**Contact Plating:**

**A**—.000030 [0.00076] gold on mating end, tin on termination end, with entire contact nickel underplated  
**B**—Gold flash on mating end, tin on termination end, with entire contact nickel underplated

**Technical Documents:**

**Product Specification**—108-40025  
**Application Specification**—114-40013

See customer drawings for printed circuit board layouts.



Shell Size	No. of Contact Positions	Dimensions				Contact Finish (Plating Code)	Part Number
		A	B	D	E		
1	9	1.213 30.81	.984 24.99	.915 23.24	.125 3.18	A	5745438-4
					.220 5.59	B	5745438-3
2	15	1.541 39.14	1.312 33.33	.915 23.24	.125 3.18	A	5745439-4
					.220 5.59	A	5745439-2
3	25	2.088 53.04	1.852 47.04	.919 23.34	.125 3.18	A	5745440-4
					.220 5.59	B	5745440-1
4	37	2.729 69.32	2.500 63.50	.919 23.34	.125 3.18	A	5745441-4
					.220 5.59	B	—

- Notes:**
- All connectors are preloaded with size 20 DF posted contacts; plugs with pin contacts and receptacles with socket contacts.
  - .125 [3.18] post length is recommended for pc board thickness of .093 [2.36] max.; .220 [5.59] post length is recommended for pc board thickness of .125 [3.18] max.

**Note:** All part numbers are RoHS compliant.

.454 [11.53] Board Mount Footprint

**HD-20 Full Metal-Shell Right-Angle Posted Connectors 454 Mount** (Continued)

Post Size—.025 [0.64] Sq.

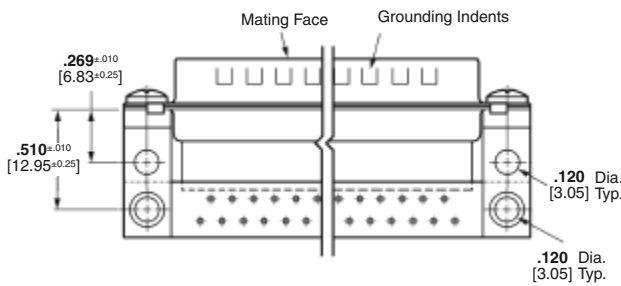
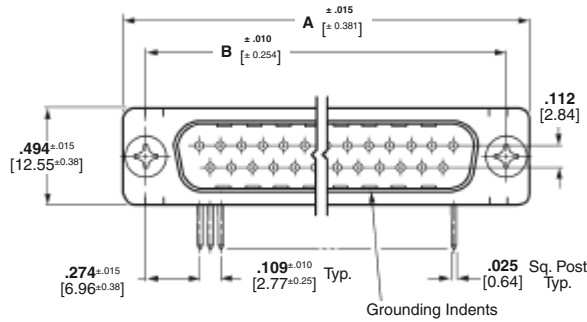
Plug



Without Grounding Indents



With Grounding Indents



**Material and Finish:**

**Shell**—Steel, tin plated  
**Insert**—94V-0 rated thermoplastic, black

**Contacts (Posted):**  
**Pin**—Brass  
**Socket**—Phosphor bronze

**Contact Plating:**  
**A**—.000030 [0.00076] gold on mating end, tin on termination end, with entire contact nickel underplated  
**B**—Gold flash on mating end, tin on termination end, with entire contact nickel underplated

**Technical Documents:**

**Product Specification**—108-40025  
**Application Specification**—114-40013

Shell Size	No. of Contact Positions	Dimensions					Contact Finish (Plating Code)	Part Numbers With Grounding Indents
		A	B	C	D	E		
1	9	1.213 30.81	.984 24.99	.235 5.97	.915 23.24	.125 3.18	A	5745434-8
						.220 5.59	B	—
2	15	1.541 39.14	1.312 33.33	.235 5.97	.915 23.24	.125 3.18	A	5745435-8
						.220 5.59	A	—
3	25	2.088 53.04	1.852 47.04	.230 5.84	.919 23.34	.125 3.18	A	—
						.220 5.59	B	5745436-3
4	37	2.729 69.32	2.500 63.50	.230 5.84	.919 23.34	.125 3.18	A	5745437-8
						.220 5.59	B	5745437-3

- Notes:** 1. All connectors are preloaded with size 20 DF posted contacts; plugs with pin contacts and receptacles with socket contacts.  
 2. .125 [3.18] post length is recommended for pc board thickness of .093 [2.36] max.; .220 [5.59] post length is recommended for pc board thickness of .125 [3.18] max.

**Note:** All part numbers are RoHS compliant.

## HD-20 Front Metal-Shell Right-Angle Posted Connectors 478 Mount

Post Size—.026 [0.66] Dia. Plug



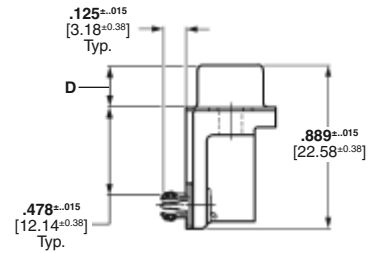
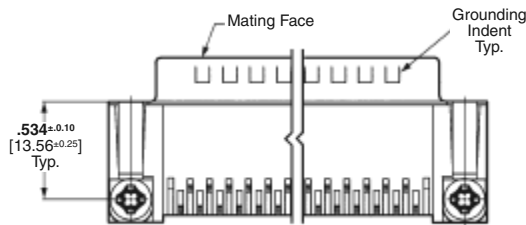
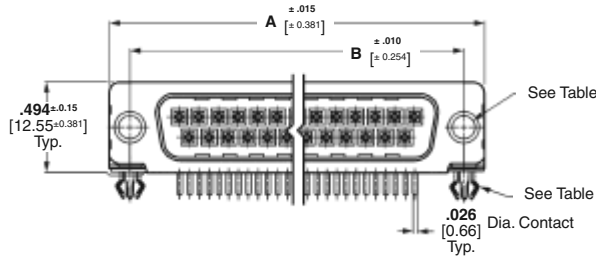
With Grounding Indents and Grounding Straps



With Threaded Insert



With Fixed Female Screwlock



**Material and Finish:**

- Front Shell**—Steel, tin plated
- Housing**—94V-0 rated thermoplastic, black
- Eyelets**—Brass, tin plated
- Threaded Inserts**—Zinc
- Female Screwlock**—Zinc
- Boardlocks**—Copper alloy, tin plated
- Pin Contacts (Posted)**—Brass, duplex plated as follows:
  - A**—.000030 [0.00076] gold on mating end, tin on termination end, with entire contact nickel underplated
  - B**—Gold flash on mating end, tin on termination end, with entire contact nickel underplated

**Technical Documents:**

- Product Specification**—108-40025
- Application Specification**—114-40010

See customer drawings for printed circuit board layouts.

Shell Size	No. of Contact Positions	Dimensions			Contact Finish (Plating Code)	Plug Part Number With Boardlocks	
		A	B	D		With Threaded Inserts	With Fixed Female Screwlocks
1	9	1.213 30.81	.984 24.99	.235 5.97	A	5747848-4	—
3	25	2.088 53.04	1.852 47.04	.230 5.84	A	—	5747850-6

- Notes:**
1. All plug connectors are preloaded with size 20 DF posted pin contacts.
  2. Recommended pc board thickness is .062 [1.58] for connectors with boardlocks and .093 [2.36] max. for all others.
  3. Male screw retainers are used as mating hardware for connectors with 4-40 female screwlocks.

**Note:** All part numbers are RoHS compliant.

.478 [12.14] Board Mount Footprint

**HD-20 Front Metal-Shell Right-Angle Posted Connectors 478 Mount (Continued)**

**Post Size— .026 [0.66] Dia. Receptacle**



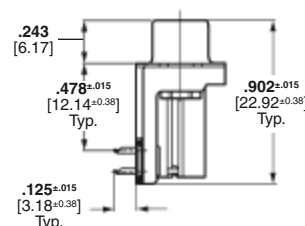
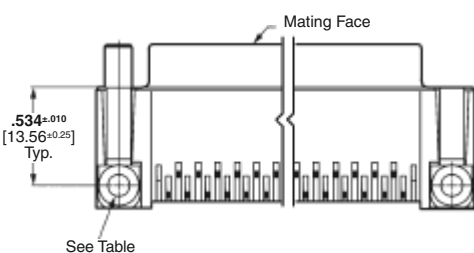
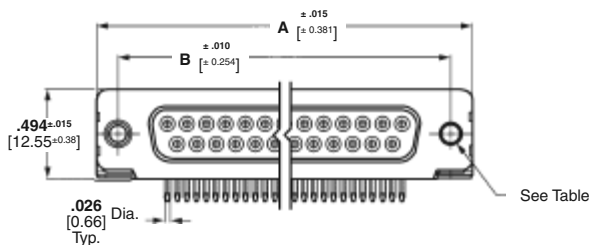
**With Grounding Straps**



**With Threaded Insert**



**With Fixed Female Screwlock**



**Material and Finish:**

- Front Shell**—Steel, tin plated
- Housing**—94V-0 rated thermoplastic, black
- Eyelets**—Brass, tin plated
- Threaded Inserts**—Zinc
- Female Screwlock**—Zinc
- Boardlocks**—Copper alloy, tin plated
- Socket Contacts (Posted)**—Phosphor bronze, duplex plated as follows:  
**A**—.000030 [0.00076] gold on mating end, tin on termination end, with entire contact nickel underplated  
**B**—Gold flash on mating end, tin on termination end, with entire contact nickel underplated

**Technical Documents:**

- Product Specification**—108-40025
- Application Specification**—114-40010

Shell Size	No. of Contact Positions	Dimensions		Contact Finish (Plating Code)	Receptacle Part Numbers	
		A	B		Without Boardlocks	With Boardlocks
1	9	1.213 30.81	.984 24.99	A	5747418-4 With Threaded Inserts	5747852-4 With Threaded Inserts

- Notes:**
- All receptacle connectors are preloaded with size 20 DF posted socket contacts.
  - Recommended pc board thickness is .062 [1.58] for connectors with boardlocks and .093 [2.36] max. for all others.
  - Male screw retainers are used as mating hardware for connectors with 4-40 female screwlocks.

**Note:** All part numbers are RoHS compliant.

## HD-20 Full Metal-Shell Right-Angle Posted Connectors 545 Mount

Post Size—.025 [0.64] Sq.

Plug



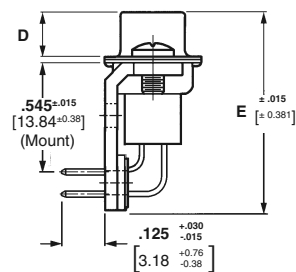
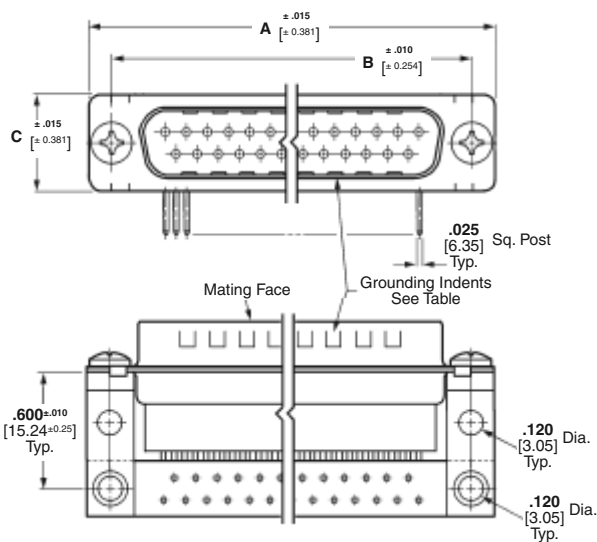
Without Grounding Indents



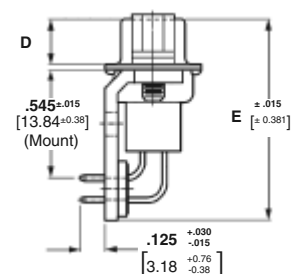
With Grounding Indents



With 4-40 Female Screwlocks



With Standard Mounting Screws



With 4-40 Female Screwlocks

**Material and Finish:**

- Shell**—Steel, tin plated
- Insert**—94V-0 rated thermoplastic, black
- Female Screwlock**—Steel, zinc plated
- Pin Contacts (Posted)**—Brass, duplex plated as follows:
  - A**—.000030 [0.00076] gold on mating end, tin on termination end, with entire contact nickel underplated
  - B**—Gold flash on mating end, tin on termination end, with entire contact nickel underplated

**Technical Documents:**

- Product Specification**—108-40025
- Application Specification**—114-40013

See customer drawings for printed circuit board layouts.

Shell Size	No. of Contact Pos.	Dimensions					Contact Finish (Plating Code)	Plug Part Numbers		
		A	B	C	D	E		Without Grounding Indents	With Grounding Indents	
		With Standard Mounting Screws*	With Standard Mounting Screws	With Female Screwlocks						
1	9	1.213 30.81	.984 24.99	.494 12.55	.235 5.99	1.025 26.04	A	5745351-2	5745351-4	5747197-4
2	15	1.541 39.14	1.312 33.33	.494 12.55	.235 5.99	1.025 26.04	A B	— 5745352-1	5745352-4	— —
3	25	2.088 53.04	1.852 47.04	.494 12.55	.230 5.84	1.029 26.14	A	—	—	5747022-2
4	37	2.729 69.32	2.500 63.50	.494 12.55	.230 5.84	1.029 26.14	A	—	5745354-4	—
5	50	2.635 66.93	2.406 61.11	.605 15.37	.230 5.84	1.149 29.19	A	—	5745355-4	5747497-4

\*These plugs can be made available with female screwlocks, consult TE.

- Notes:**
- All plugs are preloaded with size 20 DF posted pin contacts.
  - Recommended pc board thickness is .093 [2.36] max.
  - Male screw retainers are used as mating hardware for connectors with 4-40 female screwlocks.

**Note:** All part numbers are RoHS compliant.

.545 [13.84] Board Mount Footprint

**HD-20 Full Metal-Shell Right-Angle Posted Connectors 545 Mount** (Continued)

Post Size—.025 [0.64] Sq.

Receptacle



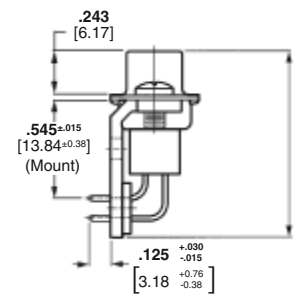
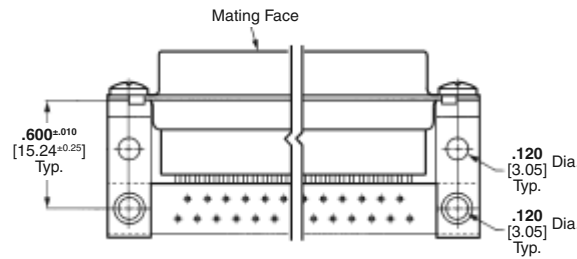
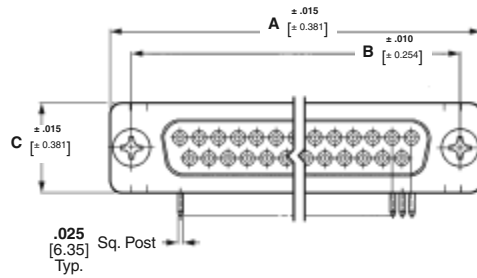
With 4-40 Female Screwlocks

**Material and Finish:**

- Shell**—Steel, tin plated
- Insert**—94V-0 rated thermoplastic, black
- Female Screwlock**—Steel, zinc plated
- Socket Contacts (Posted)**—Phosphor bronze, duplex plated as follows:
  - A**—.000030 [0.00076] gold on mating end, tin on termination end, with entire contact nickel underplated
  - B**—Gold flash on mating end, tin on termination end, with entire contact nickel underplated

**Technical Documents:**

- Product Specification**—108-40025
- Application Specification**—114-40013



Shell Size	No. of Contact Positions	Dimensions				Contact Finish (Plating Code)	Receptacle Part Numbers	
		A	B	C	E		With Standard Mounting Screws	With Female Screwlocks
1	9	1.213	.984	.494	1.033	A	5745112-2	5747020-2
		30.81	24.99	12.55	26.24	B	—	5747020-1
2	15	1.541	1.312	.494	1.033	A	5745113-2	5747021-2
		39.14	33.33	12.55	26.24			
3	25	2.088	1.852	.494	1.033	A	5745114-2	5745536-2
		53.04	47.04	12.55	26.24			
4	37	2.729	2.500	.494	1.033	A	5745115-2	—
		69.32	63.50	12.55	26.24			
5	50	2.635	2.406	.605	1.153	A	5745116-2	5747193-2
		66.93	61.11	15.37	29.29	B	5745116-1	5747193-1

- Notes:**
1. All receptacles are preloaded with size 20 DF posted socket contacts.
  2. Recommended pc board thickness is .093 [2.36] max.
  3. Male screw retainers are used as mating hardware for connectors with 4-40 female screwlocks.

**Note:** All part numbers are RoHS compliant.



## HD-20 Front Metal-Shell Right-Angle Posted Connectors 590 Mount

Post Size—.026 [0.66] Dia. Plug



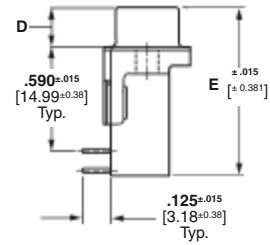
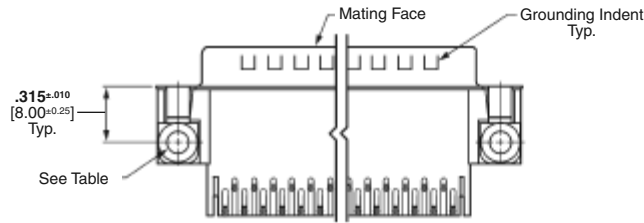
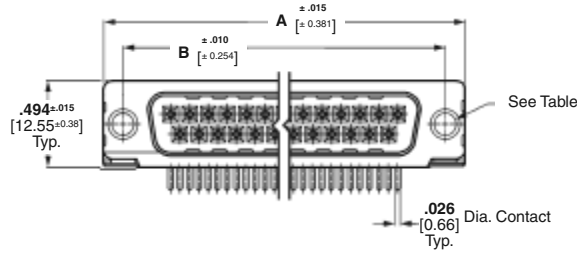
With Grounding Indents and Grounding Straps



With Threaded Insert



With Fixed Female Screwlock



**Material and Finish:**

- Front Shell**—Steel, tin plated
- Housing**—94V-0 rated thermoplastic, black
- Eyelets**—Brass, tin plated
- Threaded Inserts**—Zinc
- Female Screwlock**—Zinc
- Boardlocks**—Copper alloy, tin plated
- Pin Contacts (Posted)**—Brass, duplex plated as follows:  
**A**—.000030 [0.00076] gold on mating end, tin on termination end, with entire contact nickel underplated  
**B**—Gold flash on mating end, tin on termination end, with entire contact nickel underplated

**Technical Documents:**

- Product Specification**—108-40025
- Application Specification**—114-40010

.590 [14.99] Board Mount Footprint

Shell Size	No. of Contact Positions	Dimensions				Contact Finish (Plating Code)	Plug Part Numbers		
		A	B	D	E		Without Boardlocks		With Boardlocks
							With Threaded Inserts	With Threaded Inserts	With Fixed Female Screwlocks
1	9	1.213 30.81	.984 24.99	.235 5.97	.965 24.51	A	5745990-4	5747832-4	5747832-6
						B	5745990-3	5747832-3	—
2	15	1.541 39.14	1.312 33.33	.235 5.97	.965 24.51	A	—	5747833-4	5747833-6
						B	—	—	—
3	25	2.088 53.04	1.852 47.04	.230 5.84	.970 24.64	A	5745994-4	5747834-4	5747834-6
						B	—	—	—
4	37	2.729 69.32	2.500 63.50	.230 5.84	.972 24.69	A	—	5747835-4	5747835-6
						B	—	—	—

- Notes:**
1. All plug connectors are preloaded with size 20 DF posted pin contacts.
  2. Recommended pc board thickness is .062 [1.58] for connectors with boardlocks and .093 [2.36] max. for all others.
  3. Male screw retainers are used as mating hardware for connectors with 4-40 female screwlocks.

**Note:** All part numbers are RoHS compliant.

**HD-20 Front Metal-Shell Right-Angle Posted Connectors 590 Mount (Continued)**

**Post Size— .026 [0.66] Dia. Receptacle**



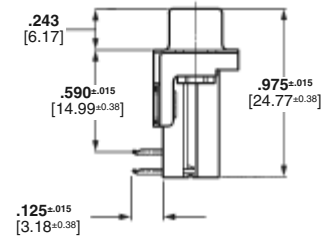
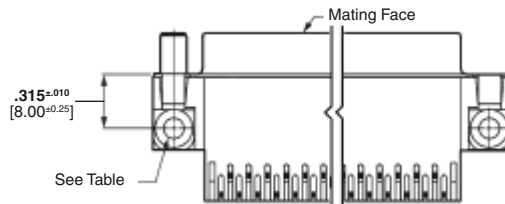
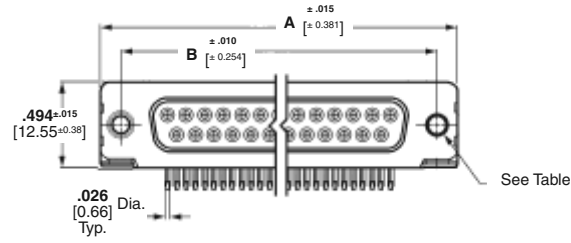
**With Grounding Straps**



**With Threaded Insert**



**With Fixed Female Screwlock**



**Material and Finish:**

- Front Shell**—Steel, tin plated
- Housing**—94V-0 rated thermoplastic, black
- Eyelets**—Brass, tin plated
- Threaded Inserts**—Zinc
- Female Screwlock**—Zinc
- Boardlocks**—Copper alloy, tin plated
- Socket Contacts (Posted)**—Phosphor bronze, duplex plated as follows:
  - A**—.000030 [0.00076] gold on mating end, tin on termination end, with entire contact nickel underplated
  - B**—Gold flash on mating end, tin on termination end, with entire contact nickel underplated

**Technical Documents:**

- Product Specification**—108-40025
- Application Specification**—114-40010

Shell Size	No. of Contact Positions	Dimensions		Contact Finish (Plating Code)	Receptacle Part Numbers			
		A	B		Without Boardlocks		With Boardlocks	
					With Threaded Inserts	With Fixed Female Screwlocks	With Threaded Inserts	With Fixed Female Screwlocks
1	9	1.213 30.81	.984 24.99	A	5745988-4	5745988-6	5747836-4	5747836-6
2	15	1.541 39.14	1.312 33.33	A	5745984-4	—	5747837-4	—
3	25	2.088 53.04	1.852 47.04	A	—	5745992-6	5747838-4	5747838-6
				B	5745992-3	—	5747838-3	—
4	37	2.729 69.32	2.500 63.50	A	5745996-4	—	5747839-4	—

- Notes:**
1. All receptacle connectors are preloaded with size 20 DF posted socket contacts.
  2. Recommended pc board thickness is .062 [1.58] for connectors with boardlocks and .093 [2.36] max. for all others.
  3. Male screw retainers are used as mating hardware for connectors with 4-40 female screwlocks.

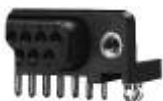
**Note:** All part numbers are RoHS compliant.

## HD-20 All-Plastic Right-Angle Posted Connectors 318 Mount

### Receptacle—With Boardlocks



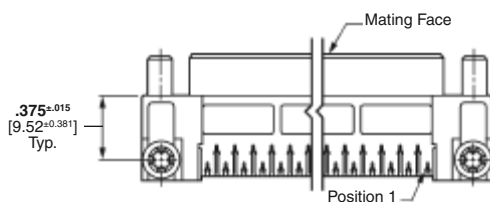
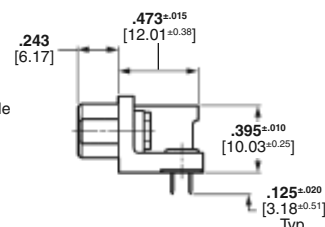
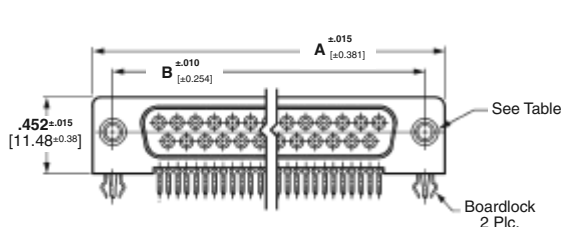
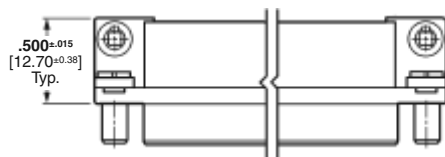
With Threaded Insert



With Threaded Insert



With Fixed Female Screwlock



**Material and Finish:**

**Housing**—94V-0 rated thermoplastic, black

**Eyelets**—Brass, tin plated

**Threaded Inserts**—Zinc

**Female Screwlock**—Zinc

**Boardlock**—Copper alloy, tin plated

**Socket Contacts (Posted)**—Phosphor bronze, duplex plated as follows:

**A**—.000030 [0.00076] gold on mating end, tin on termination end, with entire contact nickel underplated

**Technical Documents:**

**Product Specification**—108-1226

**Application Specification**—114-40027

See customer drawings for printed circuit board layouts.

Shell Size	No. of Contact Positions	Dimensions		Contact Finish (Plating Code)	Part Numbers	
		A	B		With Threaded Inserts	With Fixed Female Screwlocks
1	9	1.222 31.04	.984 24.99	A	—	5748979-1
3	25	2.090 53.09	1.852 47.04	A	5748901-1	5748981-1

Consult TE for availability.

- Notes: 1. All receptacle connectors are preloaded with size 20 DF posted socket contacts.
- 2. Recommended pc board thickness is .062 [1.58].
- 3. Male screw retainers are used as mating hardware for connectors with 4-40 female screwlocks.

Note: All part numbers are RoHS compliant.

**HD-20 All-Plastic Right-Angle Posted Connectors 318 Mount** (Continued)

**Plug**



With Threaded Insert

**Material and Finish:**

**Housing**—94V-0 rated thermoplastic, black

**Eyelets**—Brass, tin plated

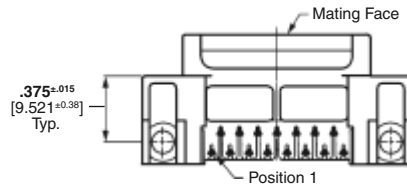
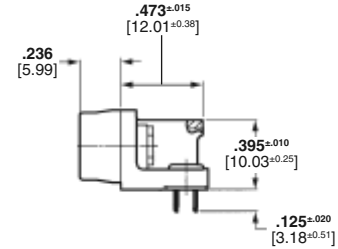
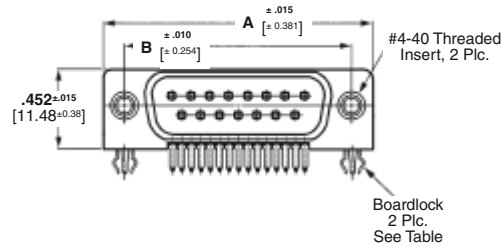
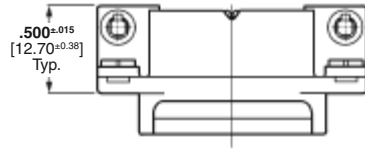
**Threaded Inserts**—Zinc

**Boardlock**—Copper alloy, tin plated

**Pin Contacts (Posted)**—Copper alloy, duplex plated as follows:

**A**—.000030 [0.00076] gold on mating end, tin on termination end, with entire contact nickel underplated

**B**—.000010 [0.00025] min. gold on mating end, tin on termination end, with entire contact nickel underplated



**Technical Documents:**

**Product Specification**—108-1226

**Application Specification**—114-40027

See customer drawings for printed circuit board layouts.

Shell Size	No. of Contact Positions	Dimensions		Contact Finish (Plating Code)	Part Numbers	
		A	B		With Threaded Inserts	Without Boardlocks
2	15	1.550 39.37	1.312 33.32	A	5748904-1	—
3	25	2.090 53.09	1.852 47.04	B	—	5748865-3

Consult TE for availability.

**Notes:** 1. All plug connectors are preloaded with size 20 DF posted pin contacts.

2. Recommended pc board thickness is .062 [1.58].

3. Male screw retainers are used as mating hardware for connectors with 4-40 female screwlocks.

**Note:** All part numbers are RoHS compliant.

**HD-20 All-Plastic Right-Angle Posted Connectors 318 Mount** (Continued)

**Post Size—**.026 [0.66] Dia. **Receptacle—Without Boardlocks**



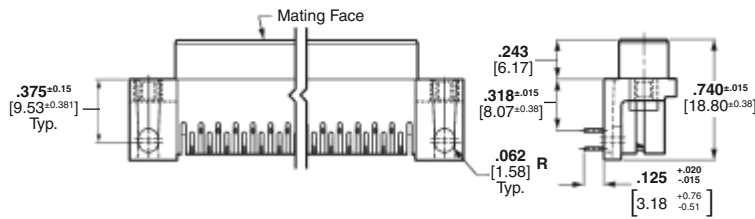
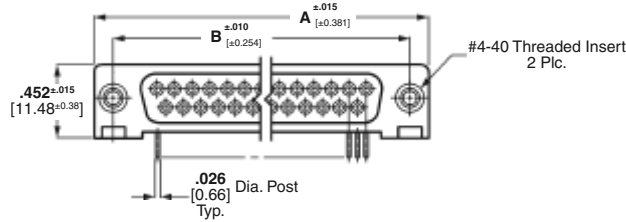
With Standard Mounting Holes



With Threaded Insert



With Fixed Female Screwlock



**Material and Finish:**

**Housing**—94V-0 rated thermoplastic, black

**Threaded Inserts**—Zinc, chromate coated

**Female Screwlocks**—Zinc, chromate coated

**Socket Contacts (Posted)**—Phosphor bronze, duplex plated as follows:

**A**—.000030 [0.00076] gold on mating end, tin on termination end, with entire contact nickel underplated

**B**—Gold flash on mating end, tin on termination end, with entire contact nickel underplated

**Technical Documents:**

**Product Specification**—108-40025

**Application Specification**—114-40015

**See customer drawings for printed circuit board layouts.**

Shell Size	No. of Contact Positions	Dimensions		Contact Finish (Plating Code)	Part Numbers		
		A	B		With Threaded Inserts	With Fixed Female Screwlocks	With .125 [3.18] Mounting Holes
1	9	1.213 30.81	.984 24.99	A	5745394-2	5745395-2	—
				B	—	—	5745131-1
2	15	1.541 39.14	1.312 33.32	A	—	5745396-2	5745396-2
				B	—	—	—
3	25	2.088 53.04	1.852 47.04	A	5745392-2	5745397-2	5745132-2
				B	—	—	—

- Notes:**
1. All receptacle connectors are preloaded with size 20 DF posted socket contacts.
  2. Recommended pc board thickness is .093 [2.36].
  3. Male screw retainers are used as mating hardware for connectors with 4-40 female screwlocks.

**Note:** All part numbers are RoHS compliant.

.318 [8.08] Board Mount Footprint

## HD-20 All-Plastic Right-Angle Posted Connectors 590 Mount

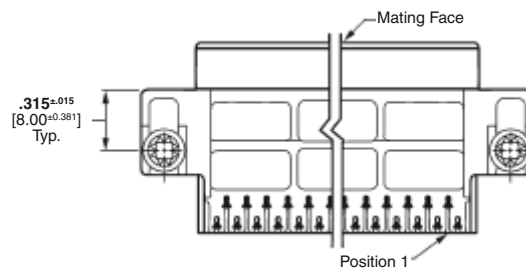
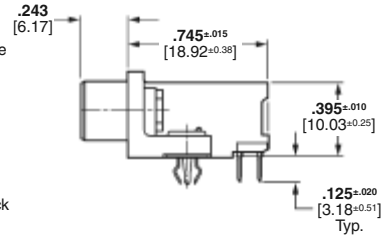
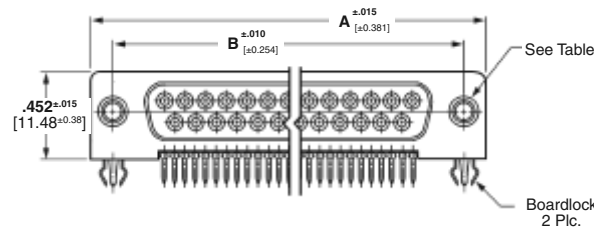
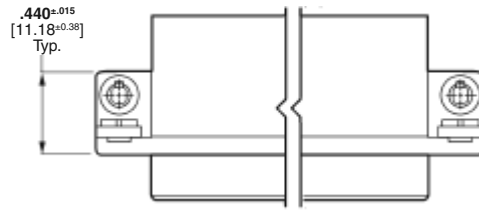
### Receptacle—With Boardlocks



With Threaded Insert



With Fixed Female Screwlock



#### Material and Finish:

**Housing**—94V-0 rated thermoplastic, black

**Eyelets**—Brass, tin plated

**Threaded Inserts**—Zinc

**Female Screwlock**—Zinc

**Boardlock**—Copper alloy, tin plated

**Socket Contacts (Posted)**—Phosphor bronze, duplex plated as follows:

**A**—.000030 [0.00076] gold on mating end, tin on termination end, with entire contact nickel underplated

**B**—Gold flash on mating end, tin on termination end, with entire contact nickel underplated

#### Technical Documents:

**Product Specification**—108-1226

**Application Specification**—114-40027

See customer drawings for printed circuit board layouts.

Shell Size	No. of Contact Positions	Dimensions		Contact Finish (Plating Code)	Part Numbers	
		A	B		With Threaded Inserts	With Fixed Female Screwlocks
1	9	1.213 30.81	.984 24.99	B	5748907-2	—
3	25	2.088 53.04	1.852 47.04	A	5748909-1	5748989-1

- Notes:**
- All receptacle connectors are preloaded with size 20 DF posted socket contacts.
  - Recommended pc board thickness is .062 [1.58].
  - Male screw retainers are used as mating hardware for connectors with 4-40 female screwlocks.

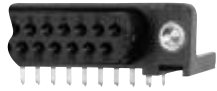
**Note:** All part numbers are RoHS compliant.

**HD-20 All-Plastic Right-Angle Posted Connectors 590 Mount** (Continued)

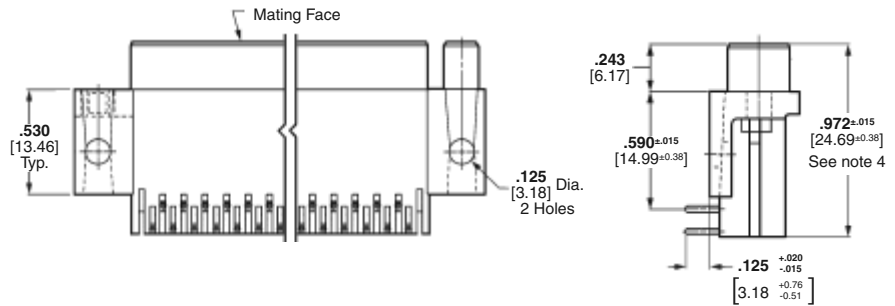
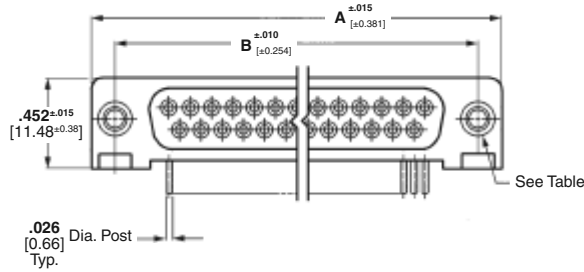
**Post Size—**.026 [0.66] Dia. **Receptacle—Without Boardlocks**



**With Threaded Insert**



**With Female Screwlock**



**Material and Finish:**

**Housing**—94V-0 rated thermoplastic, black

**Threaded Inserts**—Zinc, chromate coated

**Female Screwlocks**—Zinc, chromate coated

**Socket Contacts (Posted)**—Phosphor bronze, duplex plated as follows:

**A**—.000030 [0.00076] gold on mating end, tin on termination end, with entire contact nickel underplated

**B**—Gold flash on mating end, tin on termination end, with entire contact nickel underplated

**Technical Documents:**

**Product Specification**—108-40025

**Application Specification**—114-40015

**See customer drawings for printed circuit board layouts.**

Shell Size	No. of Contact Positions	Dimensions		Contact Finish (Plating Code)	Part Numbers		
		A	B		With Threaded Inserts	With Fixed Female Screwlocks	With .125 [3.18] Mounting Holes
1	9	<b>1.213</b>	<b>.984</b>	A	5747459-4	5747459-6	5747459-2
		30.81	24.99	B	5747459-3	5747459-5	5747459-1
2	15	<b>1.541</b>	<b>1.312</b>	A	5747460-4	5748948-1	5747460-2
		39.14	33.32	B	5747460-3	5747460-5	5747460-1
3	25	<b>2.088</b>	<b>1.852</b>	A	5747461-4	5747461-6	5747461-2
		53.04	47.04	B	5747461-3	5747461-5	5747461-1
4	37	<b>2.729</b>	<b>2.500</b>	A	5747462-4	5747462-6	5747462-2
		69.32	63.50	B	—	—	—
5	50	<b>2.635</b>	<b>2.406</b>	A	—	—	5206973-1
		66.93	61.11	B	—	—	5206973-2

- Notes:**
- All receptacle connectors are preloaded with size 20 DF posted socket contacts.
  - Recommended pc board thickness is .093 [2.36] max.
  - Male screw retainers are used as mating hardware for connectors with 4-40 female screwlocks.
  - Dimension is 1.120 [28.45] for size 5 d-sub.

**Note:** All part numbers are RoHS compliant.

**HD-20 All-Plastic Right-Angle Posted Connectors 590 Mount** (Continued)

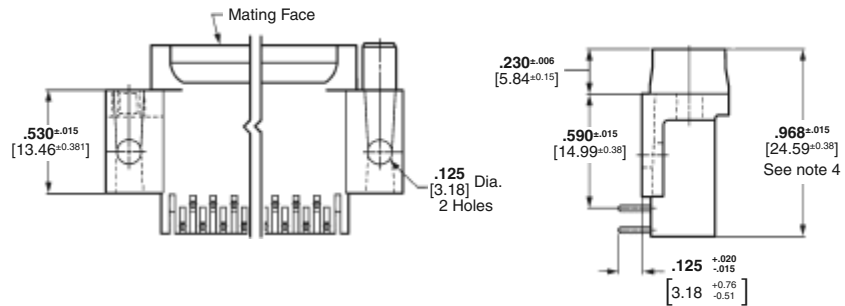
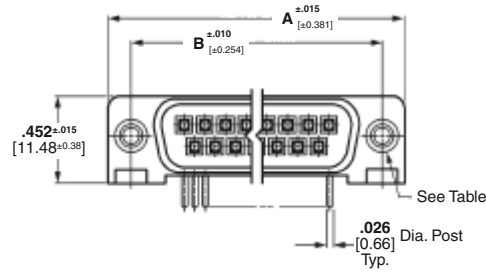
**Post Size—**.026 [0.66] Dia. **Plug—Without Boardlocks**



With Threaded Insert



With Female Screwlocks



**Material and Finish:**

**Housing**—94V-0 rated thermoplastic, black

**Threaded Inserts**—Zinc, chromate coated

**Female Screwlocks**—Zinc, chromate coated

**Pin Contacts (Posted)**—Brass, duplex plated as follows:  
**A**—0.00030 [0.00076] gold on mating end, tin on termination end, with entire contact nickel underplated  
**B**—Gold flash on mating end, tin on termination end, with entire contact nickel underplated

**Technical Documents:**

**Product Specification**—108-40025

**Application Specification**—114-40015

**See customer drawings for printed circuit board layouts.**

Shell Size	No. of Contact Positions	Dimensions		Contact Finish (Plating Code)	Part Numbers		
		A	B		With Threaded Inserts	With Fixed Female Screwlocks	With .125 [3.18] Mounting Holes
1	9	1.213	.984	A	5747467-4	—	5747467-2
		30.81	24.99	B	—	—	5747467-1
2	15	1.541	1.312	A	5748872-1	5748952-1	5747468-2
		39.14	33.32	B	—	—	5748826-1
3	25	2.090	1.852	A	5748873-1	5748953-1	5748826-1
		53.09	47.04	B	—	—	5748826-2
4	37	2.729	2.500	A	—	—	5747470-2
		69.32	63.50	B	—	—	5206971-1
5	50	2.635	2.406	A	—	—	5206971-1
		66.93	61.11	B	—	—	5206971-2

- Notes:**
1. All plug connectors are preloaded with size 20 DF posted pin contacts.
  2. Recommended pc board thickness is .093 [2.36] max.
  3. Male screw retainers are used as mating hardware for connectors with 4-40 female screwlocks.
  4. Dimension is 1.115 [28.32] for size 5 d-sub, GPL244.

**Note:** All part numbers are RoHS compliant.



## Right-Angle Mounting Connectors — European Standard Footprint



### Material and Finish:

**Front Shell**—Steel, tin plated

**Housing**—Black glass-filled polyester

**Flammability**—UL 94V-0

**Contact Material**—

**Pin**—Phosphor bronze

**Socket**—Phosphor bronze

**Contact Area Plating**—0.76µm Gold

**Current Rating**—6A max.

**Insulation Resistance**—  
5000 MΩ min.

**Dielectric Strength**—1000V AC min.

**Temperature Rating**—  
–55°C to +105°C

### Plug with Boardlocks — Solder Termination

No of Ways	3mm Hole	4-40 Inserts	4-40 Screwlocks	M3 Inserts	M3 Screwlocks
9	338168-2	1-338168-2	3-338168-2	2-338168-2	4-338168-2
15	338169-2	1-338169-2	3-338169-2	2-338169-2	4-338169-2
25	338170-2	1-338170-2	3-338170-2	2-338170-2	4-338170-2
37	338171-2	1-338171-2	3-338171-2	2-338171-2	4-338171-2

### Socket with Boardlocks — Solder Termination

No of Ways	3mm Hole	4-40 Inserts	4-40 Screwlocks	M3 Inserts	M3 Screwlocks
9	106505-2	1-106505-2	3-106505-2	2-106505-2	4-106505-2
15	106506-2	1-106506-2	3-106506-2	2-106506-2	4-106506-2
25	106507-2	1-106507-2	3-106507-2	2-106507-2	4-106507-2
37	106508-2	1-106508-2	3-106508-2	2-106508-2	4-106508-2

### Plug without Boardlocks — Solder Termination

No of Ways	3mm Hole	4-40 Inserts	4-40 Screwlocks	M3 Inserts	M3 Screwlocks
9	5-338168-2	6-338168-2	8-338168-2	7-338168-2	9-338168-2
15	5-338169-2	6-338169-2	8-338169-2	7-338169-2	9-338169-2
25	5-338170-2	6-338170-2	8-338170-2	7-338170-2	9-338170-2
37	5-338171-2	6-338171-2	8-338171-2	7-338171-2	9-338171-2

### Socket without Boardlocks — Solder Termination

No of Ways	3mm Hole	4-40 Inserts	4-40 Screwlocks	M3 Inserts	M3 Screwlocks
9	5-106505-2	6-106505-2	8-106505-2	7-106505-2	9-106505-2
15	5-106506-2	6-106506-2	8-106506-2	7-106506-2	9-106506-2
25	5-106507-2	6-106507-2	8-106507-2	7-106507-2	9-106507-2
37	5-106508-2	6-106508-2	8-106508-2	7-106508-2	9-106508-2

**Note:** All part numbers are RoHS compliant.

## Right-Angle Mounting Connectors — Eurostyle Footprint



### Material and Finish:

**Front Shell**—Steel, tin plated

**Housing**—Grey thermoplastic PBTP

**Flammability**—UL 94V-0

**Contact Material**—

**Pin**—Copper alloy

**Socket**—Copper alloy

**Contact Area Plating**—Nickel/Gold  
(>250 mating cycles)

**Current Rating**—2.2A

**Insulation Resistance**—  
5000 M $\Omega$  min.

**Dielectric Strength**—1000V AC

**Temperature Rating**—  
-55°C to +125°C

### Plug with Boardlocks — Solder Termination

No of Ways	3mm Hole	4-40 Inserts	4-40 Screwlocks	M3 Inserts	M3 Screwlocks
9	5-1393480-9	8-1393480-5	1393481-5	7-1393480-4	9-1393480-4
15	6-1393480-0	8-1393480-6	3-1392010-3	7-1393480-5	9-1393480-5
25	On Enquiry	8-1393480-7	1393481-6	7-1393480-6	9-1393480-6
37	On Enquiry	8-1393480-8	3-1392010-4	7-1393480-7	On Enquiry

### Socket with Boardlocks — Solder Termination

No of Ways	3mm Hole	4-40 Inserts	4-40 Screwlocks	M3 Inserts	M3 Screwlocks
9	5-1393480-5	8-1393480-1	9-1393480-9	6-1393480-7	9-1393480-0
15	5-1393480-6	8-1393480-2	1393481-1	6-1393480-8	9-1393480-1
25	5-1393480-7	8-1393480-3	1393481-2	6-1393480-9	9-1393480-2
37	On Enquiry	8-1393480-4	3-1392010-7	7-1393480-0	On Enquiry

### Plug without Boardlocks — Solder Termination

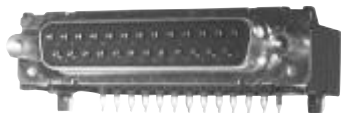
No of Ways	3mm Hole	4-40 Inserts	4-40 Screwlocks	M3 Inserts	M3 Screwlocks
9	2-1393480-1	4-1393480-0	5-1393480-2	3-1393480-2	On Enquiry
15	2-1393480-2	4-1393480-1	5-1393480-3	3-1393480-3	On Enquiry
25	2-1393480-3	4-1393480-2	5-1393480-4	2-1392010-8	On Enquiry
37	2-1393480-4	4-1393480-3	3-1392010-5	3-1392010-6	On Enquiry

### Socket without Boardlocks — Solder Termination

No of Ways	3mm Hole	4-40 Inserts	4-40 Screwlocks	M3 Inserts	M3 Screwlocks
9	1-1393480-7	3-1393480-6	4-1393480-7	2-1393480-8	On Enquiry
15	1-1393480-8	3-1393480-7	4-1393480-8	2-1393480-9	On Enquiry
25	1-1393480-9	3-1393480-8	4-1393480-9	3-1393480-0	On Enquiry
37	2-1393480-0	3-1393480-9	5-1393480-0	3-1392010-8	On Enquiry

**Note:** All part numbers are RoHS compliant.

## Standard Density Press Fit Termination, Right-Angle Mounting — European Standard Footprint



### Material and Finish:

**Front Shell**—Steel, tin plated

**Housing**—Black thermoplastic  
PBTP/PPS

**Flammability**—UL 94V-0

**Contact Material**—

**Pin**—Copper alloy

**Socket**—Copper alloy

**Contact Area Plating**—Nickel/Gold  
(>250 mating cycles)

**Current Rating**—2.2A

**Insulation Resistance**—  
5000 M $\Omega$  min.

**Dielectric Strength**—1000V AC

**Temperature Rating**—  
-55°C to +125°C

### Plug with Boardlocks — Press Fit Termination

No of Ways	3mm Hole	4-40 Inserts	4-40 Screwlocks	M3 Inserts	M3 Screwlocks
9	—	3-1393481-2	3-1393481-8	2-1393481-5	On Enquiry
15	—	3-1393481-3	3-1393481-9	2-1393481-6	On Enquiry
25	—	3-1393481-4	2-1393497-7	2-1393481-7	On Enquiry
37	—	2-1392010-7	4-1393481-0	2-1393481-8	On Enquiry

### Socket with Boardlocks — Press Fit Termination

No of Ways	3mm Hole	4-40 Inserts	4-40 Screwlocks	M3 Inserts	M3 Screwlocks
9	—	2-1393481-9	3-1393481-6	2-1393481-1	On Enquiry
15	—	3-1393481-0	2-1393497-4	2-1393481-2	On Enquiry
25	—	3-1393481-1	2-1393497-5	2-1393481-3	On Enquiry
37	—	2-1392010-6	2-1393497-6	2-1393481-4	On Enquiry

## Standard Density Press Fit Termination, Right-Angle Mounting — Eurostyle Footprint



### Material and Finish:

**Front Shell**—Steel, tin plated

**Housing**—Black thermoplastic  
PBTP/PPS

**Flammability**—UL 94V-0

**Contact Material**—

**Pin**—Copper alloy

**Socket**—Copper alloy

**Contact Area Plating**—Nickel/Gold  
(>250 mating cycles)

**Current Rating**—2.2A

**Insulation Resistance**—  
5000 M $\Omega$  min.

**Dielectric Strength**—1000V AC

**Temperature Rating**—  
-55°C to +125°C

### Plug with Boardlocks — Press Fit Termination

No of Ways	3mm Hole	4-40 Inserts	4-40 Screwlocks	M3 Inserts	M3 Screwlocks
9	—	On Enquiry	3-1393482-0	1-1393482-4	2-1393482-1
15	—	On Enquiry	3-1393482-2	3-1393497-0	4-1483489-2
25	—	On Enquiry	3-1393482-4	1-1393482-5	On Enquiry
37	—	On Enquiry	3-1393482-5	3-1393497-1	On Enquiry

### Socket with Boardlocks — Press Fit Termination

No of Ways	3mm Hole	4-40 Inserts	4-40 Screwlocks	M3 Inserts	M3 Screwlocks
9	—	1-1393482-6	2-1393482-2	1-1393482-2	2-1393482-0
15	—	1-1393482-8	2-1393482-4	1-1393482-3	On Enquiry
25	—	3-1392010-9	2-1393482-6	9-1393487-2	On Enquiry
37	—	4-1392010-0	2-1393482-8	2-1393497-9	On Enquiry

**Note:** All part numbers are RoHS compliant.

## Subminiature D Connectors for Cable Mounting

This guide illustrates the preferred range of Subminiature D Connectors for cable mounting.

Please refer to our general catalogs or our website [www.te.com](http://www.te.com) for details of additional ranges, connec-

tor styles, plating options and performance levels.

### Standard Density Crimp Termination

#### Connector Housings

##### Material and Finish:

**Front Shell**—Steel, tin plated

**Housing**—Black glass-filled thermo-plastic

**Flammability**—UL 94V-0

**Current Rating**—3.7A max.

**Insulation Resistance**—5000 M $\Omega$  min.

**Dielectric Strength**—1000V AC min.

**Temperature Rating**— $-55^{\circ}\text{C}$  to  $+105^{\circ}\text{C}$



#### Plug Connector Housing

No of Ways	Part Number
9	167292-1
15	167293-1
25	167294-1
37	167295-1
50	167296-1

#### Socket Connector Housing

No of Ways	Part Number
9	164531-4
15	164532-4
25	164533-4
37	164534-4
50	164535-4

### Crimp Contacts



##### Material and Finish:

**Contact Material**—

**Pin**—Brass

**Socket**—Phosphor bronze

**Contact Area Plating**— $0.76\mu\text{m}$  Gold

Additional contacts on page 105

#### Male Contact for Plug Connector Housing

Wire Size	Reel of 12500 Contacts (1)	Reel of 500 Contacts (2)	Bag of 100 Loose Contacts (3)
20-24 AWG	166053-1	5-166053-1	166293-1
24-28 AWG	166054-1	5-166054-1	166294-1

#### Female Contact for Socket Connector Housing

Wire Size	Reel of 12500 Contacts (1)	Reel of 500 Contacts (2)	Bag of 100 Loose Contacts (3)
20-24 AWG	166051-1	5-166051-1	166291-1
24-28 AWG	166052-1	5-166052-1	166292-1

### Application Tooling

#### (1) Reel of 12500 Contacts

Use applicator Part Number 1238049 with suitable press.

#### (2) Reel of 500 Contacts

Use Mini Reel-Fed CERTI-LOK (Hand tools for applying and/or extracting electrical connectors) Part Number 169424-1

#### (3) Loose Piece Contacts

**Premium:** Use CERTI-CRIMP II (Hand compression electrical connector crimping tools) — Part Number 91503-1

**Commercial:** Use SDE die — Part Number 58448-2 with suitable ancillary equipment

#### Insertion / Extraction Tool

Use Part Number 1579007-9

### Standard Density Solder Cup Termination

#### Industrial

##### Material and Finish:

**Front Shell**—Steel, tin plated

**Housing**—Grey thermoplastic PBTP

**Flammability**—UL 94V-0

**Contact Material**—Copper alloy

**Contact Area Plating**—Nickel/Pd/Gold (>250 mating cycles)

**Current Rating**—3A

**Insulation Resistance**—5000 M $\Omega$  min.

**Dielectric Strength**—1000V AC min.

**Temperature Rating**— $-55^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$



#### Plug Connector

No of Ways	Part Number
9	3-1393483-8
15	3-1393483-9
25	4-1393483-0
37	4-1393483-1

#### Socket Connector

No of Ways	Part Number
9	4-1393483-7
15	4-1393483-8
25	4-1393483-9
37	5-1393483-0

**Note:** All part numbers are RoHS compliant.

## HD-20 Straight Posted Connectors



Straight Posted Connectors



### Product Selection Guide

Connector Density	Type	Post Style	Style and Shell Finish	No. of Contact Positions	Mating Hardware	Contact Plating (Mating Area/Solder Tails)	Post Length	Profile
HD-20	Plugs and Receptacles	Straight	Full Metal-Shell With and Without Grounding Indents, Tin Plated (pgs. 78 and 79)	9	.120 [3.05] Dia. Holes	Duplex (.000030 [0.00076] Gold/Tin)	.125 [3.18]	High
				15	Clinch Nuts	Duplex (.000030 [0.00076] Gold/Tin)	.188 [4.78]	
				25				
				37				
				50				
				9	.120 [.318] Dia. Holes	Duplex (.000030 [0.00076] Gold/Tin)	.125 [3.18]	
	15	Threaded Inserts Retention Inserts	Duplex (Gold Flash/Tin)	.170 [4.32]				
	25							
	37							
	All-Plastic (pgs. 82-85)				9	.120 [3.05] Dia. Holes	Duplex (.000030 [0.00076] Gold/Tin)	.125 [3.18]
					15	Threaded Inserts	Duplex (Gold Flash/Tin)	.170 [4.32]
					25			
37								
50								
All-Plastic (pg. 89)					Receptacles			9
	15	Threaded Inserts	Duplex (Gold/Tin)	.228 [5.79]				
	25							
	37							
	50							
	All-Plastic (pg. 89)	Receptacles						9
15					Threaded Inserts	Duplex (.000010 [0.000254] Gold Flash/Tin)		
25								
37								
50								
HD-22					Plugs and Receptacles	Straight	Front Metal-Shell With Grounding Indents, Nickel Plated (pg. 86)	15
	26	Threaded Inserts	Duplex (.000015 [0.00038] Gold/Tin)					
	44							
	62							
	78							
		Female Screwlocks	Duplex (Gold Flash/Tin)					

**HD-20 Straight Posted Connectors** (Continued)

**Product Facts**

- Flame retardant thermo-plastic housing material, UL 94V-0 rated
- HD-20 straight posted connectors are available in 9, 15, 25, 37 and 50 positions (Shell Sizes 1 thru 5)
- HD-20 straight posted connectors in Full Metal-Shell, Front Metal-Shell and All-Plastic versions
- HD-20 connectors with ACTION PIN contacts are available in low, medium and high profiles with integral standoffs
- ACTION PIN contact connectors for both .093 [2.36] and .062 [1.58] min. thick pc board application

- Various straight posted connectors offer a choice of through-holes, 4-40 threaded inserts or 4-40 fixed female screwlocks
- Choice of contact platings
- Integral boardlock feature secures connector to pc board prior to soldering
- Connectors are intermateable with any size 20 or 22 subminiature D connectors dimensionally complying with MIL-C-24308
- Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476 
- CSA Certified, File No. LR 16455 HD-20 Products 

**Section Contents**

Straight Posted Connectors

- HD-20 Full Metal-Shell  
Straight Posted Connectors .....78, 79
- HD-20 Front Metal-Shell  
Straight Posted Connectors .....80, 81
- HD-20 All-Plastic Straight Posted Connectors .....82-85
- HD-22 Subminiature D Connectors .....86
- HD-20 Front Metal-Shell Straight Posted  
Connectors with ACTION PIN Contacts.....87, 88
- HD-20 All-Plastic Straight Posted Connectors  
with ACTION PIN Contacts .....89

## HD-20 Full Metal-Shell Straight Posted Connectors

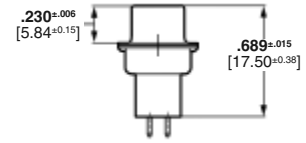
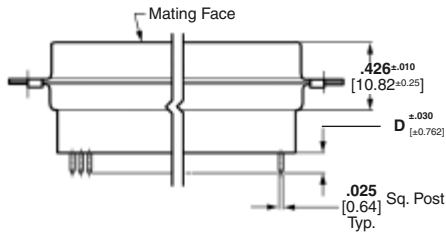
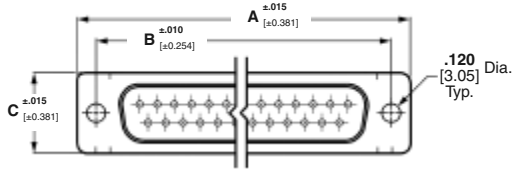
### Plug



Without Grounding Indents



With Grounding Indents



See customer drawings for pcb layouts.

### Material and Finish:

**Shell**—Steel, tin plated  
**Insert**—94V-0 rated thermoplastic, black

**Pin Contacts (Posted)**—Brass, plated as follows:  
**A**—.000030 [0.00076] gold on mating end, tin on termination end, with entire contact .000050 [0.00127] (min.) nickel underplated  
**B**—Gold flash on mating end, tin on termination end, with entire contact .000050 [0.00127] (min.) nickel underplated

### Technical Documents:

**Product Specification**—108-40025

Shell Size	No. of Contact Positions	Dimensions				Contact Finish (Plating Code)	Plug Part Numbers		
		A	B	C	D*		Without Grounding Indents	With Grounding Indents	With Clinch Nuts
1	9	1.213 30.81	.984 24.99	.494 12.55	.125 3.18	A	—	5745410-1	5749014-1
					.188 4.78	B	5745182-2	—	
2	15	1.541 39.14	1.312 33.33	.494 12.55	.125 3.18	A	—	5745411-1	—
					.188 4.78	B	5745186-2	—	
3	25	2.088 53.04	1.852 47.04	.494 12.55	.125 3.18	A	—	5745412-1	5745959-1
					.188 4.78	A	—	5745412-7	—
4	37	2.729 69.32	2.500 63.50	.494 12.55	.125 3.18	A	—	5745413-1	—
					.188 4.78	A	—	5745414-1	—
5	50	2.635 66.93	2.406 61.11	.605 15.37	.125 3.18	A	—	5745414-1	—
					.188 4.78	A	—	5745414-7	—

\*.125 [3.18] post length is for recommended pc board thickness of .062-.093 [1.58-2.36] max.; .188 [4.78] post length is for recommended pc board thickness of .125 [3.18].

- Notes:**
- All plugs are preloaded with size 20 DF posted pin contacts.
  - Special loading of contacts can be arranged upon request.
  - Longer post lengths available, consult TE.

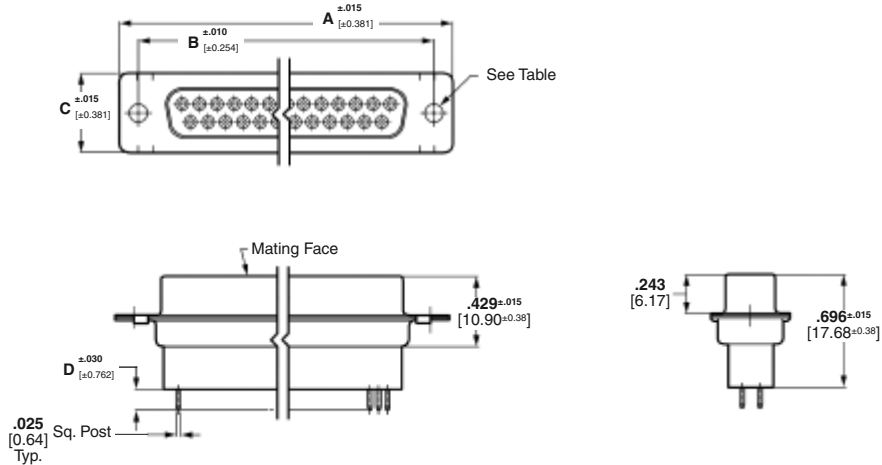
**Note:** All part numbers are RoHS compliant.

**HD-20 Full Metal-Shell Straight Posted Connectors** (Continued)

**Receptacle**



With Clinch Nuts



See customer drawings for pcb layouts.

**Material and Finish:**

- Shell**—Steel, tin plated
- Insert**—94V-0 rated thermoplastic, black
- Clinch Nuts**—Steel, zinc plated
- Socket Contacts (Posted)**—Phosphor bronze, plated as follows:  
**A**—.000030 [0.00076] gold on mating end, tin on termination end, with entire contact .000050 [0.00127] (min.) nickel underplated  
**B**—Gold flash on mating end, tin on termination end, with entire contact .000050 [0.00127] (min.) nickel underplated

**Technical Documents:**

**Product Specification**—108-40025

Shell Size	No. of Contact Positions	Dimensions				Contact Finish (Plating Code)	Receptacle Part Numbers	
		A	B	C	D*		With .120 [3.05] Mounting Holes	With Clinch Nuts
1	9	1.213 30.81	.984 24.99	.494 12.55	.125 3.18	A	5745183-1	5747190-2
					.188 4.78	B	5745183-2	5747190-1
					.188 4.78	A	5745183-7	5747190-4
					.188 4.78	B	—	—
2	15	1.541 39.14	1.312 33.33	.494 12.55	.125 3.18	A	5745185-1	5745820-1
					.188 4.78	B	—	5745820-2
					.125 3.18	A	5745185-7	—
					.188 4.78	B	—	—
3	25	2.088 53.04	1.852 47.04	.494 12.55	.125 3.18	A	5745187-1	5745886-1
					.188 4.78	B	—	5745886-2
					.125 3.18	A	5745187-7	—
					.188 4.78	B	5745187-8	—
4	37	2.729 69.32	2.500 63.50	.494 12.55	.125 3.18	A	5745189-1	5747315-1
					.188 4.78	A	5745189-7	—
					.125 3.18	A	5745191-1	5747302-1
					.188 4.78	A	5745191-7	—

\*.125 [3.18] post length is for recommended pc board thickness of .062-.093 [1.58-2.36] max.; .188 [4.78] post length is for recommended pc board thickness of .093-.125 [2.36-3.18].

- Notes:**
1. All receptacles are preloaded with size 20 DF posted socket contacts.
  2. Special loading of contacts can be arranged upon request.
  3. Longer post lengths available, consult TE.

**Note:** All part numbers are RoHS compliant.



## HD-20 Front Metal-Shell Straight Posted Connectors

### Plug



With Grounding Indents



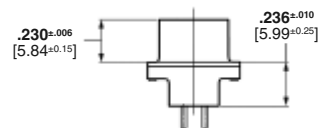
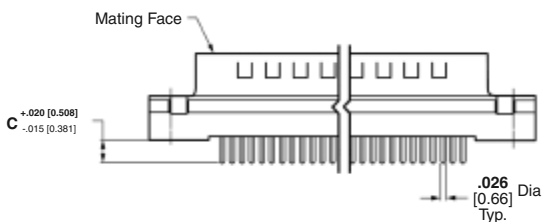
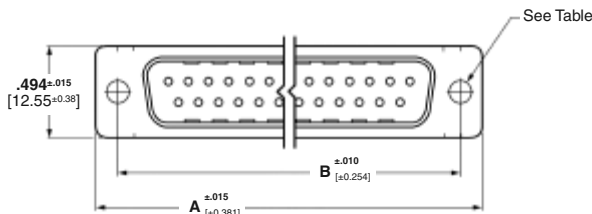
With Threaded Insert



With Fixed Female Screwlock



With Retention



See customer drawings for pcb layouts.

#### Material and Finish:

- Shell**—Steel, tin plated
- Housing**—94V-0 rated thermoplastic, black
- Threaded Inserts**—Brass, unplated
- Female Screwlocks**—Zinc
- Pin Contacts (Posted)**—Brass, plated as follows:
  - A**—.000030 [0.00076] gold on mating end, tin on termination end, with entire contact .000050 [0.00127] (min.) nickel underplated
  - B**—Gold flash on mating end, tin on termination end, with entire contact .000050 [0.00127] (min.) nickel underplated

#### Technical Documents:

- Product Specification**—108-40025
- Application Specification**—114-40023

Shell Size	No. of Contact Positions	Dimensions			Contact Finish (Plating Code)	Plug Part Numbers				
		A	B	C*		With Standard Mounting Holes	With 4-40 Threaded Inserts	With Retention 4-40 Inserts (for .062 [1.58] PCB)	With Fixed Female Screwlocks	With Retention 4-40 Screwlocks (for .062 [1.58] PCB)
1	9	1.213 30.81	.984 24.99	.125 3.18	A	5747871-2	5747871-8	2-5748003-0	1-5747871-4	—
				B	—	—	1-5747871-3	—		
				.170 4.32	A	5747871-4	—	—	1-5747871-6	—
2	15	1.541 39.14	1.312 33.33	.125 3.18	A	—	5747872-8	—	—	5748026-1
				.170 4.32	A	5747872-4	—	—	1-5747872-6	—
				.125 3.18	A	5745968-2	5745968-8	2-5747704-0	1-5745968-4	5748027-1
3	25	2.090 53.09	1.852 47.04	B	—	5745968-7	—	1-5745968-3	—	
				.170 4.32	A	5745968-4	—	—	1-5745968-6	—
				B	—	—	—	1-5745968-5	—	
4	37	2.732 69.39	2.500 63.50	.125 3.18	A	5747375-2	5747375-8	—	—	5787686-1

\*.125 [3.18] post length is recommended for pc board thickness of .062-.093 [1.58-2.36] max.; .170 [4.32] post length is recommended for pc board thickness of .093-.125 [2.36-3.18]; .250 [6.35] post length is for special applications

- Notes:**
1. All plugs are preloaded with size 20 DF posted pin contacts.
  2. Male screw retainers are used as mating hardware for connectors with 4-40 female screwlocks.
  3. PC board hole size is .121±.002 [3.07±0.0508] for all retention inserts and screwlocks.

**Note:** All part numbers are RoHS compliant.

**HD-20 Front Metal-Shell Straight Posted Connectors** (Continued)

**Receptacle**



With Standard Mounting Holes



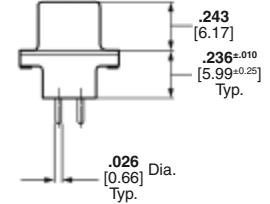
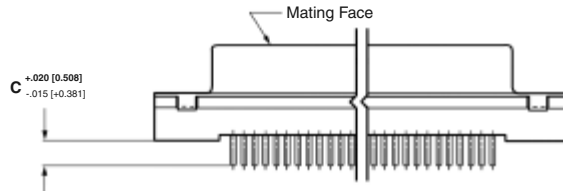
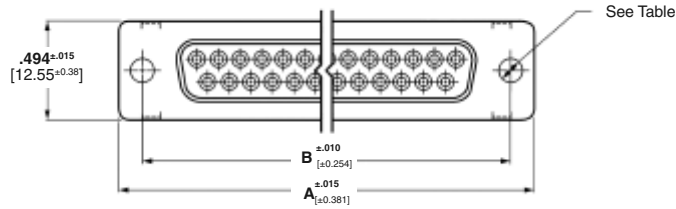
With Threaded Insert



With Fixed Female Screwlock



With Retention



See customer drawings for pcb layouts.

**Material and Finish:**

- Shell**—Steel, tin plated
- Housing**—94V-0 rated thermoplastic, black
- Threaded Inserts**—Brass, unplated
- Female Screwlocks**—Zinc

- Socket Contacts (Posted)**—Phosphor bronze, plated as follows:  
**A**—.000030 [0.00076] gold on mating end, tin on termination end, with entire contact .000050 [0.00127] (min.) nickel underplated  
**B**—Gold flash on mating end, tin on termination end, with entire contact .000050 [0.00127] (min.) nickel underplated

- Technical Documents:**  
**Product Specification**—108-40025  
**Application Specification**—114-40023

Shell Size	No. of Contact Positions	Dimensions			Contact Finish (Plating Code)	Receptacle Part Numbers				
		A	B	C*		With Standard Mounting Holes	With 4-40 Threaded Inserts	With Retention 4-40 Inserts (for .062 [1.58] PCB)	With Fixed Female Screwlocks	With Retention 4-40 Screwlocks (for .062 [1.58] PCB)
1	9	1.216 30.89	.984 24.99	.125 3.18	A	5747150-2	5747150-8	2-5747706-0	1-5747150-4	5750678-1
				B	—	5747150-7	—	1-5747150-3	—	
				.170 4.32	A	5747150-4	—	—	1-5747150-6	—
				B	—	5747150-9	—	—	—	
2	15	1.541 39.14	1.312 33.33	.125 3.18	A	5747299-2	5747299-8	2-5747707-0	1-5747299-4	5787683-1
				B	—	5747299-7	—	—	—	
				.170 4.32	A	5747299-4	—	—	1-5747299-6	—
				B	—	—	—	—	—	
3	25	2.090 53.09	1.852 47.04	.125 3.18	A	5745967-2	5745967-8	2-5747708-0	1-5745967-4	5748612-1
				B	—	5745967-7	1-5745967-0	—	—	
				.170 4.32	A	5745967-4	1-5745967-0	—	1-5745967-6	—
				B	—	—	—	1-5745967-5	—	
4	37	2.732 69.39	2.500 63.50	.125 3.18	A	5747301-2	5747301-8	2-5747709-0	1-5747301-4	5787685-1
				B	—	5747301-7	—	—	—	
				.170 4.32	A	—	—	—	1-5747301-6	—
				B	—	—	—	—	—	

\*.125 [3.18] post length is recommended for pc board thickness of .062-.093 [1.58-2.36] max.; .170 [4.32] post length is recommended for pc board thickness of .093-.125 [2.36-3.18]; .250 [6.35] post length is for special applications

- Notes:**
- All receptacles are preloaded with size 20 DF posted socket contacts.
  - Male screw retainers are used as mating hardware for connectors with 4-40 female screwlocks.
  - Pc board hole size is .121±.002 [3.07±0.0508] for all retention inserts and screwlocks.

**Note:** All part numbers are RoHS compliant.

## HD-20 All-Plastic Straight Posted Connectors

### Plug



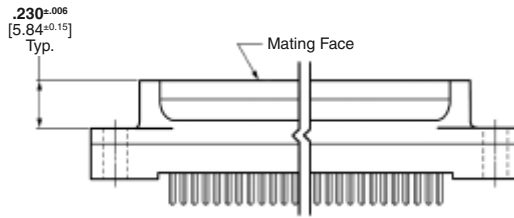
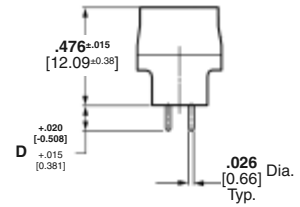
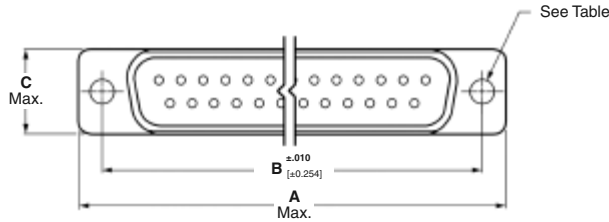
With Standard Mounting Hole



With Threaded Insert



With Fixed Female Screwlock



See customer drawings for pcb layouts.

### Material and Finish:

**Housing**—94V-0 rated thermoplastic, black

**Threaded Inserts**—Brass, unplated

**Female Screwlocks**—Brass, nickel plated

**Pin Contacts (Posted)**—Brass, plated as follows:

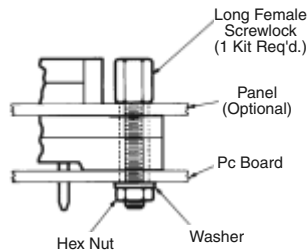
**A**—.000030 [0.00076] gold on mating end, tin on termination end, with entire contact .000050 [0.00127] (min.) nickel underplated

**B**—Gold flash on mating end, tin on termination end, with entire contact .000050 [0.00127] (min.) nickel underplated

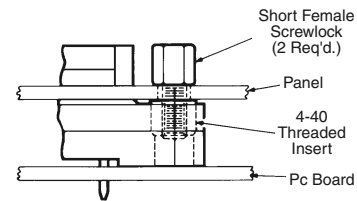
### Technical Documents:

**Product Specification**—108-40025

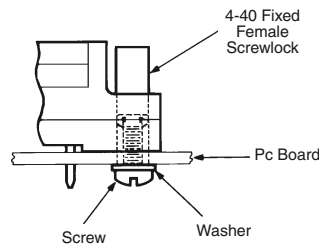
### Typical Applications



Application of connector with standard mounting holes using Long Female Screwlock Kit No. 207719



Application of connector with 4-40 Threaded Inserts using Short Female Screwlocks included in Kit No. 207952



Application of connector with 4-40 Fixed Female Screwlocks. (See table on next page.)

**Note:** Hardware parts in illustrations above are not included with the connectors listed in the table on page 83. They are to be supplied by the Customer or, where applicable, purchased separately from TE using the part nos. specified.

**Note:** All part numbers are RoHS compliant.

**HD-20 All-Plastic Straight Posted Connectors** (Continued)

**Plug**  
(Continued)

Shell Size	No. of Contact Positions	Dimensions				Contact Finish (Plating Code)	Plug Part Numbers		
		A	B	C	D*		With .120 [3.05] Mounting Holes	With Threaded Inserts	With Fixed Female Screwlocks
1	9	1.228 32.72	.984 24.99	.420 10.67	.125 3.18	A	5208006-2	5745051-2	5745071-2
					.170 4.32	B	5208006-1	5745051-1	5745071-1
2	15	1.546 39.27	1.312 33.33	.420 10.67	.125 3.18	A	5208007-2	5745052-2	5745072-2
					.170 4.32	B	—	5745052-1	—
					.170 4.32	A	—	—	5745072-4
3	25	2.095 53.21	1.852 47.04	.420 10.67	.125 3.18	A	5208008-2	5745053-2	5745073-2
					.170 4.32	B	5208008-1	—	5745073-1
4	37	2.737 69.52	2.500 63.50	.420 10.67	.125 3.18	A	—	—	5745074-2
					.170 4.32	B	5208009-1	—	5745074-1
					.170 4.32	A	—	5745054-4	5745074-4
5	50	2.643 67.13	2.406 61.11	.527 13.39	.125 3.18	A	5208010-2	—	—

\*.125 [3.18] post length is recommended for pc board thickness of .062-.093 [1.58-2.36] max.; .170 [4.32] post length is recommended for pc board thickness of .093-.125 [2.36-3.18]; .250 [6.35] post length is for special applications.

- Notes:**
1. All plugs are preloaded with size 20 DF posted pin contacts.
  2. It is recommended that these connectors be secured with appropriate hardware to a pc board and/or panel.
  3. Male screw retainers are used as mating hardware for connectors with 4-40 female screwlocks.

Straight Posted Connectors

**Note:** All part numbers are RoHS compliant.

**HD-20 All-Plastic Straight Posted Connectors** (Continued)

**Receptacle**



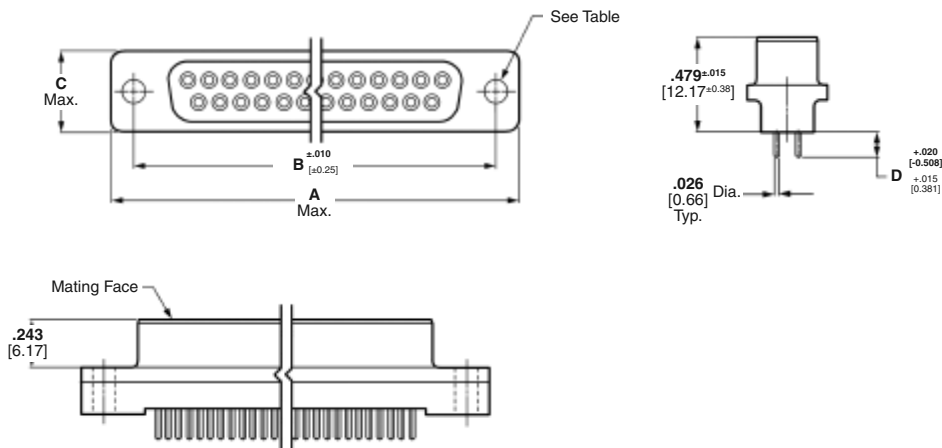
With Standard Mounting Hole



With Threaded Insert



With Fixed Female Screwlock



See customer drawings for pcb layouts.

**Material and Finish:**

**Housing**—94V-0 rated thermoplastic, black

**Threaded Inserts**—Brass, unplated

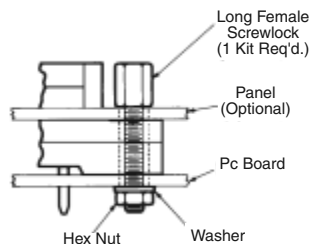
**Female Screwlocks**—Brass, nickel plated

**Socket Contacts (Posted)**—Phosphor bronze, plated as follows:  
**A**—.000030 [0.00076] gold on mating end, tin on termination end, with entire contact .000050 [0.00127] (min.) nickel underplated  
**B**—Gold flash on mating end, tin on termination end, with entire contact .000050 [0.00127] (min.) nickel underplated

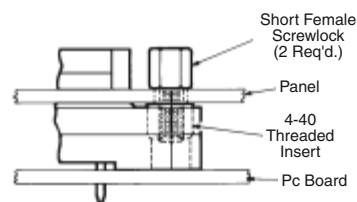
**Technical Documents:**

**Product Specification**—108-40025

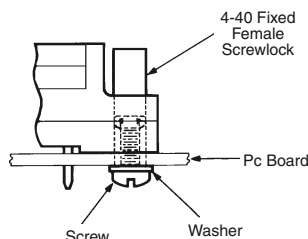
**Typical Applications**



Application of connector with standard mounting holes using Long Female Screwlock Kit No. 207719



Application of connector with 4-40 Threaded Inserts using Short Female Screwlocks included in Kit No. 207952



Application of connector with 4-40 Fixed Female Screwlocks. (See table on next page.)

**Note:** Hardware parts in illustrations above are not included with the connectors listed in the table on page 85. They are to be supplied by the Customer or, where applicable, purchased separately from TE using the part nos. specified.

**Note:** All part numbers are RoHS compliant.

**HD-20 All-Plastic Straight Posted Connectors** (Continued)

**Receptacle**  
(Continued)

Shell Size	No. of Contact Positions	Dimensions				Contact Finish (Plating Code)	Receptacle Part Numbers		
		A	B	C	D*		With .120 [3.05] Mounting Holes	With Threaded Inserts	With Fixed Female Screwlocks
1	9	1.228 32.72	.984 24.99	.420 10.67	.125 3.18	A	5207826-4	5207841-4	5745076-4
					.170 4.32	B	5207826-3	5207841-3	5745076-3
2	15	1.546 39.27	1.312 33.33	.420 10.67	.125 3.18	A	5207827-4	5745057-4	5745077-4
					.170 4.32	B	5207827-3	5745057-3	5745077-3
3	25	2.095 53.21	1.852 47.04	.420 10.67	.125 3.18	A	5207828-4	5745058-4	5745078-4
					.170 4.32	B	5207828-3	5745058-3	5745078-3
4	37	2.737 69.52	2.500 63.50	.420 10.67	.125 3.18	A	5207829-4	5745059-4	5745079-4
					.170 4.32	A	—	—	5745079-6
5	50	2.643 67.13	2.406 61.11	.527 13.39	.125 3.18	A	—	—	5745080-4
					.170 4.32	A	—	—	5745080-6

\*.125 [3.18] post length is recommended for pc board thickness of .062-.093 [1.58-2.36] max.; .170 [4.32] post length is recommended for pc board thickness of .093-.125 [2.36-3.18]; .250 [6.35] post length is for special applications.

- Notes:**
1. All receptacles are preloaded with size 20 DF posted socket contacts.
  2. It is recommended that these connectors be secured with appropriate hardware to a pc board and/or panel.
  3. Male screw retainers are used as mating hardware for connectors with 4-40 female screwlocks.

Straight Posted Connectors

**Note:** All part numbers are RoHS compliant.

## HD-22 Straight Subminiature D Connectors

**Material and Finish:**

**Housing**—94V-0 rated thermoplastic, black

▲ VESA Std. 15-position Receptacle Housing Material—Thermoplastic 94V-0 blue per VESA Std.

**Shell**—Steel, nickel plated

**Contacts**

**Pins**—Brass

**Sockets**—Phosphor bronze

**Contact Plating**—

Gold flash, .000010 [0.00025] or .000030 [0.00076] on mating end, tin on solder tails with overall nickel underplate

**Boardlocks**—Brass, tin plated

**Female Screwlocks**—Brass, nickel plated

**Threaded Inserts**—Brass, tin plated

**Technical Documents:**

**Product Specification**—108-1092

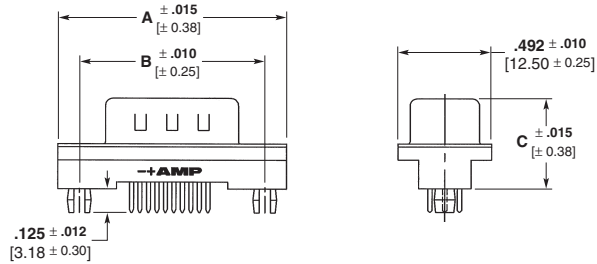
**Application Specification**—114-13199

See customer drawings for printed circuit board layouts.

■ **Recognized under the Component Program of Underwriters Laboratories, Inc., File No. E28476**

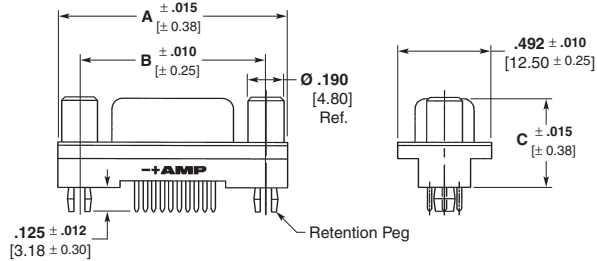


■ **Certified by Canadian Standards Association, File No. LR 7189**



Vertical Plug

No. of Contact Positions	Dimensions			Mounting Hardware	PCB Mounting Style	Part Numbers		
	A	B	C			Gold Flash	15µ" Gold	30µ" Gold
15	1.212	.984	.476	4-40 inserts	retention pegs	5750489-4	5750489-3	5750489-1
	30.80	25.00	12.10	4-40 inserts	—	5749798-4	5749798-3	5749798-1
78	2.640	2.500	.476	4-40 inserts	—	5749019-6	5749019-5	5749019-1
	67.00	63.50	12.10					



Vertical Receptacle

No. of Contact Positions	Dimensions			Mounting Hardware	PCB Mounting Style	Part Numbers		
	A	B	C			Gold Flash	15µ" Gold	30µ" Gold
15	1.212	.984	.465	4-40 inserts	—	—	5749374-7	5749374-1
	30.80	25.00	11.80	4-40 screw locks	—	5786356-4	5786356-3	5786356-1
	1.212	.984	.465	4-40 inserts	retention pegs	—	—	5749374-3
	30.80	25.00	11.80	4-40 screw locks	retention pegs	—	5786382-3	5786382-1
26	1.543	1.310	.465	4-40 inserts	—	5749030-4	5749030-3	5749030-1
	39.20	33.30	11.80	4-40 screw locks	retention pegs	5788623-4	5788623-3	—
62	2.732	2.500	.465	4-40 inserts	—	3-5747786-4	—	5747786-6
78	2.638	2.400	.476	4-40 inserts	—	1-5748831-0	5748831-9	5748831-1
	67.00	61.00	12.10					

**Note:** All part numbers are RoHS compliant.

## HD-20 Front Metal-Shell Straight Posted Connectors With ACTION PIN Contacts

### Receptacle



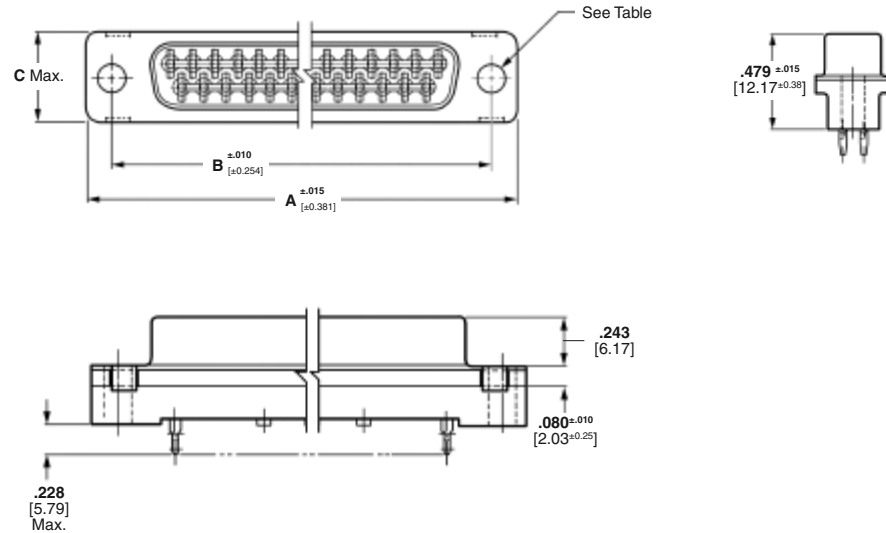
With Standard Mounting Holes



With Threaded Insert



With Fixed Female Screwlock



See customer drawings for pcb layouts.

### Material and Finish:

**Front Shell**—Steel, tin plated

**Housing**—94V-0 rated thermoplastic, black

**Threaded Inserts**—Brass, unplated

**Female Screwlocks**—Zinc

**ACTION PIN Contacts**—Copper alloy, duplex plated as follows:

**A**—.000030 [0.00076] gold on mating end, tin on ACTION PIN post surface, with entire contact .000050 [0.00127] (min.) nickel underplated

**B**—Gold flash on mating end, tin on ACTION PIN post surface, with entire contact .000050 [0.00127] (min.) nickel underplated

### Technical Documents:

**Product Specification**—108-40014

**Application Specification**—114-40026

### For .062 [1.57] min. Thick Pc Boards

Shell Size	No. of Contact Positions	Dimensions			Contact Finish (Plating Code)	Receptacle Part Numbers			Seating Tool Part No.
		A	B	C		With .120 [3.05] Mounting Holes	With Threaded Inserts	With Fixed Female Screwlocks	
1	9	1.213 30.81	.984 24.99	.509 12.93	A	—	—	—	91164-2
2	15	1.541 39.14	1.312 33.33	.509 12.93	A	—	—	—	91165-2
3	25	2.088 53.04	1.852 47.04	.509 12.93	B	—	—	5748688-1	91168-2
5	50	2.635 66.93	2.406 61.11	.620 15.75	A	—	5748485-2	—	91167-2

### For .093 [2.36] min. Thick Pc Boards

Shell Size	No. of Contact Positions	Dimensions			Contact Finish (Plating Code)	Receptacle Part Numbers			Seating Tool Part No.
		A	B	C		With .120 [3.05] Mounting Holes	With Threaded Inserts	With Fixed Female Screwlocks	
1	9	1.213 30.81	.984 24.99	.509 12.93	A	5747089-2	5747090-2	5747091-2	91164-2
2	15	1.541 39.14	1.312 33.32	.509 12.93	A	5747140-2	5747141-2	5747142-2	91165-2
3	25	2.088 53.04	1.852 47.04	.509 12.93	A	5745922-2	5745925-2	5745928-2	91168-2
4	37	2.729 69.32	2.500 63.50	.509 12.93	A	5747713-2	5747714-2	5747715-2	91166-2
					B	—	5747714-1	—	
5	50	2.635 66.93	2.406 61.11	.620 15.75	A	5747143-2	5747144-2	5747145-2	91167-2

- Notes:**
1. All receptacles are preloaded with straight posted ACTION PIN socket contacts.
  2. Male screw retainers are used as mating hardware for connectors with 4-40 female screwlocks.

**Note:** All part numbers are RoHS compliant.



## HD-20 Front Metal-Shell Straight Posted Connectors With ACTION PIN Contacts (Continued)

### Plug



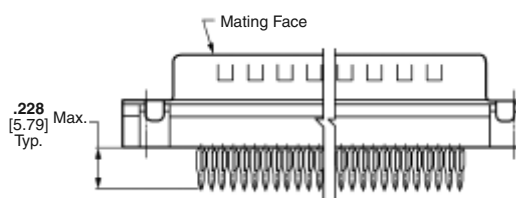
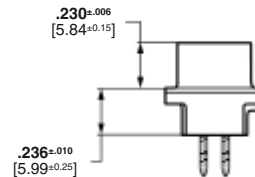
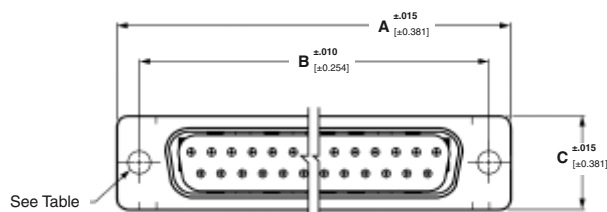
With Standard Mounting Holes



With Threaded Insert



With Fixed Female Screwlock



See customer drawings for pcb layouts.

### Material and Finish:

**Front Shell**—Steel, tin plated

**Housing**—94V-0 rated thermoplastic, black

**Threaded Inserts**—Brass, unplated

**Female Screwlocks**—Zinc

**ACTION PIN Contacts**—Copper alloy, duplex plated as follows:

**A**—.000030 [0.00076] gold on mating end, tin on ACTION PIN post surface, with entire contact .000050 [0.00127] (min.) nickel underplated

### Technical Documents:

**Product Specification**—108-40014

**Application Specification**—114-40026

### For .093 [2.36] min. Thick Pc Board

Shell Size	No. of Contact Positions	Dimensions			Contact Finish (Plating Code)	Plug Part Numbers			Seating Tool Part No.
		A	B	C		With .120 [3.05] Mounting Holes	With Threaded Inserts	With Fixed Female Screwlocks	
1	9	1.213 30.81	.984 24.99	.494 12.55	A	—	5786830-1	5787176-1	58274-3
2	15	1.541 39.14	1.312 33.32	.494 12.55	A	—	—	5787177-1	58274-6
3	25	2.088 53.04	1.852 47.04	.494 12.55	A	5748146-2	5748146-4	5748146-6	58274-1
4	37	2.732 69.39	2.500 63.50	.494 12.55	A	5788458-1	5786534-1	5750060-1	58274-5
5	50	2.635 66.93	2.406 61.11	.605 15.37	A	—	5749892-1	—	58273-1

- Notes:** 1. All plugs are preloaded with straight posted ACTION PIN pin contacts.  
2. Male screw retainers are used as mating hardware for connectors with 4-40 female screwlocks.

**Note:** All part numbers are RoHS compliant.

## HD-20 All-Plastic Straight Posted Connectors With ACTION PIN Contacts

### Receptacles (Low and High Profile)



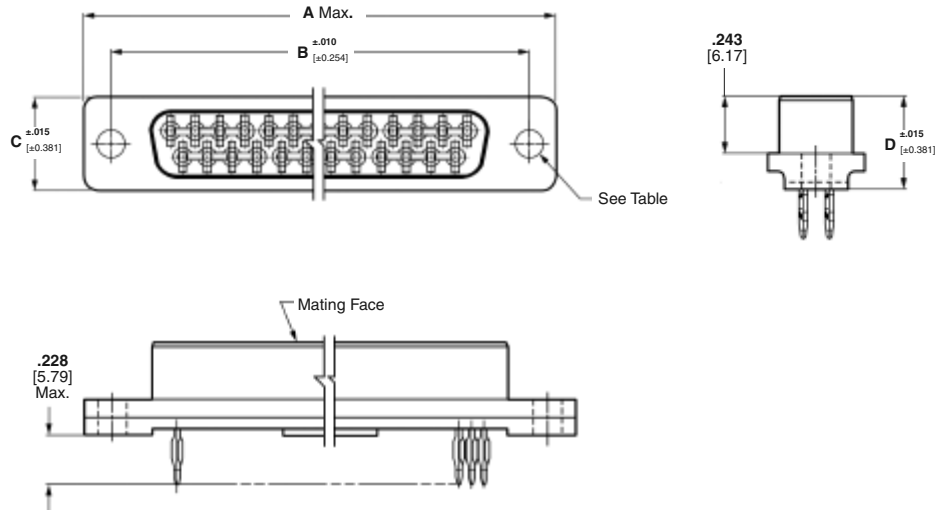
With Standard Mounting Holes



With Threaded Insert



With Fixed Female Screwlock



See customer drawings for pcb layouts.

### Material and Finish:

**Housing**—94V-0 rated thermoplastic, black

**Threaded Inserts**—Brass, unplated

**Female Screwlocks**—Brass, nickel plated

**ACTION PIN Contacts**—Copper alloy, duplex plated as follows:

**A**—.000030 [0.00076] gold on mating end, tin on ACTION PIN post surface, with entire contact .000050 [0.00127] (min.) nickel underplated

**B**—Gold flash on mating end, tin on ACTION PIN post surface, with entire contact .000050 [0.00127] (min.) nickel underplated

### Technical Documents:

**Product Specification**—108-40014

Shell Size	No. of Contact Positions	Dimensions				Profile	Contact Finish (Plating Code)	Receptacle Part Numbers						Seating Tool Part No.
		A	B	C	D			For .093 [2.36] (min.) Thick Pc Boards			For .062 [1.57] (min.) Thick PC Boards			
								With .120 [3.05] Mounting Holes	With Threaded Inserts	With Fixed Female Screwlocks	With .120 [3.05] Mounting Holes	With Threaded Inserts	With Fixed Female Screwlocks	
1	9	1.221 31.01	.984 24.99	.410 10.41	.395 10.03	Low	A	—	—	5745454-2	—	—	—	91164-1
						High	A	—	—	5745455-2	—	—	—	91164-3
2	15	1.546 39.27	1.312 33.32	.410 10.41	.395 10.03	Low	A	—	—	5745456-2	—	—	—	91165-1
						High	A	—	—	—	—	5745612-2	—	—
3	25	2.095 53.21	1.852 47.04	.410 10.41	.395 10.03	Low	A	—	—	5745458-2	—	—	—	91168-1
						High	A	—	—	5745458-1	—	—	—	—
4	37	2.737 69.52	2.500 63.50	.410 10.41	.395 10.03	Low	A	—	—	5745459-2	5745589-2	—	—	91166-1
						High	A	—	—	5745465-2	—	—	—	—
5	50	2.643 67.13	2.406 61.11	.517 13.13	.395 10.03	Low	A	—	—	5745461-2	—	—	—	91167-1

- Notes:** 1. All receptacles are preloaded with straight posted ACTION PIN socket contacts.  
2. Male screw retainers are used as mating hardware for connectors with 4-40 female screwlocks.

**Note:** All part numbers are RoHS compliant.

**HDP-20 Crimp Snap-In Contact Connectors**



**Product Selection Guide**

Connector				Contacts		
Type	Insert Material	Shell Type Material and Finish	Mounting	Type	Termination	Plating
Plug (pg. 92)	94V-0 Rated Thermoplastic Black	Zinc Plated Steel Without Grounding Indents	.120 [3.05] Dia. Holes Clinch Nut, 4-40 Threads	Pins (pgs. 100, 101)	Crimp  Posted	Duplex (.000030 [0.00076] Gold and Tin)
		Tin Plated Steel Without Grounding Indents				Duplex (Gold Flash and Tin)
		Tin Plated Steel With Grounding Indents				Select (.000030 [0.00076] Gold and Gold Flash)
Receptacle (pg. 93)	94V-0 Rated Thermoplastic Black	Zinc Plated Steel	.120 [3.05] Dia. Holes Clinch Nuts, 4-40 Threaded	Sockets (pgs. 100, 101)	Crimp  Posted	Duplex (.000030 [0.00076] Gold and Tin)
		Tin Plated Steel				Duplex (Gold Flash and Tin)
						Select (.000030 [0.00076] Gold and Gold Flash)

**HDP-20 Crimp Snap-In Contact Connectors** (Continued)

**Product Facts**

- Shell sizes offer wide choice of contact positions—9, 15, 25, 37 and 50
- Lower cost, commercial version of the military approved series
- Tin or zinc plated shells, with or without grounding indents
- Crimp snap-in contacts allows loading of only the number of contacts being used
- Available with shielding hardware and shielding enclosure kits
- Numerous cable clamps and mating hardware options
- Low cost, high performance, precision-formed crimp contacts

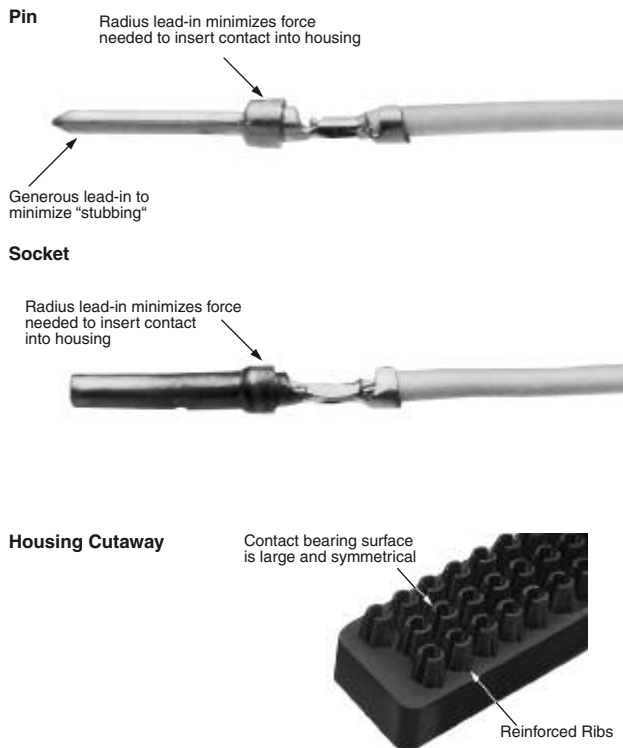
- Machine applied terminations assure highest production rates at lowest applied cost
- Intermateable with any size 20 Subminiature D connector dimensionally complying with MIL-C-24308
- Recognized under the Component Program of Underwriters Laboratories Inc.,  File No. E28476
- Listed under Underwriters Laboratories Inc., Standard 1863, Communication Circuit Accessories,  File No. E81956
- Certified by Canadian Standards Association,  File No. LR 1088108 (LR 7189-207)

**Section Contents**

Plug and Receptacle Connectors ..... 92, 93  
 Basic Shielding Hardware Kits ..... 94, 95  
 Shielding Hardware Enclosure Kits ..... 96, 97  
 Preassembled Shielded Connector Kits ..... 98  
 Ferrules for Shielding Hardware Kits ..... 99  
 Contacts ..... 100, 101  
 Application Tooling ..... 102

Unshielded Cable Clamps	Shielded Cable Clamps and Shielding Hardware and Enclosure Kits	Mounting and Mating Hardware
<p>One-Piece Cable Clamp 180°/120° Quik-Snap (pg. 134)</p> <p>Box and Lid Straight/90° Exit (pg. 137)</p> <p>Box and Lid with Male Screw Retainers (pg. 137)</p> <p>Clam Shell Straight/45° Exit (pg. 138)</p> <p>Clam Shell Straight/45° Exit with Male Screw Retainers (pg. 138)</p>	<p>Straight Exit RFI/EMI Shields for Jacketed Cable (pgs. 139, 142)</p> <p>90° Exit Die Cast RFI/EMI Shields for Jacketed Cable (pg. 142)</p> <p>Basic Shielding Hardware Kits (pgs. 94, 95)</p> <p>Shielding Hardware Enclosure Kits (pgs. 96, 97)</p>	<p>Keying Plug (pg. 155)</p> <p>Male Screw Retainers (pgs. 146, 147)</p> <p>Female Screwlocks (pg. 148)</p> <p>Locking Posts and Slide Latches (pgs. 149, 151)</p> <p>Spring Latch, Two-Piece (pg. 152)</p> <p>Latching Blocks (pgs. 153, 154)</p> <p>Standoff Bushings (pg. 155)</p>

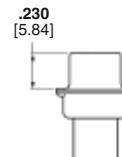
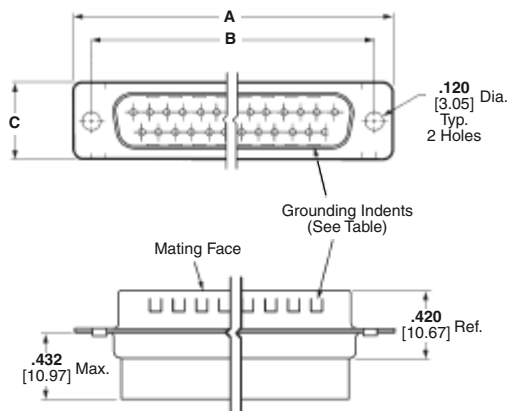
**Contact Retention Features**



**HDP-20 Crimp Snap-In Contact Connectors** (Continued)



**Plug**

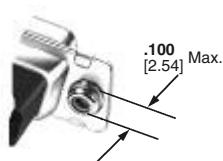


**Material and Finish:**  
**Shell**—Steel, zinc or tin plated  
**Insert**—94V-0 rated thermoplastic, black

**Mounting Holes:**  
**Standard**—.120 [3.05] Dia.  
**Clinch Nut**—4-40 threads with self-locking feature

- Related Product Data:**
- Contact Arrangements**—page 40
  - Performance Characteristics**—page 41
  - Contacts**—pages 100, 101
  - Application Tooling**—page 102
  - Mateable Connectors:**
    - HDE**—pages 110-123
    - HDP**—pages 90-102
    - HD-20 Board Mount**—pages 54-71, 78-85, 87-89
  - Mating/Panel Mounting**—page 42
  - Cable Clamps**—pages 132, 133, 135-137, 140, 141, 144, 145
  - Mating Hardware**—pages 146-150, 153, 155

- Technical Documents:**
- Product Specification**—108-40005
  - Application Specifications**—114-10000, 114-40030



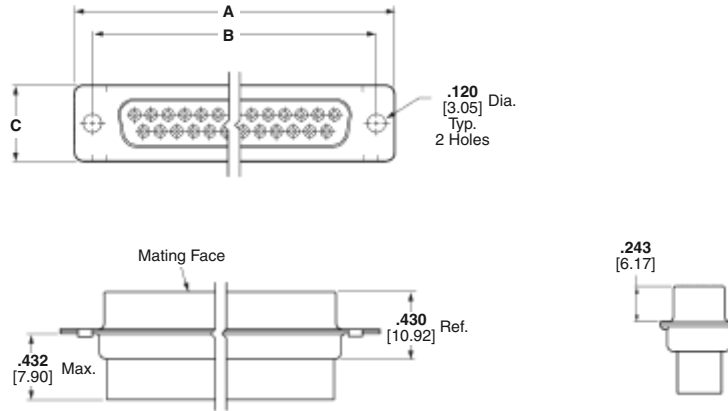
**Clinch Nut**  
(Plug and Receptacle)

**Note:** Instruction Sheets for TE Tooling are packaged with the tooling. For additional information call the Tooling Assistance Center: **1-800-722-1111**.

**HDP-20 Crimp Snap-In Contact Connectors** (Continued)

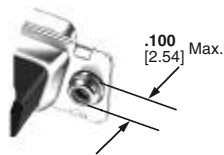


**Receptacle**



Shell Size	No. of Contact Positions	Dimensions			Insert Material	Mounting Method	Plug Part Numbers			Receptacle Part Nos.	
		A	B	C			Zinc Plated Shell	Tin Plated Shell		Zinc Plated Shell	Tin Plated Shell
							Without Grounding Indents	With Grounding Indents			
1	9	1.213 30.81	.984 24.99	.494 12.55	94V-0	Standard	205204-9	205204-8	205204-4	205203-8	205203-3
						Clinch Nut	—	1658642-2	1658642-1	—	1658643-1
2	15	1.541 39.14	1.312 33.33	.494 12.55	94V-0	Standard	205206-9	205206-8	205206-3	205205-7	205205-2
						Clinch Nut	—	—	5745908-2	—	1658644-1
3	25	2.088 53.04	1.852 47.04	.494 12.55	94V-0	Standard	5205208-1	207464-7	207464-2	5205207-1	207463-1
						Clinch Nut	—	—	5745036-2	207516-6	207516-5
4	37	2.729 69.32	2.500 63.50	.494 12.55	94V-0	Standard	205210-8	205210-7	205210-3	205209-7	205209-2
						Clinch Nut	—	—	745135-4	—	5207661-3
5	50	2.635 66.93	2.406 61.11	.605 15.37	94V-0	Standard	1658641-3	1658641-1	1658641-2	1658640-2	1658640-1
						Clinch Nut	—	—	5745883-2	—	5745884-1

**Note:** Plugs accept size 20 DF pin contacts and receptacles accept size 20 DF socket contacts.



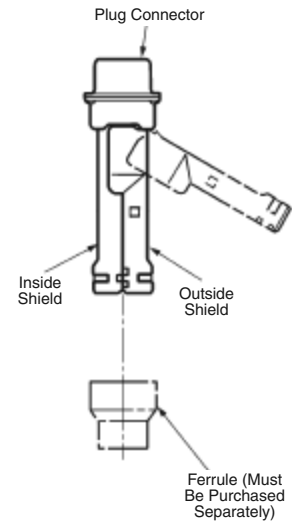
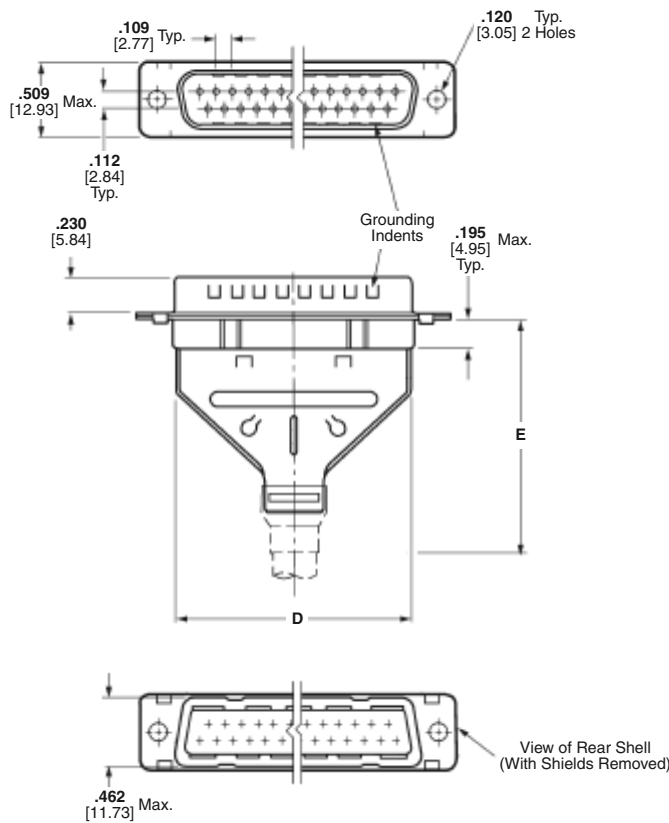
**Clinch Nut**  
(Plug and Receptacle)

**Note:** Instruction Sheets for TE Tooling are packaged with the tooling. For additional information call the Tooling Assistance Center: **1-800-722-1111**.

**Note:** All part numbers are RoHS compliant.

## HDP-20 Basic Shielding Hardware Kits

### Plug



#### Each kit contains:

- Connector
- Inner shield
- Outer shield

Contacts and ferrules must be purchased separately.

#### Material and Finish:

**Connector Shells**—Steel, tin plated

**Connector Insert**—94V-0 rated thermoplastic, black

**Shield**—Steel, tin plated

#### Related Product Data:

**Contact Arrangements**—page 40

**Performance Characteristics**—page 41

**Contacts**—pages 100, 101

**Application Tooling**—page 102

#### Mateable Connectors:

**HDE**—pages 110-123

**HDP**—pages 90-102

**HD-20 Board Mount**—

pages 54-71, 78-85, 87-89

**Mating/Panel Mounting**—page 42

**Mating Hardware**—pages 146-150, 153, 155

**Ferrules**—page 99

#### Technical Documents:

##### Product Specifications—

108-40005

108-40030

##### Application Specifications—

114-10000

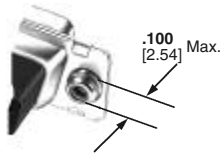
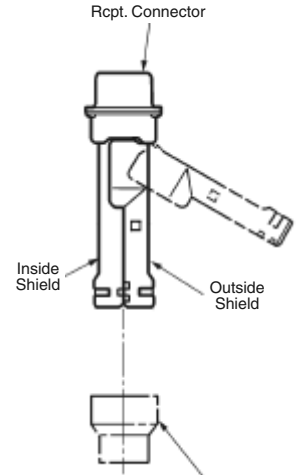
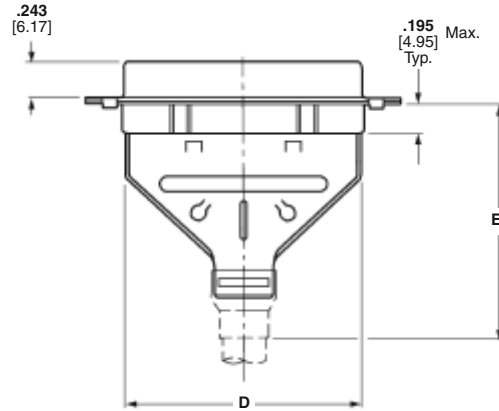
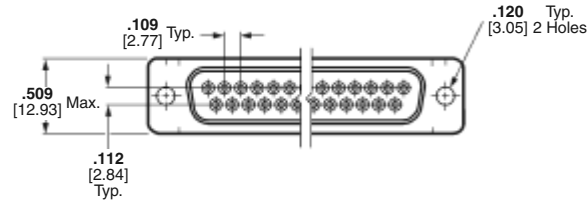
114-40030

##### Instruction Sheet—408-9010

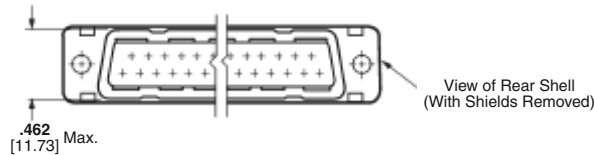
**Note:** Instruction Sheets for TE Tooling are packaged with the tooling. For additional information call the Tooling Assistance Center: **1-800-722-1111**.

**HDP-20 Basic Shielding Hardware Kits (Continued)**

**Receptacle**



**Clinch Nut**  
(Plug and Receptacle)



Shell Size	No. of Contact Positions	Dimensions		Recommended Cable Outer Dia. Range	Max. Inner Cable Bundle Dia.†	Mounting Method	Plug Kit Numbers	Receptacle Kit Numbers
		D	E					
1	9	.700	1.535	.165-.455	.350	Standard	1658645-1	1658646-1
		17.78	38.99			Clinch Nut	5748526-1	5748536-1
2	15	1.024	1.535	.165-.455	.350	Standard	1658647-1	5747539-1
		26.01	38.99			Clinch Nut	5750636-1	5787908-1
3	25	1.576	1.535	.165-.455	.350	Standard	1658648-1	1658649-1
		40.03	38.99			Clinch Nut	—	1658662-1
4	37	2.215	1.892	.338-.562	.450	Standard	1658650-1	1658651-1
		56.26	48.06			Clinch Nut	5786929-1	—
5	50	2.120	1.876	.338-.480	.450	Standard	1658652-1	1658653-1
		53.85	47.65	8.59-12.19	11.43			

**Notes:** 1. Plugs accept size 20 DF pin contacts and receptacles accept size 20 DF socket contacts.  
2. Components of the kits are shipped unassembled and bulk-packaged in quantities of 100 pieces.  
†Maximum cable diameter after jacket and braid removed.

**Note:** All part numbers are RoHS compliant.



## HDP-20 Shielding Hardware Enclosure Kits

### Plug



#### Each Kit Contains:

- Connector
- Inner shield
- Outer shield
- Enclosure
- Two jackscrews

Contacts and ferrules must be purchased separately.

#### Material and Finish:

**Connector Shells**—Steel, tin plated.

**Connector Insert**—94V-0 rated thermoplastic, black

**Shield**—Steel, tin plated

**Enclosure**—PVC, black

**Jackscrews**—Zinc alloy

#### Related Product Data:

**Contact Arrangements**—page 40

**Performance Characteristics**—page 41

**Contacts**—pages 100, 101

**Application Tooling**—page 102

#### Mateable Connectors:

**HDE**—pages 110-123

**HDP**—pages 90-102

**HD-20 Board Mount**—pages 54-71, 78-85, 87-89

**Mating/Panel Mounting**—page 42

**Mating Hardware**—pages 146-150, 153, 155

**Ferrules**—page 99

#### Technical Documents:

##### Product Specifications—

108-40005

108-40030

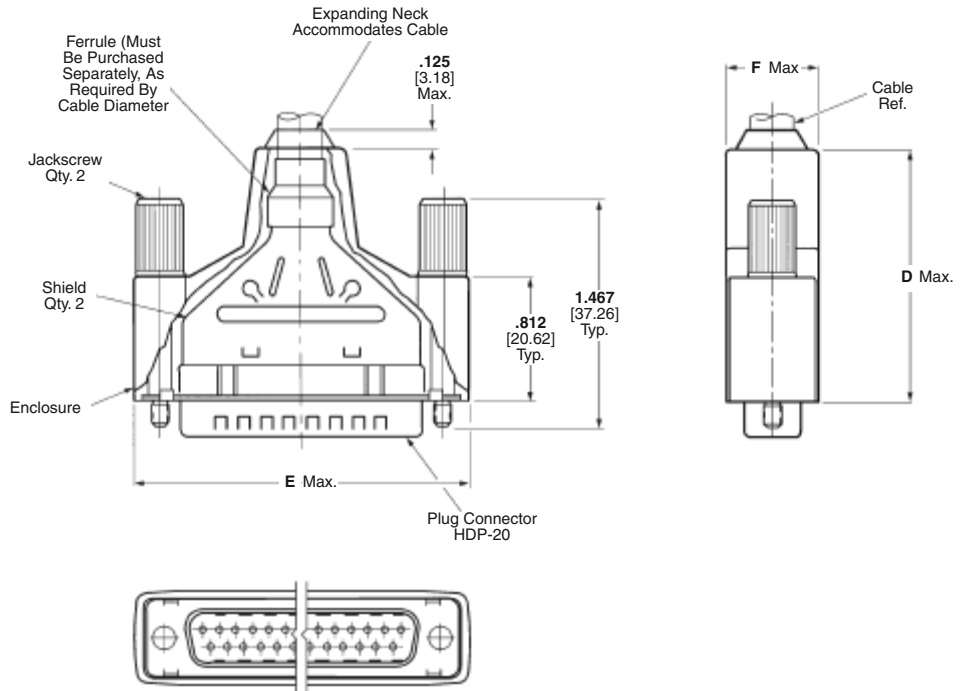
##### Application Specifications—

114-10000

114-40030

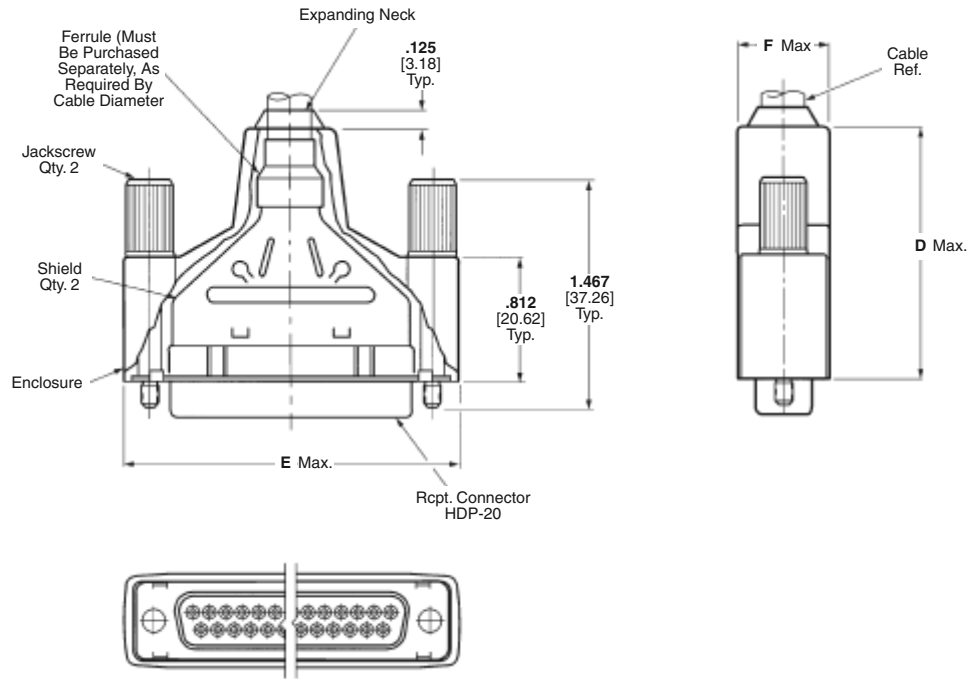
##### Instruction Sheet—408-9172

**Note:** Instruction Sheets for TE Tooling are packaged with the tooling. For additional information call the Tooling Assistance Center: **1-800-722-1111**.



**HDP-20 Shielding Hardware Enclosure Kits** (Continued)

**Receptacle**



Cable Connectors

Shell Size	No. of Contact Positions	Dimensions			Recommended Cable Outer Diameter Range	Max. Inner Cable Bundle Dia.†	Insert Material	Kit Numbers		Shielding Enclosure Expansion Tool	
		D	E	F				Plug	Receptacle	Cable O.D. (Max.)	Part Number
1	9	1.660	1.355	.630	.190-.330 4.83-8.38	.330 8.38	94V-0	1658655-1	1658654-1	.330 8.38	58241-4
		42.16	34.42	16.00							
2	15	1.660	1.685	.630	.190-.330 4.83-8.38	.330 8.38	94V-0	1658657-1	1658656-1	.450 11.43	58241-1
		42.16	42.80	16.00							
3	25	1.660	2.210	.630	.217-.435 5.51-11.05	.350 8.89	94V-0	1658659-1	1658658-1	.572 14.52	58241-2
		42.16	56.13	16.00							
4	37	2.010	2.865	.730	.338-.562 8.59-14.28	.450 11.43	94V-0	5747958-1	1658660-1	.450 11.43	58241-1
		51.05	72.77	18.54							
5	50	2.010	2.775	.730	.338-.562 8.59-14.28	.450 11.43	94V-0	1658661-1	5747959-1	.450 11.43	58241-1
		51.05	70.49	18.54							

**Notes:** 1. Plugs accept size 20 DF pin contacts and receptacles accept size 20 DF socket contacts.  
 2. Components of the kits are shipped unassembled and bulk-packaged in quantities of 100 pieces.  
 †Maximum cable diameter after jacket and braid removed.

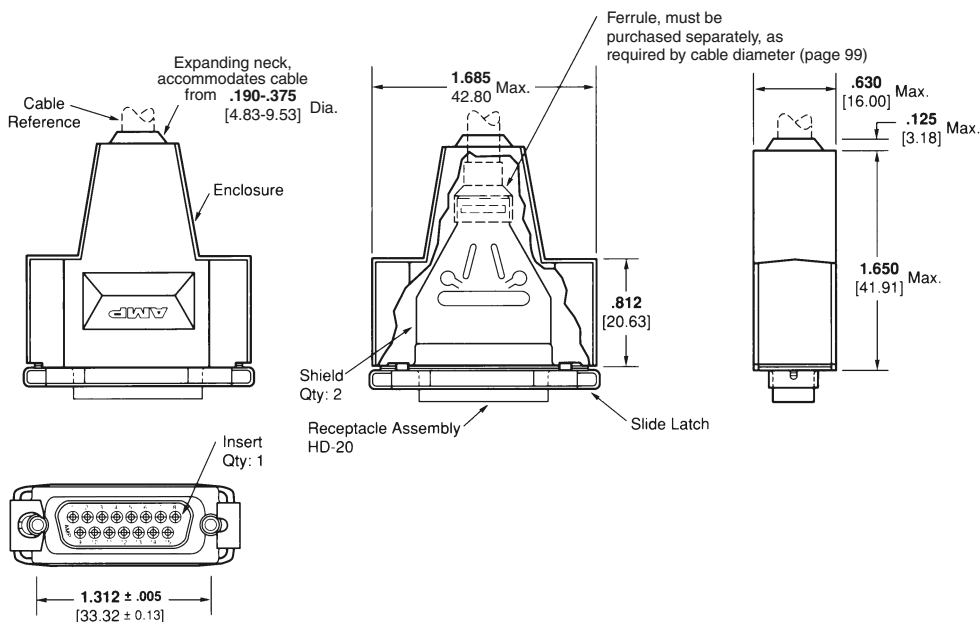
**Note:** All part numbers are RoHS compliant.

## Shielded Connector, Preassembled Kit

Designed to meet the requirements of Local Area Networking, this Subminiature D Shielded Connector Kit is available with slide latches attached to the receptacle. The receptacle is shielded and covered with a durable plastic enclosure. This shielding decreases emissions and provides an effective EMI/RFI barrier.

Preassembled connector kits are available in Subminiature D, shell size 2, 15-position configuration and accept crimp, snap-in HD-20 contacts. Contacts are available separately and allow for selective positioning.

Other sizes and styles can be made available, consult TE.



Receptacle  
Part No. 749246-1

### Material and Finish:

**Inserts**—94V-0 rated nylon, black

**Enclosures**—Elastomer, styrene polyolefin, or PVC, black

**Shields and Shells**—Carbon steel per ASTM A109, plated with .000200 [0.00508] min. tin over .000050 [0.00127] min. copper

**Note:** Instruction Sheets for TE Tooling are packaged with the tooling. For additional information call the Tooling Assistance Center: 1-800-722-1111.

### Related Product Data:

**Contact Arrangements**—page 40

**Performance Characteristics**—page 41

**Contacts**—pages 100, 101

**Application Tooling**—page 102

**Ferrules**—page 99

### Technical Documents:

**Product Specifications**—108-40005, 108-40030, 108-40032

**Application Specifications**—114-10000 & 114-40030

**Note:** All part numbers are RoHS compliant.

## HDP-20 Ferrules for Shielding Hardware Kits

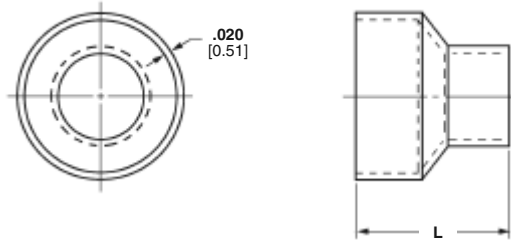
### Ferrules for Shielding Hardware Kits



Stepped



Straight



### Material and Finish:

Steel (annealed), tin plated

### Related Product Data:

Shielding Hardware and Enclosure Kits—pages 94-98

### Technical Documents:

#### Instruction Sheets—

408-9507  
408-9508  
408-9243  
408-9242

**Note:** Instruction Sheets for TE Tooling are packaged with the tooling. For additional information call the Tooling Assistance Center: **1-800-722-1111**.

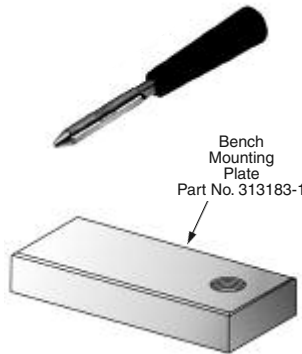
Shell Sizes	Style	L Dim.	Cable Diameter	Part Numbers	
				Ferrule	Die Sets*
1-3	Stepped	.440 11.18	.165-.190 4.19-4.83	3-747579-0	543424-3
1-3	Stepped	.440 11.18	.190-.217 4.83-5.51	3-747579-0	543424-2
1-3	Stepped	.440 11.18	.217-.246 5.51-6.25	3-747579-0	543424-8
1-3	Stepped	.440 11.18	.246-.284 6.25-7.21	3-747579-2	543424-1
1-3	Stepped	.440 11.18	.284-.324 7.21-8.23	3-747579-2	543424-7
1-3	Stepped	.440 11.18	.324-.375 8.23-9.53	3-747579-4	543424-6
1-3	Straight	.440 11.18	.375-.437 9.53-11.10	2-747579-7	543424-5
1-3	Straight	.440 11.18	.400-.460 10.16-11.56	3-747579-6	543424-4
4-5	Stepped	.625 15.88	.230-.265 5.84-6.73	2-747580-4	543425-2
4-5	Stepped	.625 15.88	.338-.385 8.59-9.78	2-747580-3	543425-1
4-5	Stepped	.625 15.88	.375-.432 9.53-10.97	2-747580-1	58238-1
4-5	Stepped	.625 15.88	.422-.490 10.72-12.45	3-747580-1	58237-2
4-5	Straight	.625 15.88	.480-.562 12.19-14.28	2-747580-2	58237-1

\*Die sets used with Hand Crimping Tool Part No. 543344-1 or Pneumatic Bench Tool Part No. 312522-3 equipped with Die Set Holder Part No. 58449-1.

### Application Tooling for Shielding Hardware Kits



Hand Crimping Tool  
No. 543344-1  
(Requires Die Sets, see table above.)



Shielding Enclosure Expansion Tools  
Part No. 58241-1 (.450 [11.43])†  
58241-2 (.572 [14.53])†  
58241-4 (.330 [8.38])†  
†Maximum Cable Diameter (Instruction Sheet—408-9172)

Pneumatic Bench Tool  
No. 312522-3  
(Requires Die Set Holder No. 58449-1.)



**Note:** All part numbers are RoHS compliant.

## HDP-20 Connector Contacts, Precision Formed

### Contact Size 20 DF Pin Diameter .040 [1.02]

#### Material and Finish:

**Pin**—Brass

**Socket**—Phosphor bronze

#### Plated

**A**—Select—Gold flash over nickel on entire contact, with additional .000030 [0.00076] gold on mating end

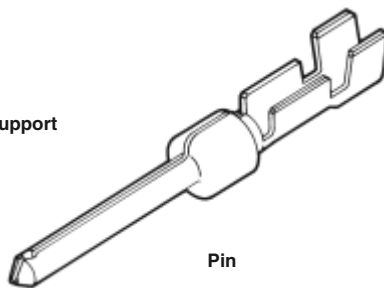
**B**—Duplex—.000030 [0.00076] gold on mating end, tin on termination end, with entire contact nickel underplated

**C**—Gold flash over nickel on entire contact

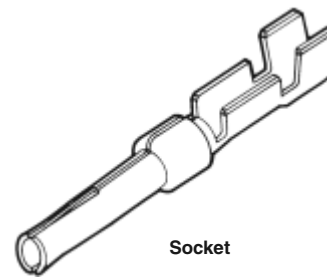
**D**—Duplex—Gold flash on mating end, tin on termination end, with entire contact nickel underplated

### Crimp Snap-In Contacts

With Insulation Support



Pin



Socket

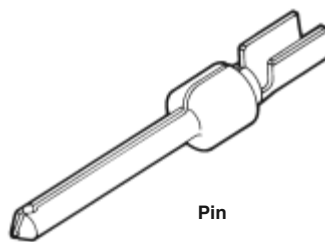
Wire Size Range AWG [mm <sup>2</sup> ]	Ins. Dia. Max.	Contact Finish (Plating Code)	Contact Part Numbers				Hand Tools for Loose Form Contacts		
			Pin		Socket		PRO-CRIMPER II Hand Tool	CERTI-CRIMP II Hand Tool (Color Code)	Applicators* for Strip Form Contacts
			Strip Form	Loose Form	Strip Form	Loose Form			
28-24 0.08-0.2	.040 1.02	A	66507-3	66507-9	66505-3	66505-9	58448-2	91503-1 (Blue Dot)	466423-4** 466901-1***
		B	1658540-4	1658540-5	1658538-2	—			
		C	66507-4	1-66507-0	66505-4	1-66505-0			
		D	1658540-1	1658540-2	1658538-3	1658538-1			
26-22 0.15-0.4	.040 1.27	A	66682-2	66682-4	66683-2	66683-4	—	91549-1 (Black Dot)	466963-1***
		B	5066682-9	—	1-5066683-0	—			
		C	745254-3	745254-7	745253-3	745253-7			
		D	1658544-3	—	1658543-3	—			
24-20 0.2-0.6	.060 1.52	A	66506-3	66506-9	66504-3	66504-9	58448-2	91503-1 (Red Dot)	466422-4** 466900-1***
		B	1658539-1	1658539-3	1658537-3	1658537-4			
		C	66506-4	1-66506-0	66504-4	1-66504-0			
		D	1658539-2	1658539-4	1658537-1	1658537-2			

\*For Part Nos. of Special Applicators and Applicators for other model machines, call the TE Tooling Assistance Center at 1-800-722-1111.

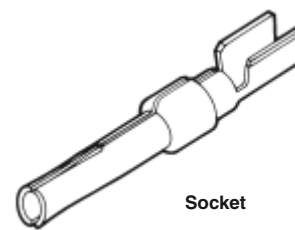
\*\*For use with AMP-O-ELECTRIC Model "G" Terminating Machine.

\*\*\*For use with AMP-O-MATIC Model II Stripper-Crimper Machine.

Without Insulation Support



Pin



Socket

Wire Size Range AWG [mm <sup>2</sup> ]	Ins. Dia. Max.	Contact Finish (Plating Code)	Contact Part Numbers		Hand Tools for Loose Form Contacts	
			Pin	Socket	CERTI-CRIMP II Hand Tool (Color Code)	Applicators* for Strip Form Contacts
			Strip Form	Strip Form		
28-24 0.08-0.2	.068 1.73	A	205310-2	205311-3	91548-1 (Blue Dot)	466903-1***
		C	205202-6	205201-6		
24-20 0.2-0.6	.068 1.73	A	205202-2	205201-3	91548-1 (Red Dot)	466902-1***
		C	205202-6	205201-6		
22-18 0.4-0.8	.068 1.73	A	745229-2	745230-2	91513-1 (Green Dot)	466996-1***
		B	1658541-1	1658542-2		
		C	745229-5	745230-5		
		D	—	1658542-1		

**Note:** Wire insulation diameter is limited by the connector housing cavity and clearance for the insertion/extraction tool.

\*For Part Nos. of Special Applicators and Applicators for other model machines, call the TE Tooling Assistance Center at 1-800-722-1111.

\*\*\*For use with AMP-O-MATIC Model II Stripper-Crimper Machine.

**Note:** All part numbers are RoHS compliant.

#### Related Product Data:

**Performance Characteristics**—page 41

**Connectors used with:**  
**HDP**—pages 92-97

**Application Tooling**—page 102

#### Technical Documents:

**Product Specification**—108-40005

**Application Specifications**—114-10000  
114-40030

**Note:** Instruction Sheets for TE Tooling are packaged with the tooling. For additional information call the Tooling Assistance Center: 1-800-722-1111.

### Insertion/Extraction Tool No. 91285-1

Instruction Sheet—408-9404

**HDP-20 Connector Contacts, Precision Formed** (Continued)

**Contact Size 20 DF  
Pin Diameter .040 [1.02]**

**Material and Finish:**

**Pin**—Brass

**Socket**—Phosphor bronze

**Plated:**

**A**—Duplex plated .000030 [0.00076] gold on mating end, with entire contact .000050 [0.00127] min. nickel under-plated

**B**—Duplex plated gold flash on mating end, with entire contact .000050 [0.00127] min. nickel underplated

**Related Product Data:**

**Performance Characteristics**—  
page 41

**Connectors used with:**  
**HDP**—pages 92, 93

**Technical Documents:**

**Product Specification**—108-40005

**Application Specifications**—  
114-10000  
114-40030

**Note:** Instruction Sheets for TE Tooling are packaged with the tooling. For additional information call the Tooling Assistance Center: **1-800-722-1111**.

**Contact Size 20 DF  
Pin Diameter .040 [1.02]**

**Material and Finish:**

**Pin**—Brass

**Socket**—Phosphor bronze

**Plated**—Gold flash over nickel on entire contact, with additional .000030 [0.00076] gold on mating end

**Related Product Data:**

**Performance Characteristics**—  
page 41

**Connectors used with:**  
**HDP**—pages 92-97

**Technical Documents:**

**Product Specification**—108-40005

**Application Specification**—  
114-40030

**Insertion/Extraction Tool  
No. 91285-1**

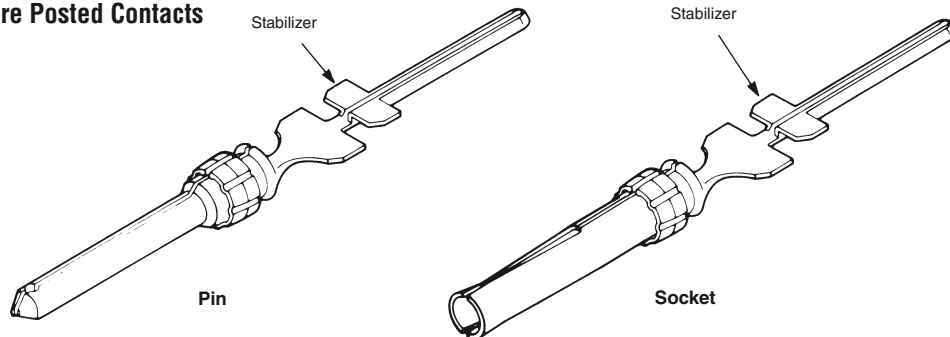
This tool includes interchangeable tips to Insert/Extract:

Size 22, 28-22 AWG [0.08-0.4 mm<sup>2</sup>]

Size 20, Posted Contacts

(Instruction Sheet—408-9404)

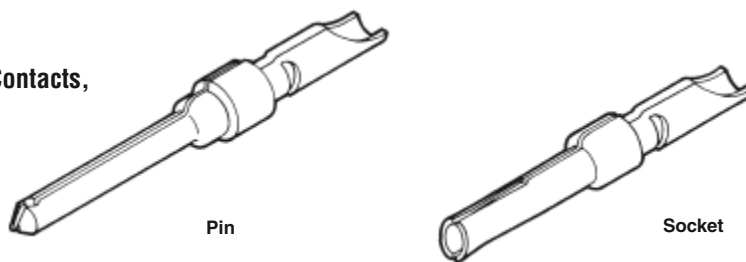
**.025 [0.64]  
Square Posted Contacts**



Contact Finish (Plating Code)	Loose Form Contact Numbers							
	.125 [3.18] Post Length*		.188 [4.78] Post Length*		.427 [10.85] Post Length*		.651 [16.54] Post Length*	
	Pin	Socket	Pin	Socket	Pin	Socket	Pin	Socket
A	—	5-745288-5	5-745287-4	7-745288-0	4-745287-7	5-745288-8	5-745287-0	6-745288-1
B	—	—	—	—	—	7-745288-2	—	7-745288-2

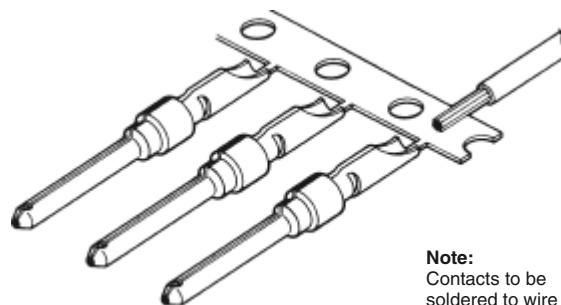
\*Length of post extending from rear of HDP-20 metal-shell connector.

**Solder Cup Contacts,  
Snap-In**



**18 AWG Max. Wire (.046 [1.17] Max. Conductor Diameter)**

Strip Form Contact Number		Loose Form Contact Number	
Pin	Socket	Pin	Socket
66570-2	66569-2	66570-3	66569-3



**Note:** Contacts to be soldered to wire before being inserted into housing

**Note:** All part numbers are RoHS compliant.

## HDP-20 Application Tooling

HDP-20 contacts may be applied by a variety of hand tools and machines. For low production runs, repairs and prototype work, we offer either our premium CERTI-CRIMP Hand Tool or our commercial PRO-CRIMPER II Hand Tool. For medium-volume production, you have the choice of our AMP-O-LECTRIC Model "G" Terminating Machine, our new Model "M" Terminating Machine, or our AMP-O-MATIC Model II Stripper-Crimper Machine. The Stripper-Crimper is typically used for terminating the wires of jacketed cable. All three machines can be bench mounted.

For production requirements ranging from non-stop high volumes to countless series of short runs, our popular AMPOMATOR CLS IV+ fully-automated lead-making machine is an ideal choice.

For further information about these or other TE hand tools and machines, call the TE Tooling Assistance Center at **1-800-722-1111**.



### AMPOMATOR CLS IV+ Lead-Making Machine

This versatile machine now incorporates two AMP-O-LECTRIC Model "G" Terminating Units. Basically, it produces single-wire leads in lengths from 1.62 [41.2] to 1000 [25 400]. It measures, cuts, strips and terminates wire sizes from 26 to 10 AWG [0.12 to 6 mm<sup>2</sup>] stranded and 26 to 16 AWG [0.12 to 1.4 mm<sup>2</sup>] solid. Production rates range up to 4800 leads per hour for 3 [76.2] lengths.

The machine is microprocessor controlled, and programmed and operated with

an easy-to-follow, menu-driven touchscreen. It can retain data for up to 200 lead assemblies. Off-line programming is also possible with optional software OffLine-Plus for Windows 95, **Part No. 189263-2**.

Air requirement is 90 psi [6.21] bar minimum at 15 scfm [0.0071 m<sup>3</sup>/s]. Power requirement is single-phase 220 VAC, 50 or 60 Hz, 25 A.

For further information request Catalog 124324.

**Note:** All part numbers are RoHS compliant.

## HDP-22 Crimp Snap-In Contact Connectors



### Product Selection Guide

Connector			
Type	Insert Material	Shell Type Material and Finish	Mounting

Plug  
(pg. 105)

94V-0 Rated  
Thermoplastic,  
Black

Tin Plated Steel  
with Grounding  
Indents

.120  
[3.05]  
Dia. Holes



Contacts		
Type	Termination	Plating

Pin  
(pg. 109)

Crimp

Duplex  
(.000030  
[0.00076] Gold  
and Tin)

Duplex  
(Gold Flash  
and Tin)



Receptacle  
(pg. 105)

94V-0 Rated  
Thermoplastic,  
Black

Tin Plated Steel

.120  
[3.05]  
Dia. Holes



Socket  
(pg. 109)

Crimp

Duplex  
(.000030  
[0.00076] Gold  
and Tin)

Duplex  
(Gold Flash  
and Tin)



**HDP-22 Crimp Snap-In Contact Connectors** (Continued)

**Product Facts:**

- Approximately 65% higher density than HD-20 connectors
- Lower cost, commercial version of the military approved Series 90 family
- Available with shielding overmold hardware and shielding enclosure kits
- Capable of using numerous standard HD-20 cable clamps and mating hardware

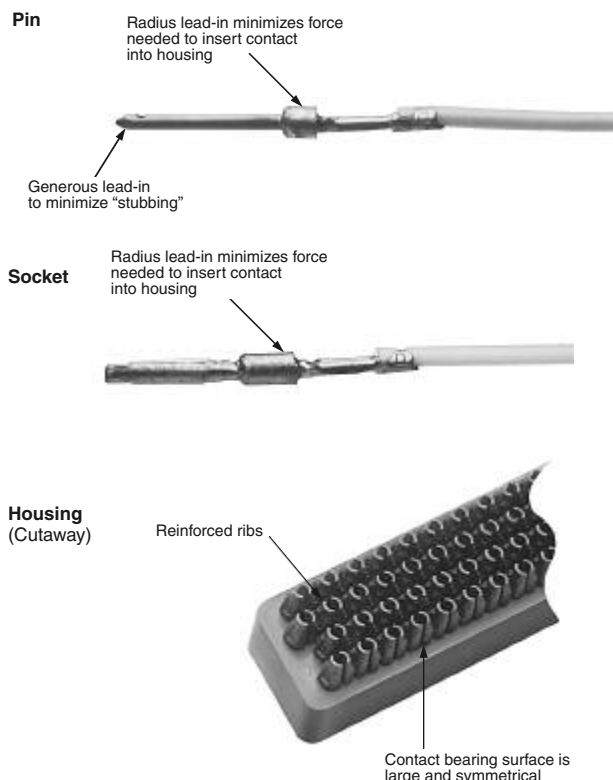
- Low cost, high performance, precision-formed crimp contacts
- Intermateable with any size 22 Subminiature D connector dimensionally complying with MIL-C-24308
- Recognized under the Component Program of Underwriters Laboratories Inc.,  File No. E28476
- Listed under Underwriters Laboratories Inc., Standard 1863, Communication Circuit Accessories,  File No. E81956
- Certified by Canadian Standards Association, File No. LR 1088108  (LR 7189-207)

**Section Contents**

Plug and Receptacle Connectors ..... 105  
 Basic Shielding Hardware Kits ..... 106  
 Shielding Hardware Enclosure Kits ..... 107  
 Ferrules for Shielding Hardware Kits ..... 108  
 Contacts ..... 109  
 Application Tooling ..... 108, 109

Unshielded Cable Clamps	Shielded Cable Clamps and Shielding Hardware and Enclosure Kits	Mounting and Mating Hardware
One-Piece All Plastic Cable Clamp 180°/120° Exit (Quik-Snap) (pg. 133)	Straight Exit RFI/EMI Shields for Jacketed Cable (pg. 141)	Male Screw Retainers (pgs. 146, 147)
Box and Lid Straight/90° Exit (pg. 137)	90° Exit RFI/EMI Die Cast Shields For Jacketed Cable (pg. 142)	Female Screwlocks (pg. 148)
Box and Lid Straight/90° Exit with Male Screw Retainers (pg. 137)	Basic Shielding Hardware Kits (pg. 106)	Locking Posts and Slide Latches (pgs. 149, 151)
Clam Shell Straight/45° Exit (pg. 138)	Shielding Hardware Enclosure Kits (pg. 107)	Two-Piece Spring Latch (pg. 152)
Clam Shell Straight/45° Exit with Screw Retainers (pg. 138)	Crimp & Split Ring Ferrules (pgs. 143-145)	Latching Blocks (pgs. 153, 154)

**Contact Retention Features**



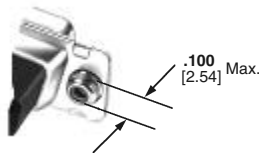
**HDP-22 Crimp Snap-In Contact Connectors** (Continued)



**Plug**  
(With Grounding Indents)



**Receptacle**



**Clinch Nut**  
(Plug and Receptacle)

**Material and Finish:**

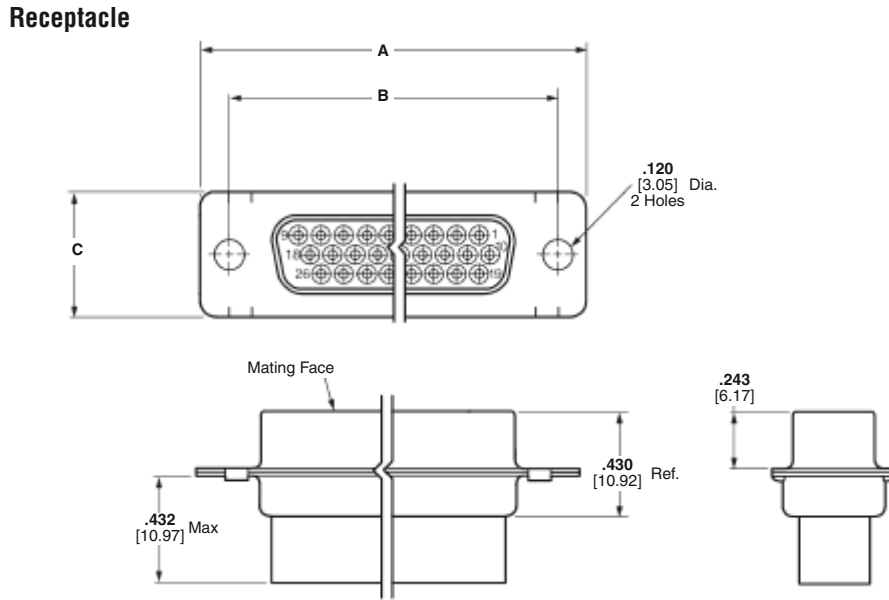
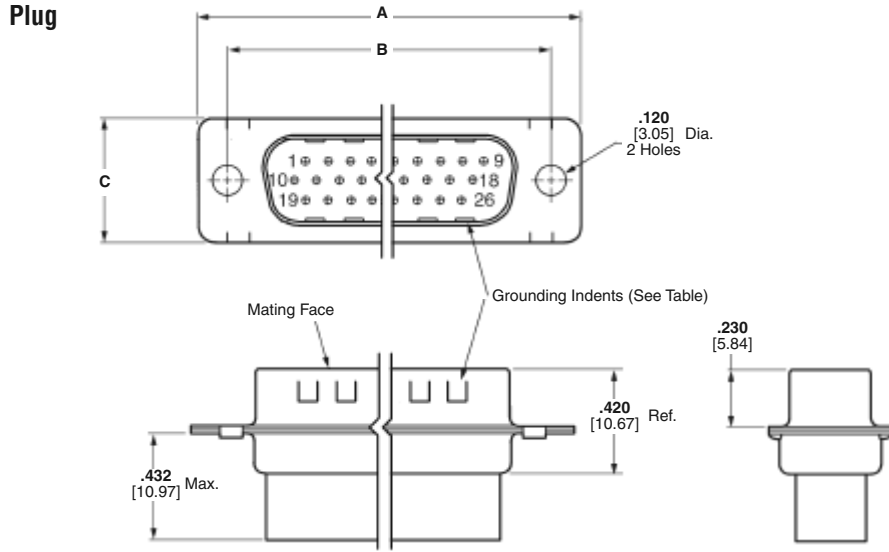
**Shell**—Steel, tin plated  
**Insert**—94V-0 rated thermoplastic, black  
 Contacts and ferrules must be purchased separately.

**Related Product Data:**

- Contact Arrangements**—page 40
- Performance Characteristics**—page 41
- Contacts**—page 109
- Ferrules**—page 108
- Mating/Panel Mounting**—page 42
- Cable Clamps**—pages 132, 133, 135-137, 140, 141, 144, 145
- Mating Hardware**—pages 146-150, 153, 155

**Technical Documents:**

- Application Specification**—114-10001
  - Product Specification**—108-1268
  - Instruction Sheets**—408-9381
- Note:** Instruction Sheets for TE Tooling are packaged with the tooling. For additional information call the Tooling Assistance Center: **1-800-722-1111**.



Shell Size	No. of Contact Positions	Dimensions			Part Numbers			
		A	B	C	With Grounding Indents		With Clinch Nuts	
					Plug	Plug	Receptacle	Receptacle
1	15	1.213 30.81	.984 24.99	.494 12.55	748364-1	1658691-1	1658681-1	1658690-1
2	26	1.541 39.14	1.312 33.33	.494 12.55	1658671-1	5749717-1	1658682-1	5788816-1
3	44	2.088 53.84	1.852 47.04	.494 12.55	1658672-1	—	1658683-1	5786583-1
4	62	2.729 69.32	2.500 63.50	.494 12.55	1658673-1	6658293-1	1658684-1	—
5	78	2.635 66.93	2.406 61.11	.605 15.37	1658674-1	—	1658685-1	5788817-1

**Note:** Plugs accept size 22 DF pin contacts and receptacles accept size 22 DF socket contacts.

**Note:** All part numbers are RoHS compliant.

**HDP-22 Crimp Snap-In Contact Connectors** (Continued)

**Basic Shielding Hardware Kits**



Plug



Receptacle

**Each kit contains:**

- Connector
- Inner shield
- Outer shield

Contacts and ferrules must be purchased separately.

**Material and Finish:**

- Connector Shell**—Steel, tin plated
- Connector Insert**—94V-0 rated thermoplastic, black
- Shields**—Steel, tin plated

**Related Product Data:**

- Contact Arrangements**—page 40
- Performance Characteristics**—page 41
- Contacts**—page 109
- Ferrules**—page 108
- Application Tooling**—pages 108 & 109

**Mateable Connectors**—pages 105 & 107

**Mating Hardware**—pages 146-150, 153, 155

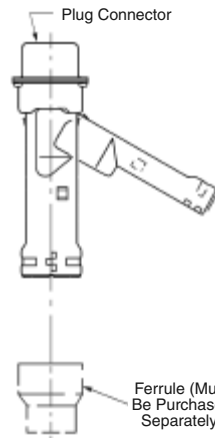
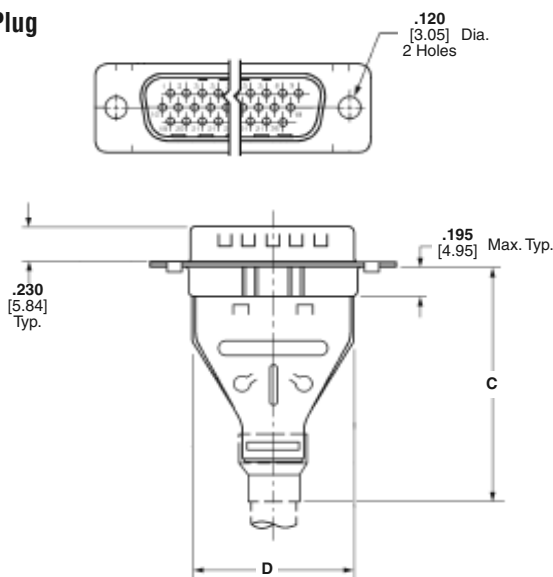
**Mating/Panel Mounting**—page 42

**Technical Documents:**

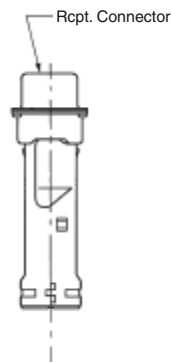
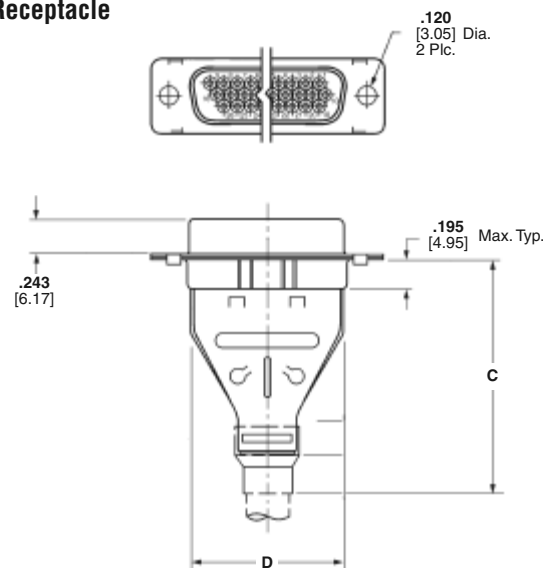
- Application Specifications**—114-10001
- Product Specification**—108-1268
- Instruction Sheet**—408-9381, 408-9010

**Note:** Instruction Sheets for TE Tooling are packaged with the tooling. For additional information call the Tooling Assistance Center: **1-800-722-1111**.

**Plug**



**Receptacle**



Shell Size	No. of Contact Positions	Dimensions		Recommended Cable Outer Dia. Range	Max. Inner Cable Bundle Dia.†	Kit Numbers	
		C	D			Plug	Receptacle
1	15	1.535 38.99	.700 17.78	.165-.455 4.19-11.56	.350 8.89	1658675-1	5748634-1
2	26	1.535 38.99	1.024 26.01	.165-.455 4.19-11.56	.350 8.89	1658676-1	1658687-1
3	44	1.535 38.99	1.576 40.03	.165-.455 4.19-11.56	.350 8.89	1658677-1	5748636-1
4	62	1.892 48.06	2.215 56.26	.338-.562 8.59-14.28	.450 11.43	5748471-1	—
5	78	1.876 47.65	2.120 53.85	.338-.490 8.59-12.45	.450 11.43	5748472-1	—

**Notes:** 1. Plugs accept size 22 DF pin contacts and receptacles accept size 22 DF socket contacts.  
2. Components of the kits are shipped unassembled and bulk-packaged in quantities of 100 pieces.  
†Maximum cable diameter after jacket and braid removed.

**Note:** All part numbers are RoHS compliant.

## HDP-22 Crimp Snap-In Contact Connectors (Continued)

### Shielding Hardware Enclosure Kits



Plug



Receptacle

#### Each kit contains:

- Connector
- Inner shield
- Outer shield
- Enclosure
- Two jackscrews

Contacts and ferrules must be purchased separately.

#### Material and Finish:

- Connector Shell**—Steel, tin plated
- Connector Insert**—94V-0 rated thermoplastic, black
- Shields**—Steel, tin plated
- Enclosure**—PVC, black
- Jackscrews**—Zinc alloy

#### Related Product Data:

- Contact Arrangements**—page 40
- Performance Characteristics**—page 41
- Contacts**—page 109
- Ferrules**—page 108

**Application Tooling**—pages 108 & 109

**Mateable Connectors**—pages 105 & 106

**Mating Hardware**—pages 146-150, 153-155

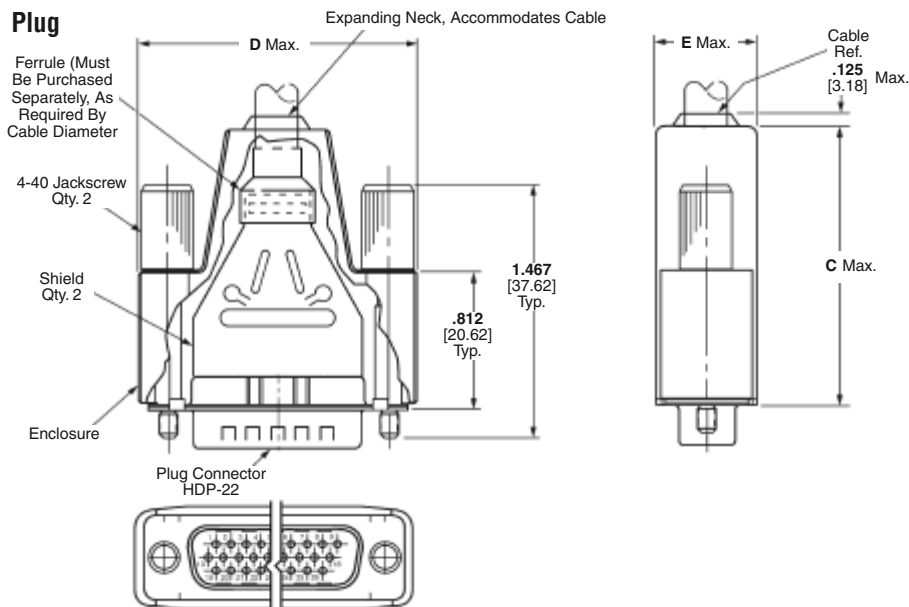
**Mating/Panel Mounting**—page 42

#### Technical Documents:

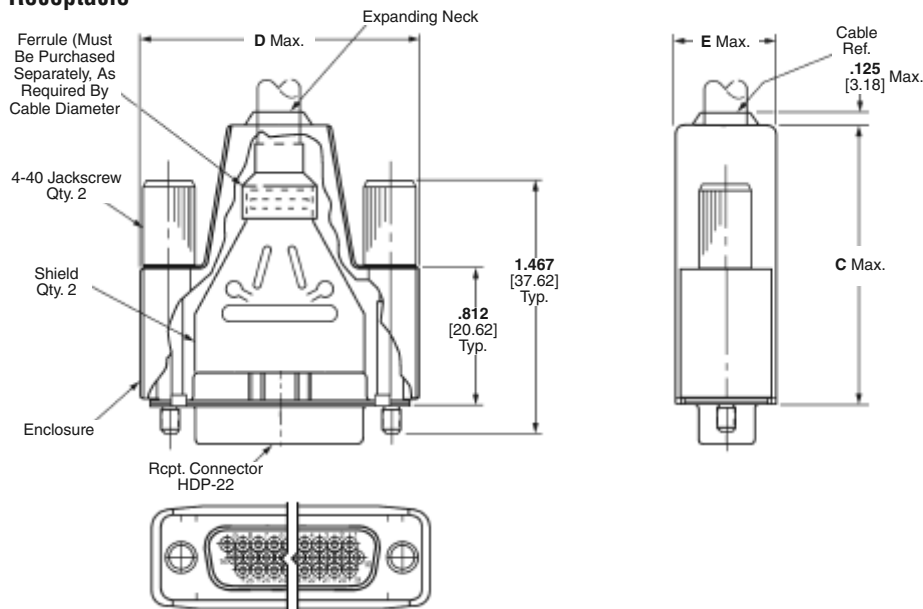
- Application Specifications**—114-10001
- Product Specification**—108-1268
- Instruction Sheet**—408-9381  
408-9172

**Note:** Instruction Sheets for TE Tooling are packaged with the tooling. For additional information call the Tooling Assistance Center: **1-800-722-1111**.

### Plug



### Receptacle



Shell Size	No. of Contact Positions	Dimensions			Recommended Cable Outer Diameter	Max. Inner Cable Bundle Dia.†	Kit Numbers		Shielding Enclosure Expansion Tool	
		C	D	E			Plug	Receptacle	Cable O.D. (Max.)	Part Number
1	15	1.640 41.66	1.355 34.42	.630 16.00	.190-.330 4.83-8.38	.330 8.38	1658678-1	1658688-1	.330 8.38	58241-4
2	26	1.640 41.66	1.685 42.80	.630 16.00	.190-.330 4.83-8.38	.330 8.38	1658679-1	1658689-1		
3	44	1.640 41.66	2.205 56.01	.630 16.00	.217-.435 5.51-11.05	.350 8.89	1658680-1	5748641-1	.450 11.43	58241-1
4	62	2.010 51.05	2.860 72.64	.730 18.54	.338-.562 8.59-14.28	.450 11.43	5748476-1	5748642-1	.572 14.52	58241-2
5	78	2.010 51.05	2.770 70.36	.730 18.54	.338-.490 8.59-12.45	.450 11.43	5748477-1	—		

**Notes:** 1. Plugs accept size 22 DF pin contacts and receptacles accept size 22 DF socket contacts.  
2. Components of the kits are shipped unassembled and bulk-packaged in quantities of 100 pieces.

†Maximum cable diameter after jacket and braid removed.

**Note:** All part numbers are RoHS compliant.

**HDP-22 Crimp Snap-In Contact Connectors** (Continued)

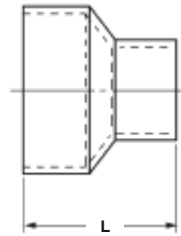
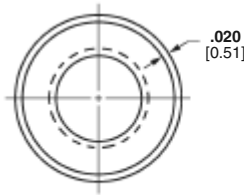
**Ferrules for Shielding Hardware Kits**



Stepped



Straight



**Material and Finish:**

Steel (annealed), tin plated

**Related Product Data:**

**Shielding Hardware and Enclosure Kits**—pages 106 & 107

**Technical Documents:**

**Instruction Sheets**—

- 408-9507
- 408-9508
- 408-9243
- 408-9242

**Note:** Instruction Sheets for TE Tooling are packaged with the tooling. For additional information call the Tooling Assistance Center: **1-800-722-1111**.

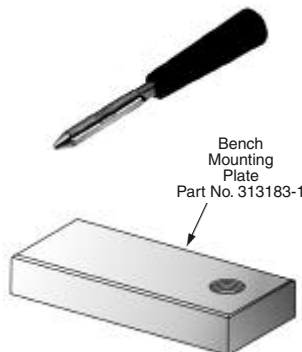
Shell Sizes	Style	L Dim.	Cable Diameter	Part Numbers	
				Ferrule	Die Sets*
1-3	Stepped	.440 11.18	.165-.190 4.19-4.83	3-747579-0	543424-3
1-3	Stepped	.440 11.18	.190-.217 4.83-5.51	3-747579-0	543424-2
1-3	Stepped	.440 11.18	.217-.246 5.51-6.25	3-747579-0	543424-8
1-3	Stepped	.440 11.18	.246-.284 6.25-7.21	3-747579-2	543424-1
1-3	Stepped	.440 11.18	.284-.324 7.21-8.23	3-747579-2	543424-7
1-3	Stepped	.440 11.18	.324-.375 8.23-9.53	3-747579-4	543424-6
1-3	Straight	.440 11.18	.375-.437 9.53-11.05	7-747579-7	543424-5
1-3	Straight	.440 11.18	.400-.460 10.16-11.56	3-747579-6	543424-4
4-5	Stepped	.625 15.88	.230-.265 5.84-6.73	2-747580-4	543425-2
4-5	Stepped	.625 15.88	.338-.385 8.59-9.78	2-747580-3	543425-1
4-5	Stepped	.625 15.88	.375-.432 9.53-10.97	2-747580-1	58238-1
4-5	Stepped	.625 15.88	.422-.490 10.72-12.45	3-747580-1	58237-2
4	Straight	.625 15.88	.480-.562 12.19-14.28	2-747580-2	58237-1

\*Die sets used with Hand Crimping Tool Part No. 543344-1 or Pneumatic Bench Tool Part No. 312522-3 equipped with Die Set Holder Part No. 58449-1.

**Application Tooling for Shielding Hardware Kits**



**Hand Crimping Tool**  
No. 543344-1  
(Requires Die Sets, see table above.)



**Shielding Enclosure Expansion Tools**  
Part No. 58241-1 (.450 [11.43])†  
58241-2 (.572 [14.53])†  
58241-4 (.330 [8.38])†  
†Maximum Cable Diameter  
(Instruction Sheet—408-9507)

**Pneumatic Bench Tool**  
No. 312522-3  
(Requires Die Set Holder No. 58449-1.)



**Note:** All part numbers are RoHS compliant.

## HDP-22 Crimp Snap-In Contact Connectors (Continued)

### Material

**Pin**—Brass

**Socket**—Phosphor bronze

### Finish

**A**—Duplex plated .000030 [0.00076] gold on mating end, tin on crimp barrel, with entire contact nickel underplated

**B**—Duplex plated gold flash on mating end, tin on crimp barrel, entire contact nickel underplated

### Related Product Data:

**Performance Characteristics**—page 41

**Connectors used with**—pages 105-107

### Technical Documents:

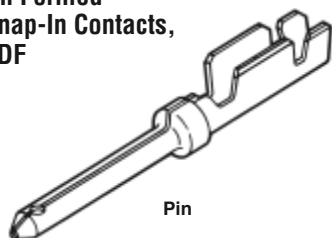
**Application Specification**—114-10001

**Product Specification**—108-1268

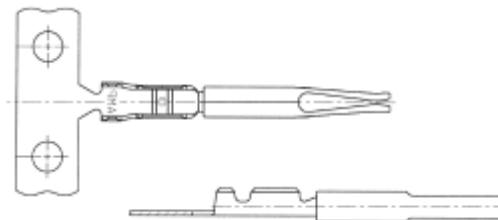
**Instruction Sheet**—408-9381

**Note:** Instruction Sheets for TE Tooling are packaged with the tooling. For additional information call the Tooling Assistance Center: **1-800-722-1111**.

### Precision Formed Crimp Snap-In Contacts, Size 22 DF



Pin



Socket

Wire Size AWG mm <sup>2</sup>	Insulation Diameter Max.	Contact Finish (Plating Code)	Contact Part Numbers				Hand Tools for Loose Form Contacts	
			Pin		Socket		PRO-CRIMPER II Hand Tool	CERTI-CRIMP II Hand Tool
			Strip Form	Loose Form	Strip Form	Loose Form		
28-22 0.4-0.08	.040 1.02	A	1658670-1	1658670-2	1658686-1	1658686-2	90800-1	91520-1
		B	1658670-3	1658670-4	1658686-3	1658686-4		

**Notes:** 1. Strip form contacts shipped 20,000 pieces/reel.

### Insertion/Extraction Tool No. 91285-1 (Instruction Sheet—408-9404)

This tool contains interchangeable tips to Insert/Extract Size 22, 28-22 AWG [0.08-0.4 mm<sup>2</sup>] Crimp Contacts Size 20, 28-20 AWG [0.08-0.4 mm<sup>2</sup>] Crimp Contacts Size 20, Posted Contacts

### Application Tooling



#### Applicators

To accommodate the broad range of wire termination products that TE produces, most TE terminating machines are designed for use with interchangeable applicators. The basic styles are quickly interchangeable to minimize costly down times, and feature dial-in wire and insulation crimp-height settings. Special applicators are now available for use with the AMP Crimp Quality Monitor, for measuring the crimp height of each termination as it is made, plus evaluating the quality of each crimp.

For further information, request Catalog 65404.

For applicator part numbers, call the TE Tooling Assistance Center at **1-800-722-1111**.



#### AMP-O-LECTRIC MODEL "G" Terminating Machine

A totally new design of our most popular machine for bench-top operation. It features a quiet and highly-reliable direct motor drive, electronic controls for ease of setup and operation, and improved guarding and lighting for operator convenience and safety. All versions also include either manual or automatic precision adjustment for crimp height. Power requirement is 120 or 220 VAC, 50 or 60 Hz.

For further information, request Catalog 65828.



#### AMP-O-MATIC Model II Stripper-Crimper Machine

This machine automatically strips as well as terminates individual wires. Similar to the AMP-O-LECTRIC Model "G" machine, applicators are quickly interchangeable, and it includes precision adjustment for crimp height. All adjustments can be made from the front of the machine without special tools. Power requirement is 120 VAC. Air requirement is 80-100 psi [5.52-6.89 bar], 3.5 scfm [0.00165 m<sup>3</sup>/s].

For further information request Catalog 65004.



#### PRO-CRIMPER II Hand Tool Part No. 90800-1

Features interchangeable die sets and ratchet control that provides full die closure to help eliminate partial crimps. The new design is more durable, and requires dramatically less hand force.

For further information, request Catalog 82276.

**Note:** All part numbers are RoHS compliant.

**HDE-20 IDC Connectors for Discrete Wire and Jacketed Cable**






**Product Selection Guide**

Connector				Contacts Pre-Loaded*		
Type	Insert Material	Shell Type Material and Finish	Mounting	Type	Termination	Plating
<b>Plug</b>						
All-Plastic (pg. 112)	94V-0 Rated Thermoplastic, Black	Tin Plated Steel	.120 [3.05] Dia. Holes	Pins	Insulation Displacement  * Interchangeable crimp snap-in contacts available, see page 121	Duplex (.000030 [0.00076] Gold and Tin)
Metal-Shell (pg. 114)						Duplex (Gold Flash and Tin)
<b>Receptacle</b>						
All-Plastic (pg. 113)	94V-0 Rated Thermoplastic, Black	Tin Plated Steel	.120 [3.05] Dia. Holes	Sockets	Insulation Displacement  * Interchangeable crimp snap-in contacts available, see page 121	Duplex (.000030 [0.00076] Gold and Tin)
Metal-Shell (pg. 115)						Duplex (Gold Flash and Tin)

**HDE-20 IDC Connectors for Discrete Wire and Jacketed Cable** (Continued)

**Product Facts**

- Insulation displacement contacts preloaded in housings
- No wire stripping
- Post plated contacts with no bare edges
- Duplex plated contacts—gold on mating end and tin on crimp end
- Patented contact ensures reliable termination of a wide range of wire sizes and insulation diameters
- Removable contacts for replacement and repair

- Selective loading of contacts available
- Crimp snap-in contacts available for making jumpers between circuits
- Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476 
- Listed under Underwriters Laboratories Inc., Standard 1863, Communication Circuit Accessories, File No. E81956 
- Certified by Canadian Standards Association, File No. 1088108 (LR 7189-207) 

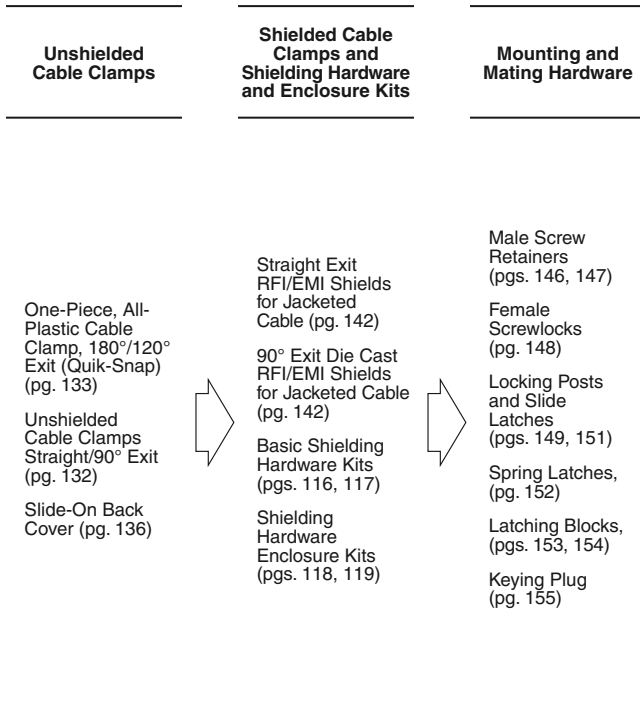
**Section Contents**

All-Plastic Plug and Receptacle Connectors ..... 112, 113  
 Metal-Shell Plug and Receptacle Connectors ..... 114, 115  
 Basic Shielding Hardware Kits ..... 116, 117  
 Shielding Hardware Enclosure Kits ..... 118, 119  
 Ferrules for Shielding Hardware Kits ..... 120  
 Interchangeable Contacts, Crimp Snap-In ..... 121  
 Application Tooling ..... 122, 123

**Typical Application Rates**

Tool	Rate
Pistol Style	7.4 Sec./Line
Arbor Tool	5.0 Sec./Line
CHAMPOMATOR Machine	2.8 Sec./Line

**Note:** Rates are based on total time to complete a double ended 25 position Jacketed Cable Assembly



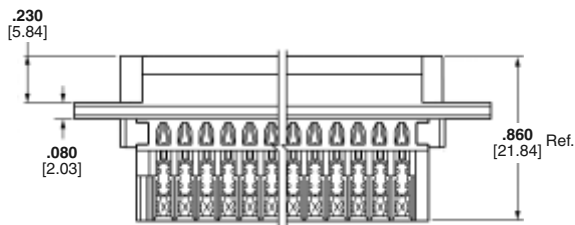
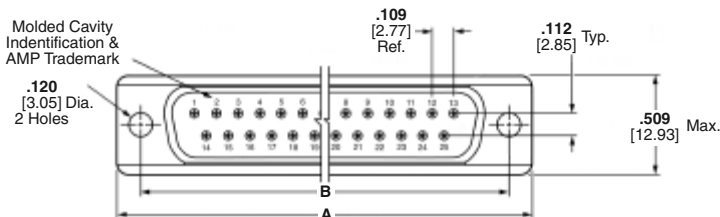


## HDE-20 All-Plastic IDC Connectors

### Plug



Plug



#### Material and Finish:

**Housing**—94V-0 rated thermoplastic, black

**Contacts**—Phosphor bronze

**Contact Finish**—Duplex plated:

**A**—.000030 [0.00076] gold on mating end, tin on termination end, with entire contact nickel underplated

**B**—Gold flash on mating end, tin on termination end, with entire contact nickel underplated

#### Related Product Data:

**Contact Arrangements**—page 40

**Performance Characteristics**—page 41

**Interchangeable Crimp Snap-In Contacts**—page 121

**Application Tooling**—pages 121-123

**Mateable Connectors:**

**HDP**—pages 90-97

**HD-20 Board Mount**—pages 54-71, 78-85, 87-89

**Mating/Panel Mounting**—page 42

**Cable Clamps**—pages 132, 133, 135-137, 139, 140, 144, 145

**Mating Hardware**—pages 146-150, 153, 155

#### Technical Documents:

**Product Specification**—108-40011

**Application Specifications**—114-40002  
114-40003

**Instruction Sheet**—408-6621

**Note:** Instruction Sheets for TE Tooling are packaged with the tooling. For additional information call the Tooling Assistance Center: **1-800-722-1111**.

Shell Size	No. of Contact Positions	Dimensions		Contact Finish (Plating Code)	Connector Part Numbers	
		A	B		Contact Identification No. 1 for 30-26 AWG [0.05-0.15mm <sup>2</sup> ] Wire Plug	Contact Identification No. 2 for 26-22 AWG [0.15-0.4mm <sup>2</sup> ] Wire Plug
1	9	1.213 30.81	.984 24.99	A	—	745203-2
				B	—	1-745203-1
2	15	1.541 39.14	1.312 33.33	A	—	745207-7
				B	—	—
3	25	2.090 53.09	1.852 47.04	A	745211-9	745211-7
				B	—	745211-8
4	37	2.732 69.39	2.500 63.50	A	—	745215-7
				B	—	—

- Notes:**
1. All connectors are preloaded with insulation displacement contacts. Pins in plug connectors and sockets in receptacle connectors. Contacts accept a max. wire insulation thickness of .015 [0.38] and a max. wire insulation dia. of .060 [1.52].
  2. HDE connectors are designed for terminating solid or stranded (7-strand max.) wire.
  3. Individual conductor strands should be larger than .005 inch [0.127] diameter.
  4. Extraction Tool Part No. 91232-1 (Instruction Sheet 408-6631) is used to remove pin or socket contacts.
  5. For terminating more than one wire, or a drain wire, use crimp contacts on page 121.

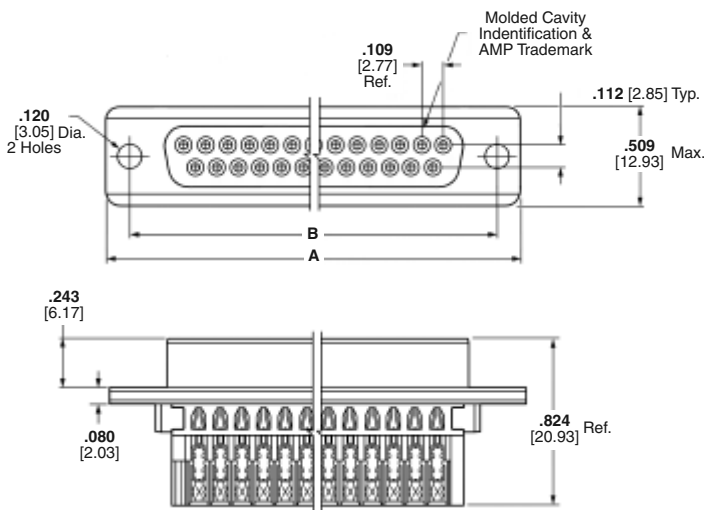
**Note:** All part numbers are RoHS compliant.

**HDE-20 All-Plastic IDC Connectors** (Continued)

**Receptacle**



Receptacle



**Material and Finish:**

**Housing**—94V-0 rated thermoplastic, black

**Contacts**—Phosphor bronze

**Contact Finish**—Duplex plated:

**A**—.000030 [0.00076] gold on mating end, tin on termination end, with entire contact nickel underplated

**B**—Gold flash on mating end, tin on termination end, with entire contact nickel underplated

**Related Product Data:**

**Contact Arrangements**—page 40

**Performance Characteristics**—page 41

**Interchangeable Crimp Snap-In Contacts**—page 121

**Application Tooling**—pages 121-123

**Mateable Connectors:**

**HDP**—pages 90-97

**HD-20 Board Mount**—pages 54-71, 78-85, 87-89

**Mating/Panel Mounting**—page 42

**Cable Clamps**—pages 132, 133, 135-137, 139, 140, 144, 145

**Mating Hardware**—pages 146-150, 153, 155

**Technical Documents:**

**Product Specification**—108-40011

**Application Specifications**—114-40002  
114-40003

**Instruction Sheet**—408-6621

**Note:** Instruction Sheets for TE Tooling are packaged with the tooling. For additional information call the Tooling Assistance Center: **1-800-722-1111**.

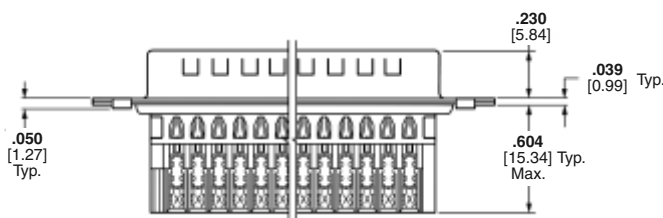
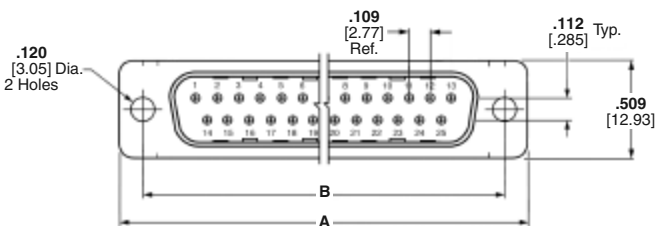
Shell Size	No. of Contact Positions	Dimensions		Contact Finish (Plating Code)	Connector Part Numbers
		A	B		Contact Identification No. 2 for 26-22 AWG [0.15-0.4mm <sup>2</sup> ] Wire Receptacle
1	9	1.213	.984	A	745201-7
		30.81	24.99	B	745201-9
2	15	1.541	1.312	A	745205-7
		39.14	33.33		
3	25	2.090	1.852	A	745209-7
		53.09	47.04	B	745209-8

- Notes:**
1. All connectors are preloaded with insulation displacement contacts. Pins in plug connectors and sockets in receptacle connectors. Contacts accept a max. wire insulation thickness of .015 [0.38] and a max. wire insulation dia. of .060 [1.52].
  2. HDE connectors are designed for terminating solid or stranded (7-strand max.) wire.
  3. Individual conductor strands should be larger than .005 inch [0.127] diameter.
  4. Extraction Tool Part No. 91232-1 (Instruction Sheet 408-6631) is used to remove pin or socket contacts.
  5. For terminating more than one wire, or a drain wire, use crimp contacts on page 121.

**Note:** All part numbers are RoHS compliant.

## HDE-20 Metal-Shell IDC Connectors

### Plug



#### Material and Finish:

**Shell**—Steel, tin plated  
**Insert**—94V-0 rated thermoplastic, black

**Contacts**—Phosphor bronze  
**Contact Finish**—Duplex plated:  
**A**—.000030 [0.00076] gold on mating end, tin on termination end, with entire contact nickel underplated  
**B**—Gold flash on mating end, tin on termination end, with entire contact nickel underplated

#### Related Product Data:

- Contact Arrangements**—page 40
- Performance Characteristics**—page 41
- Interchangeable Crimp Snap-In Contacts**—page 121
- Application Tooling**—pages 121-123
- Mateable Connectors:**
  - HDP**—pages 90-97
  - HD-20 Board Mount**—pages 54-71, 78-85, 87-89
- Mating/Panel Mounting**—page 42
- Cable Clamps**—pages 132, 133, 135-137, 138, 140, 144, 145
- Mating Hardware**—pages 146-150, 153, 155

#### Technical Documents:

- Product Specification**—108-40011
- Application Specifications**—114-40002, 114-40003
- Instruction Sheet**—408-6645
- Note:** Instruction Sheets for TE Tooling are packaged with the tooling. For additional information call the Tooling Assistance Center: **1-800-722-1111**.

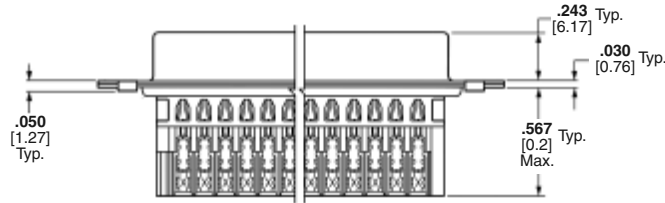
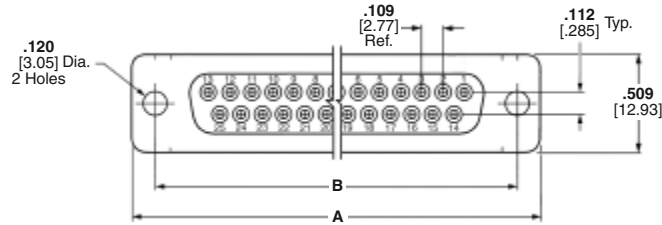
Shell Size	No. of Contact Positions	Dimensions		Contact Finish (Plating Code)	Connector Part Numbers		
					Contact Identification No. 1 for 30-26 AWG [0.05-0.15mm <sup>2</sup> ] Wire	Contact Identification No. 2 for 26-22 AWG [0.15-0.4mm <sup>2</sup> ] Wire	Contact Identification No. 3 for 22-20 AWG [0.4-0.6mm <sup>2</sup> ] Wire
					Plug	Plug	Plug
1	9	1.213 30.81	.984 24.99	A	1-745492-7	1-745492-8	1-745492-9
				B	—	2-745492-0	—
2	15	1.541 39.14	1.312 33.33	A	1-745494-7	1-745494-5	—
				B	—	1-745494-6	—
3	25	2.088 53.04	1.852 47.04	A	1-745496-9	1-745496-7	2-745496-0
				B	—	1-745496-8	—
4	37	2.729 69.32	2.500 63.50	A	1-745498-6	1-745498-5	—
				B	—	1-745498-7	—

- Notes:**
1. All connectors are preloaded with insulation displacement contacts. Pins in plug connectors and sockets in receptacle connectors. Contacts accept a max. wire insulation thickness of .015 [0.38] and a max. wire insulation dia. of .060 [1.52].
  2. Connectors can be made available with clinch nuts, contact TE.
  3. HDE connectors are designed for terminating solid or stranded (7-strand max.) wire.
  4. Individual conductor strands should be larger than .005 inch [0.127] diameter.
  5. Extraction Tool Part No. 91232-1 (Instruction Sheet 408-6631) is used to remove pin or socket contacts.
  6. For terminating more than one wire, or a drain wire, use crimp contacts on page 121.

**Note:** All part numbers are RoHS compliant.

**HDE-20 Metal-Shell IDC Connectors** (Continued)

**Receptacle**



**Material and Finish:**

**Shell**—Steel, tin plated

**Insert**—94V-0 rated thermoplastic, black

**Contacts**—Phosphor bronze

**Contact Finish**—Duplex plated:  
**A**—.000030 [0.00076] gold on mating end, tin on termination end, with entire contact nickel underplated

**B**—Gold flash on mating end, tin on termination end, with entire contact nickel underplated

**Related Product Data:**

**Contact Arrangements**—page 40

**Performance Characteristics**—page 41

**Interchangeable Crimp Snap-In Contacts**—page 121

**Application Tooling**—pages 121-123

**Mateable Connectors:**

**HDP**—pages 90-97

**HD-20 Board Mount**—pages 54-71, 78-85, 87-89

**Mating/Panel Mounting**—page 42

**Cable Clamps**—pages 132, 133, 135-137, 139, 140, 144, 145

**Mating Hardware**—pages 146-150, 153, 155

**Technical Documents:**

**Product Specification**—108-40011

**Application Specifications**—114-40002  
114-40003

**Instruction Sheet**—408-6645

**Note:** Instruction Sheets for TE Tooling are packaged with the tooling. For additional information call the Tooling Assistance Center: **1-800-722-1111**.

Shell Size	No. of Contact Positions	Dimensions		Contact Finish (Plating Code)	Connector Part Numbers		
		A	B		Contact Identification No. 1 for 30-26 AWG [0.05-0.15mm <sup>2</sup> ] Wire	Contact Identification No. 2 for 26-22 AWG [0.15-0.4mm <sup>2</sup> ] Wire	Contact Identification No. 3 for 22-20 AWG [0.4-0.6mm <sup>2</sup> ] Wire
		Receptacle			Receptacle	Receptacle	
1	9	1.213 30.81	.984 24.99	A	1-745491-6	1-745491-7	1-745491-9
				B	—	1-745491-8	—
2	15	1.541 39.14	1.312 33.33	A	1-745493-6	1-745493-4	—
				B	—	1-745493-5	—
3*	25	2.088 53.04	1.852 47.04	A	1-745495-7	1-745495-8	1-745495-9
				B	—	2-745495-0	—
4	37	2.729 69.32	2.500 63.50	A	1-745497-6	1-745497-5	—
				B	—	1-745497-7	—

\* RS-232, size 3 connector, for 26-22 [0.15-0.4mm<sup>2</sup>] AWG wire select loaded circuits 1-8,15,17, 20 and 22, Plug Part No. 747740-1, Receptacle Part No. 747741-1, gold flash contacts.

- Notes:**
- All connectors are preloaded with insulation displacement contacts. Pins in plug connectors and sockets in receptacle connectors. Contacts accept a max. wire insulation thickness of .015 [0.38] and a max. wire insulation dia. of .060 [1.52].
  - Connectors can be made available with clinch nuts, contact TE.
  - HDE connectors are designed for terminating solid or stranded (7-strand max.) wire.
  - Individual conductor strands should be larger than .005 inch [0.127] diameter.
  - Extraction Tool Part No. 91232-1 (Instruction Sheet 408-6631) is used to remove pin or socket contacts.
  - For terminating more than one wire, or a drain wire, use crimp contacts on page 121.

**Note:** All part numbers are RoHS compliant.

## HDE-20 Basic Shielding Hardware Kits



**Each kit contains:**

- Connector
- Inner shield
- Outer shield

Ferrules must be purchased separately.

**Material and Finish:**

**Connector Shell**—Steel, tin plated

**Connector Insert**—94V-0 rated thermoplastic, black

**Shield**—Steel, tin plated

**Contacts**—Phosphor bronze

**Contact Finish**—Duplex plated:

**A**—.000030 [0.00076] gold on mating end, tin on termination end, with entire contact nickel underplated

**B**—Gold flash on mating end, tin on termination end, with entire contact nickel underplated

**Related Product Data:**

**Contact Arrangements**—page 40

**Performance Characteristics**—page 41

**Application Tooling**—pages 121-123

**Mateable Connectors:**

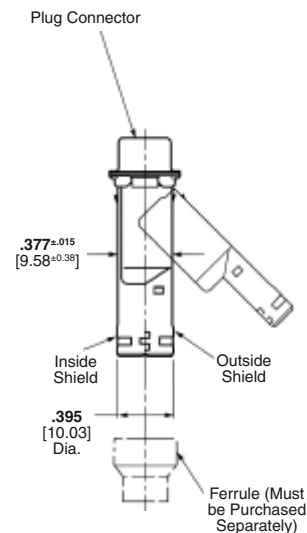
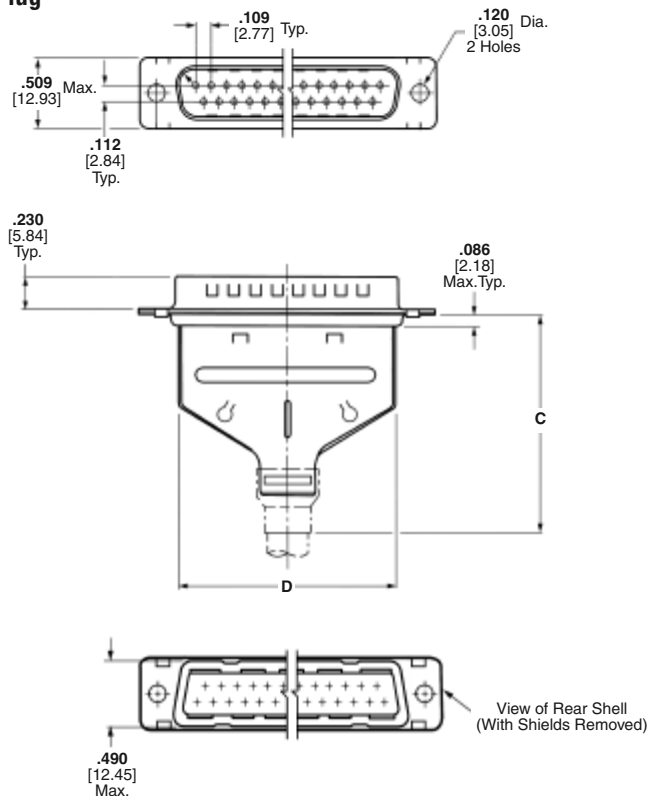
**HDP**—pages 90-97

**HD-20 Board Mount**—pages 54-71, 78-85, 87-89

**Mating Hardware**—pages 146-150, 153, 155

**Mating/Panel Mounting**—page 42

**Plug**



**Technical Documents:**

**Product Specifications—**

108-40011

108-40030

**Application Specifications—**

114-40002

114-40003

114-40006

**Instruction Sheet—**408-9010

**Note:** Instruction Sheets for TE Tooling are packaged with the tooling. For additional information call the Tooling Assistance Center: **1-800-722-1111**.

Shell Size	No. of Contact Pos.	Dimensions		Recommended Cable Outer Dia. Range	Max. Inner Cable Bundle Dia.†	Contact Finish (Plating Code)	Connector Part Numbers		
							Contact I.D. No. 1 for 30-26 AWG [0.05-0.15mm <sup>2</sup> ] Wire	Contact I.D. No. 2 for 26-22 AWG [0.15-0.4mm <sup>2</sup> ] Wire	Contact I.D. No. 3 for 22-20 AWG [0.4-0.6mm <sup>2</sup> ] Wire
							Plug	Plug	Plug
1	9	1.520 38.61	.678 17.22	.165-.455 4.19-11.56	.350 8.89	A	—	747515-7	—
							747531-7	747531-8	—
2	15	1.520 38.61	1.002 25.45	.165-.455 4.19-11.56	.350 8.89	A B	—	747531-9	—
							747547-8	747547-9	—
3	25	1.520 38.61	1.550 39.37	.165-.455 4.19-11.56	.350 8.89	A B	—	1-747547-0	—
							—	—	—
4	37	1.867 47.42	2.205 56.01	.338-.562 8.59-14.28	.450 11.43	A B	—	—	—
							—	1-747563-0	—

**Note:** Components of the kits are shipped unassembled and bulk-packaged in quantities of 100 pieces.

†Maximum cable diameter after jacket and braid removed.

**Note:** All part numbers are RoHS compliant.

**HDE-20 Basic Shielding Hardware Kits** (Continued)



**Each kit contains:**

- Connector
- Inner shield
- Outer shield

Ferrules must be purchased separately.

**Material and Finish:**

**Connector Shell**—Steel, tin plated

**Connector Insert**—94V-0 rated thermoplastic, black

**Shield**—Steel, tin plated

**Contacts**—Phosphor bronze

**Contact Finish**—Duplex plated:

**A**—.000030 [0.00076] gold on mating end, tin on termination end, with entire contact nickel underplated

**B**—Gold flash on mating end, tin on termination end, with entire contact nickel underplated

**Related Product Data:**

**Contact Arrangements**—page 40

**Performance Characteristics**—page 41

**Application Tooling**—pages 121-123

**Mateable Connectors:**

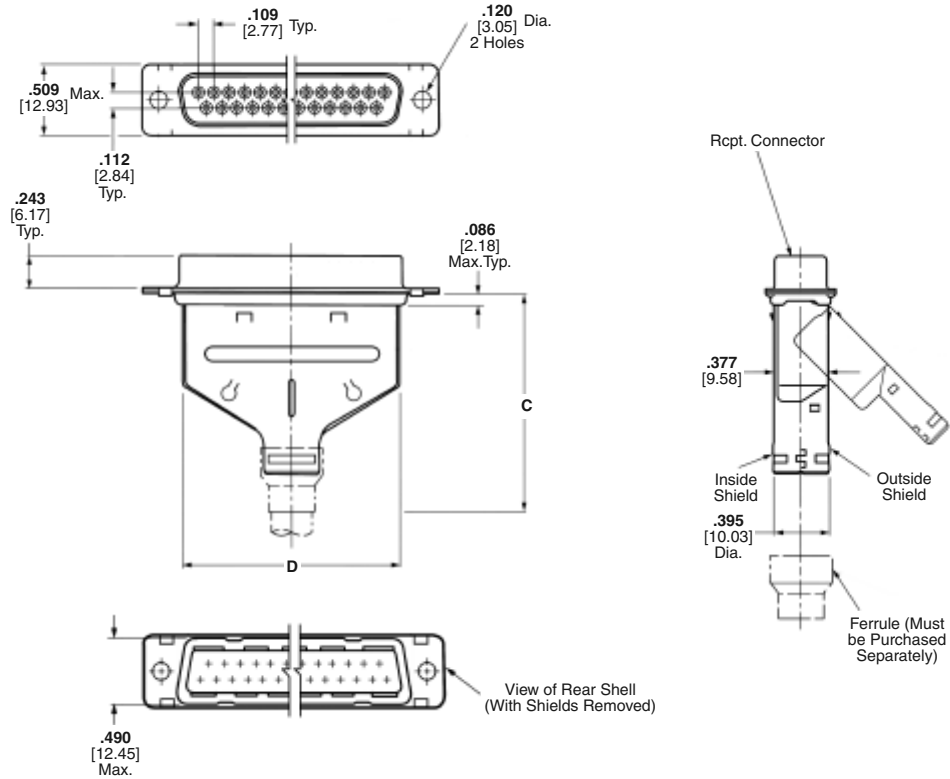
**HDP**—pages 90-97

**HD-20 Board Mount**—pages 54-71, 78-85, 87-89

**Mating Hardware**—pages 146-150, 153, 155

**Mating/Panel Mounting**—page 42

**Receptacle**



**Technical Documents:**

**Product Specifications**—108-40011  
108-40030

**Application Specifications**—

- 114-40002
- 114-40003
- 114-40006

**Instruction Sheet**—408-9010

**Note:** Instruction Sheets for TE Tooling are packaged with the tooling. For additional information call the Tooling Assistance Center: **1-800-722-1111**.

Shell Size	No. of Contact Pos.	Dimensions		Recommended Cable Outer Dia. Range	Max. Inner Cable Bundle Dia.†	Contact Finish (Plating Code)	Connector Part Numbers		
		C	D				Contact I.D. No. 1 for 30-26 AWG [0.05-0.15mm <sup>2</sup> ] Wire	Contact I.D. No. 2 for 26-22 AWG [0.15-0.4mm <sup>2</sup> ] Wire	Contact I.D. No. 3 for 22-20 AWG [0.4-0.6mm <sup>2</sup> ] Wire
							Receptacle	Receptacle	Receptacle
1	9	1.520 38.61	.678 17.22	.165-.455 4.19-11.56	.350 8.89	A	—	747516-7	747516-8
							—	747516-9	—
2	15	1.520 38.61	1.002 25.45	.165-.455 4.19-11.56	.350 8.89	A	—	747532-7	—
							—	747532-8	—
3	25	1.520 38.61	1.550 39.37	.165-.455 4.19-11.56	.350 8.89	A	—	747548-8	—
							—	747548-9	—
4	37	1.867 47.42	2.205 56.01	.338-.562 8.59-14.28	.450 11.43	B	747564-8	747564-9	—
							—	—	—

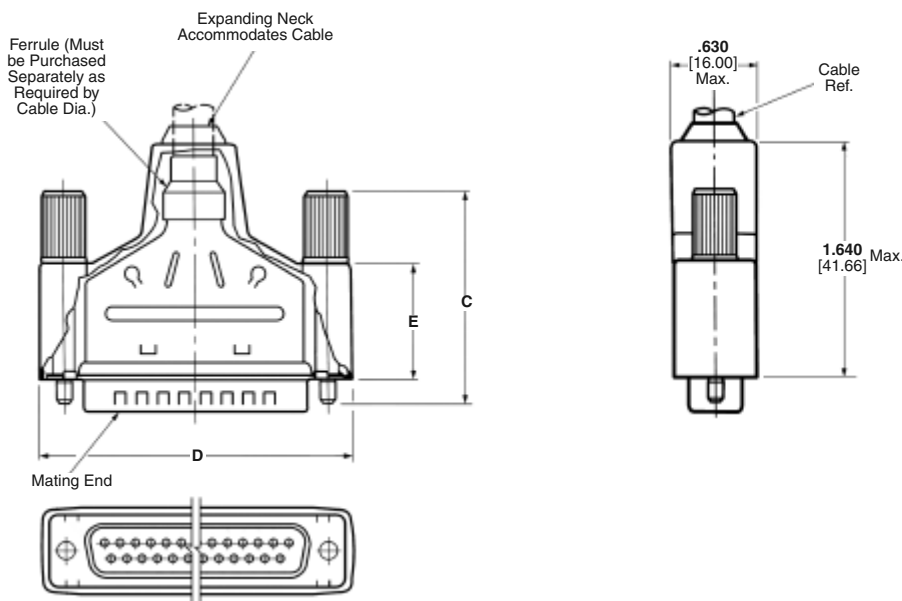
**Note:** Components of the kits are shipped unassembled and bulk-packaged in quantities of 100 pieces.

†Maximum cable diameter after jacket and braid removed.

**Note:** All part numbers are RoHS compliant.

## HDE-20 Shielding Hardware Enclosure Kits

### Plug



**Each kit contains:**

- Connector
- Inner shield
- Outer shield
- Enclosure
- Two jackscrews

Ferrules must be purchased separately.

**Material and Finish:**

**Connector Shell**—Steel, tin plated

**Connector Insert**—94V-0 rated thermoplastic, black

**Shield**—Steel, tin plated

**Enclosure**—PVC, black

**Jackscrews**—Zinc alloy

**Contacts**—Phosphor bronze

**Contact Finish**—Duplex plated:

**A**—.000030 [0.00076] gold on mating end, tin on termination end, with entire contact nickel underplated

**B**—Gold flash on mating end, tin on termination end, with entire contact nickel underplated

**Related Product Data:**

**Contact Arrangements**—page 40

**Performance Characteristics**—page 41

**Application Tooling**—pages 121-123

**Mateable Connectors:**

**HDP**—pages 90-97

**HD-20 Board Mount**—pages 54-71, 78-85, 87-89

**Mating Hardware**—pages 146-150, 153, 155

**Mating/Panel Mounting**—page 42

**Technical Documents:**

**Product Specifications**—

108-40011

108-40030

**Application Specifications**—

114-40002

114-40003

114-40006

114-40008

**Instruction Sheet**—408-9172

**Note:** Instruction Sheets for TE Tooling are packaged with the tooling. For additional information call the Tooling Assistance Center: **1-800-722-1111**.

Shell Size	No. of Contact Pos.	Dimensions			Recommended Cable Outer Dia. Range	Max. Inner Cable Bundle Dia.†	Contact Finish (Plating Code)	Kit Part Numbers			Shielding Enclosure Expansion Tool	
		C	D	E				Contact I.D. No. 1 for 30-26 AWG [0.05-0.15mm <sup>2</sup> ]	Contact I.D. No. 2 for 26-22 AWG [0.15-0.4mm <sup>2</sup> ]	Contact I.D. No. 3 for 22-20 AWG [0.4-0.6mm <sup>2</sup> ]	Cable O.D. (Max.)	Part No.
								Plug	Plug	Plug		
1	9	1.640 41.66	1.355 34.42	.630 16.00	.190-.330 4.83-8.38	.330 8.38	A	—	1-747944-5	—	.330 8.38	58241-4
							B	—	1-747944-6	—		
2	15	1.640 41.66	1.685 42.80	.630 16.00	.190-.330 4.83-8.38	.330 8.38	A	—	1-747946-5	—	.450 11.43	58241-1
							B	—	1-747946-6	—		
3	25	1.640 41.66	2.210 56.13	.630 16.00	.217-.435 5.51-11.05	.350 8.89	A	1-747948-5	1-747948-6	—	.572 14.52	58241-2
							B	—	1-747948-8	1-747948-9		
4	37	2.010 51.05	2.865 72.77	.730 18.54	.338-.562 8.59-14.28	.450 11.43	A	1-747950-4	1-747950-5	—	.572 14.52	58241-2
							B	—	1-747950-6	—		

†Maximum cable diameter after jacket and braid removed.

**Note:** All part numbers are RoHS compliant.

**HDE-20 Shielding Hardware Enclosure Kits** (Continued)



**Each kit contains:**

- Connector
- Inner shield
- Outer shield
- Enclosure
- Two jackscrews

Ferrules must be purchased separately.

**Material and Finish:**

**Connector Shell**—Steel, tin plated

**Connector Insert**—94V-0 rated thermoplastic, black

**Shield**—Steel, tin plated

**Enclosure**—PVC, black

**Jackscrews**—Zinc alloy

**Contacts**—Phosphor bronze

**Contact Finish**—Duplex plated:

**A**—.000030 [0.00076] gold on mating end, tin on termination end, with entire contact nickel underplated

**B**—Gold flash on mating end, tin on termination end, with entire contact nickel underplated

**Related Product Data:**

**Contact Arrangements**—page 40

**Performance Characteristics**—page 41

**Application Tooling**—pages 121-123

**Mateable Connectors:**

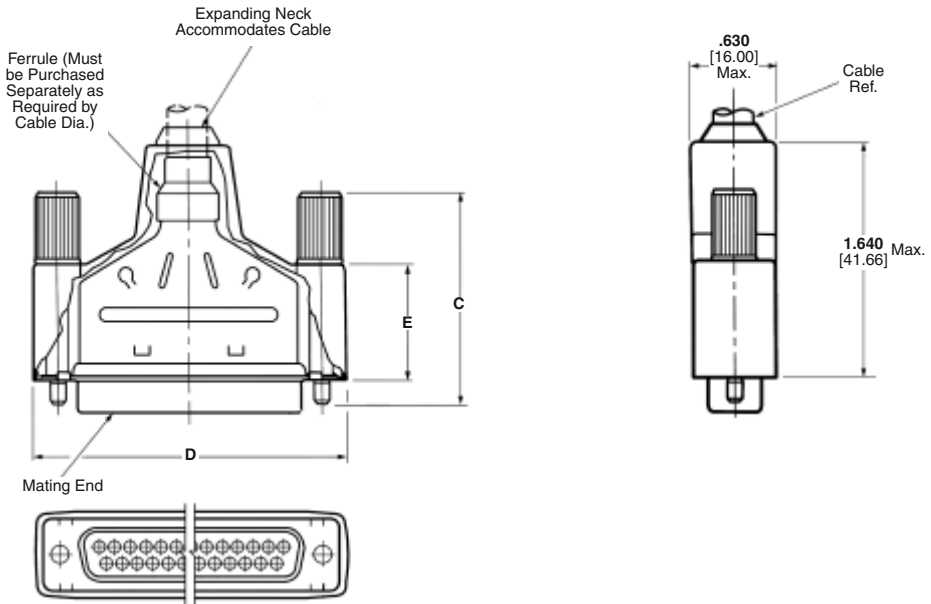
**HDP**—pages 90-97

**HD-20 Board Mount**—pages 54-71, 78-85, 87-89

**Mating Hardware**—pages 146-150, 153, 155

**Mating/Panel Mounting**—page 42

**Receptacle**



**Technical Documents:**

**Product Specifications**—

108-40011

108-40030

**Application Specifications**—

114-40002

114-40003

114-40006

114-40008

**Instruction Sheet**—408-9172

**Note:** Instruction Sheets for TE Tooling are packaged with the tooling. For additional information call the Tooling Assistance Center: **1-800-722-1111**.

Shell Size	No. of Contact Pos.	Dimensions			Recommended Cable Outer Dia. Range	Max. Inner Cable Bundle Dia.†	Contact Finish (Plating Code)	Kit Part Numbers		Shielding Enclosure Expansion Tool	
		C	D	E				Contact I.D. No. 1 for 30-26 AWG [0.05-0.15mm <sup>2</sup> ]	Contact I.D. No. 2 for 26-22 AWG [0.15-0.4mm <sup>2</sup> ]	Cable O.D. (Max.)	Part No.
								Receptacle	Receptacle		
1	9	1.640	1.355	.630	.190-.330	.330	A	1-747943-5	1-747943-6	.330	58241-4
		41.66	34.42	16.00				4.83-8.38	8.38		
2	15	1.640	1.685	.630	.190-.330	.330	A	1-747945-5	—	.330	58241-1
		41.66	42.80	16.00				4.83-8.38	8.38		
3	25	1.640	2.210	.630	.217-.435	.350	A	1-747947-5	1-747947-6	.450	58241-1
		41.66	56.13	16.00				5.51-11.05	8.89		
4	37	2.010	2.865	.730	.338-.562	.450	A	—	—	.572	58241-2
		51.05	72.77	18.54				8.59-14.28	11.43		

†Maximum cable diameter after jacket and braid removed.

**Note:** All part numbers are RoHS compliant.



## HDE-20 Crimp Snap-In Contact Connectors

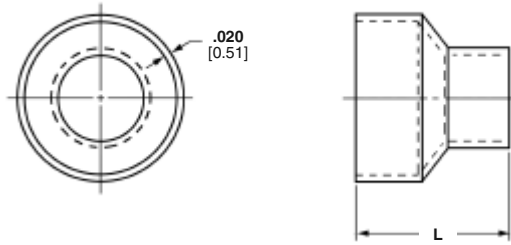
### Ferrules for Shielding Hardware Kits



Stepped



Straight



Shell Sizes	Style	L Dim.	Cable Diameter	Part Numbers	
				Ferrule	Die Sets*
1-3	Stepped	.440 11.18	.165-.190 4.19-4.83	3-747579-0	543424-3
1-3	Stepped	.440 11.18	.190-.217 4.83-5.51	3-747579-0	543424-2
1-3	Stepped	.440 11.18	.217-.246 5.51-6.25	3-747579-0	543424-8
1-3	Stepped	.440 11.18	.246-.284 6.25-7.21	3-747579-2	543424-1
1-3	Stepped	.440 11.18	.284-.324 7.21-8.23	3-747579-2	543424-7
1-3	Stepped	.440 11.18	.324-.375 8.23-9.53	3-747579-4	543424-6
1-3	Straight	.440 11.18	.375-.435 9.53-11.05	2-747579-7	543424-5
1-3	Straight	.440 11.18	.400-.455 10.16-11.56	3-747579-6	543424-4
4	Stepped	.625 15.88	.230-.265 5.84-6.73	2-747580-4	543425-2
4	Stepped	.625 15.88	.338-.385 8.59-9.78	2-747580-3	543425-1
4	Stepped	.625 15.88	.375-.432 9.53-10.97	2-747580-1	58238-1
4	Stepped	.625 15.88	.422-.490 10.72-12.45	3-747580-1	58237-2
4	Straight	.625 15.88	.480-.562 12.19-14.28	2-747580-2	58237-1

\*Die sets used with Hand Crimping Tool Part No. 543344-1 or Pneumatic Bench Tool Part No. 312522-3 equipped with Die Set Holder Part No. 58449-1.

### Material and Finish:

Steel (annealed), tin plated

### Related Product Data:

Shielding Hardware and Enclosure Kits—pages 116-119

### Technical Documents:

#### Instruction Sheets—

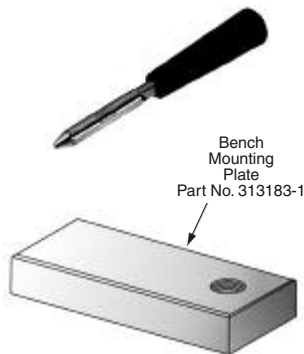
408-9242  
408-9243  
408-9507  
408-9508

**Note:** Instruction Sheets for TE Tooling are packaged with the tooling. For additional information call the Tooling Assistance Center: **1-800-722-1111**.

### Application Tooling for Shielding Hardware Kits



Hand Crimping Tool  
No. 543344-1  
(Requires Die Sets, see table above.)



Shielding Enclosure Expansion Tools  
Part No. 58241-1 (.450 [11.43])†  
58241-2 (.572 [14.53])†  
58241-4 (.330 [8.38])†  
†Maximum Cable Diameter  
(Instruction Sheet—408-9507)

Pneumatic Bench Tool  
No. 312522-3  
(Requires Die Set Holder No. 58449-1.)



**Note:** All part numbers are RoHS compliant.

## HDE-20 Contacts, Precision Formed

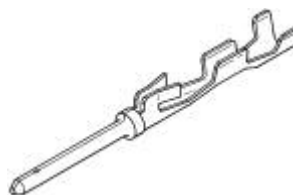
### Material and Finish:

Phosphor bronze, duplex plated as follows:

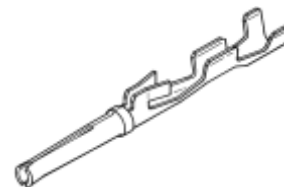
**A**—Duplex plated .000030 [0.00076] gold on mating end, tin on termination end, with entire contact nickel underplated

**B**—Gold flash on mating end, tin on termination end, with entire contact nickel underplated

### Interchangeable Contacts, Crimp Snap-In



Pin



Socket

### Related Product Data:

**Performance Characteristics**—page 41

**Connectors used with:**  
HDE—pages 112-119

### Technical Documents:

**Product Specifications**—  
108-40011  
108-40030

**Application Specifications**—  
114-40002  
114-40003  
114-40006  
114-40008

**Instruction Sheet**—408-6738

**Note:** Instruction Sheets for TE Tooling are packaged with the tooling. For additional information call the Tooling Assistance Center: **1-800-722-1111**.

Wire Size Range AWG mm <sup>2</sup>	Code*	Insulation Diameter		Contact Finish (Plating Code)	Contact Part Numbers	
		Single Wire	Two Wire		Pin Strip Form	Socket Strip Form
26-22 0.15-0.4	4	.054	.039	A	—	1-745269-1
		1.37	0.99	B	1-745266-0	1-745269-0
22-18 0.4-0.8	3	.075	.054	A	1-745267-0	1-745270-1
		1.91	1.37	B	—	1-745270-0

\* A Code indicating accepted wire size range is stamped inside insulation crimp barrel of each contact.

**Notes:** 1. Extraction Tool No. 91232-1 is used to remove pin and socket contacts.  
2. Strip form contacts shipped 10,000 pieces/reel.

**Note:** All part numbers are RoHS compliant.

## HDE-20 Application Tooling

### Hand Tools with Modular Heads

#### Technical Documents:

##### Instruction Sheets—

408-6790  
408-9414  
408-6789

**Note:** Instruction Sheets for TE Tooling are packaged with the tooling. For additional information call the Tooling Assistance Hotline: **1-800-722-1111**.

A modular interchangeable head provides versatility to these tools. Along with the head used to terminate Subminiature D connectors, heads are available to terminate other TE product lines.

The head used to terminate the Subminiature D, HDE connectors can be used with a manual pistol grip tool, an air pistol grip tool and a bench mount power assembly. These tools terminate one unstripped wire per cycle and index the connector to the next terminating position. The head rotates to permit optimum access to the wiring area.

### Manual Pistol Grip Tool



**Handle and Head Tool Assembly No. 608868-1**  
**Handle No. 58074-1**  
**Head Assembly No. 58063-2**

This tool is manually actuated, using modular heads.

### Air Pistol Grip Tool



**Handle No. 58075-1**  
**Head Assembly No. 58063-2**

Air actuated, utilizing modular heads.

### Bench Mounted Tools with Modular Heads

#### Bench Mount Pneumatic Power Assembly



**Bench Assembly No. 58338-1**  
**Head Assembly No. 58063-2**

This tool is air actuated with either a foot or knee switch.

#### Bench Mount Electric Power Assembly



**Head Assembly No. 58063-2**

This tool electrically powered and actuated by a foot switch.

**Note:** All part numbers are RoHS compliant.

**HDE-20 Application Tooling** (Continued)**Product Facts**

- Low applied costs
- Automatic termination of jacketed cable
- Automatic continuity check and shorts test
- Single- or double-ended assemblies
- Microprocessor controlled with touch input screen
- Stored program capability
- Selective termination of connector positions
- Rapid tooling changeover for different connector types
- Handles a variety of TE insulation-displacement connectors
- Terminates both multicolor and single-color wires
- Remote programming capability
- Straight or right-angle wire dress
- Control Module  
852423-1 120 VAC

**CHAMPOMATOR 3A Terminating Machine**

This machine is the high-productivity way to terminate multiconductor, jacketed cable with a variety of TE connectors having insulation displacement contacts. It automatically sorts the wires, and terminates them in a programmed sequence. The sequence may use all or some of the connector contacts, such as for various RS-232 wiring patterns.

All cable assemblies are tested for continuity and shorts.

The machine is microprocessor controlled, and programmed by a touch input screen. The easy programming simplifies the process and reduces training requirements. The machine's internal storage capability can retain up to 50 cable assemblies, which can be easily retrieved by number or name. Production monitoring and diagnostics can also be accessed through the touch screen.

Contact TE for the tooling required for your specific applications.

**Technical Documents:****Instruction Sheets**

408-7777 Manual Arbor Tool

**Note:** Instruction Sheets for TE Tooling are packaged with the tooling. For additional information call the Tooling Assistance Center: **1-800-722-1111**.



**Control Module**  
No. 852423-1

**CHAMPOMATOR 2.5 Machine**  
No. 354786-4

**CHAMPOMATOR 2.5 Terminating Machine**

This is a compact, semi-automatic bench machine. It is microprocessor controlled, and programmed using a membrane switch keyboard. The potential machine rate is one pair of wires per second. Contact TE for the tooling required for your specific applications.

The CHAMPOMATOR Model 2.5 Bench Terminating Machine—**Part No. 354786-4** is used in conjunction with Control Module—**Part No. 852423-1**.

Contact TE for application specific requirements.

**Manual Arbor Tool**

**Arbor Tool No. 91085-2**  
Applicators:

Wire O.D. .041-.060 [1.04-1.52]—No. 543157-1 (tool mount),  
543426-1 (termination tool)

Wire O.D. .040 [1.02] and smaller—No. 543157-1 (tool mount),  
543426-2 (termination tool)

**Note:** All part numbers are RoHS compliant.

**Manual Arbor Tool**

The arbor tool with applicator is used to terminate jacketed cable. Wires are neatly routed and trimmed to length with the cable jacket close to the connector. 400 to 800 terminated wires per hour are typical.

## Subminiature D Connectors HDF-20 for Flat Ribbon Cable

### Product Facts

- Available in all 5 standard shell sizes
- Visual inspection of termination possible
- Fluted cover provides positive alignment of cable prior to termination
- Wide range of application tooling
- Patented insulation displacement contact latches into the connector cover
- Contact design provides a “gas-tight” termination
- Contacts accept 28 AWG [0.08mm<sup>2</sup>] solid and stranded, and 26 AWG [0.15mm<sup>2</sup>] solid and stranded round conductor flat ribbon cable on .050 [1.27] centers
- Qualified to Battelle Level III environment
- Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476 
- Certified by Canadian Standards Association, File No. LR 7189 
- Listed and complies with UL 1863, Communication Circuit Accessories File No. E81956 

### Plug — Low Profile Metal Shell



### Receptacle — Low Profile Metal Shell



No. of Pos. & (Shell Size)	Cable Stabilizer Part No.	Plug Part Nos.		Receptacle Part Nos.	
		With Standard Mounting Holes	With 4-40 Threaded Inserts	With Standard Mounting Holes	With 4-40 Threaded Inserts
9 (1)	747275-4	1658613-4	1658608-4	1658612-4	1658610-4
15 (2)	747275-3	1658613-3	1658608-3	1658612-3	1658610-3
25 (3)	747275-2	1658613-2	1658608-2	1658612-2	1658610-2
37 (4)	747275-1	1658613-1	1658608-1	1658612-1	1658610-1
50 (5)	746785-1	—	1658607-1	—	1658606-1

**Note:** All assemblies are supplied with housing and cover pre-assembled. Optional cable stabilizer must be ordered separately.

### Material

**Front Shell**—Steel, tin or tin plated

**Housing, Cover & Cable Stabilizer**—Thermoplastic, 94V-0, black

**Threaded Inserts**—Brass, unplated

**Contacts**—Phosphor bronze, duplex plated .000030 [0.00076] min. gold on mating end, .000100-.000200 [0.00254-0.00508] bright tin on termination end with entire contact underplated .000050 [0.00127] min. nickel

### Related Product Data

**Contact Arrangement**—page 40

**Performance Characteristics**—page 41

### Mateable Receptacles:

**HDF-20 Metal-Shell**—page 124

**HDE**—pages 110-121 (Sizes 1-4 only)

**HDP**—pages 90-109

**HD-20 Board Mount**—pages 54-71, 78-85, 87-89

**Mating/Panel Mounting**—page 126

**Ribbon Cable**—page 125

### Accessories:

**Commoning Strip**—page 146

**Mating Hardware**—pages 146-150, 153 & 154

**Application Tooling**—page 127

### Technical Documents

**Product Specification**—108-40012

**Note:** All part numbers are RoHS compliant.

## HDF-20 Low Profile All-Plastic Connectors (for Round Conductor Flat Ribbon Cable)

### Material and Finish

**Housing, Cover & Cable Stabilizer**—Black thermoplastic, 94V-0 rated

**Threaded Inserts**—Brass, unplated

**Pin Contacts**—Phosphor bronze, duplex plated .000030 [0.00076] gold on mating end, .000100-.000200 [0.00254-0.00508] bright tin on termination end, with entire contact underplated .000050 [0.00127] nickel

### Related Product Data

**Contact Arrangement**—page 40

**Performance Characteristics**—page 41

#### Mateable Receptacles:

**HDF-20 All-Plastic**—page 124

**HD-20 Board Mount**—pages 54-71, 78-85, 87-89

**HDE All-Plastic**—pages 147, 148

**Mating/Panel Mounting**—page 126

**Ribbon Cable**—page 125

#### Accessories:

**Mating Hardware**—pages 146-150, 153, 155

**Application Tooling**—page 127

### Technical Documents

#### Product Specifications—

108-40012 HDF-20 Low Profile Connectors

### Plug Assemblies



Housing and Covers are Preassembled; Cable Stabilizer is Separate.

### Receptacle Assemblies



Housing and Covers are Preassembled; Cable Stabilizer is Separate.

No. of Contact Pos. & (Shell Size)	Optional Cable Stabilizer Part No.	Plug Assembly Part No.		Receptacle Assembly Part No.	
		With Standard Mounting Holes	With Threaded Inserts	With Standard Mounting Holes	With Threaded Inserts
9 (1)	747275-4	1658615-4	1658611-4	1658614-4	1658609-4
15 (2)	747275-3	1658615-3	1658611-3	1658614-3	1658609-3
25 (3)	747275-2	1658615-2	1658611-2	1658614-2	1658609-2
37 (4)	747275-1	1658615-1	—	1658614-1	1658609-1

**Note:** All assemblies are supplied with housing and cover pre-assembled. Optional cable stabilizer must be ordered separately.

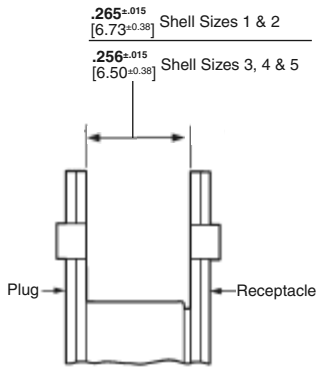
### Ribbon Cable Parameters

No. of Conductors	28 AWG [0.08mm <sup>2</sup> ] Part No.		26 AWG [0.15mm <sup>2</sup> ] Part No.
	Length Per Reel		Length Per Reel
	100 Ft. [30.5m]	500 Ft. [152.4m]	500 Ft. [152.4m]
9	1-57040-2	1-971111-2	57034-2
15	1-57040-5	1-971111-5	57034-5
25	57040-2	971111-2	57034-9
37	1-57040-8	1-971111-8	1-57034-3
50	57040-6	971111-6	1-57034-5

**Note:** All part numbers are RoHS compliant.

## HDF-20 Plugs/Receptacles Mating and Panel Mounting Specifications

### Plug/Receptacle Mating



The .265/.256 [6.73/6.50] dimensions are required to assure full mating of connector halves. These dimensions must be taken into consideration when determining the method of mounting, panel thickness, etc.

### Panel Mounting

Plugs and receptacles can be mounted to a panel from either the front or rear, using a variety of accessory hardware. Typical examples are shown below.

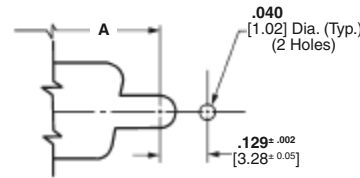
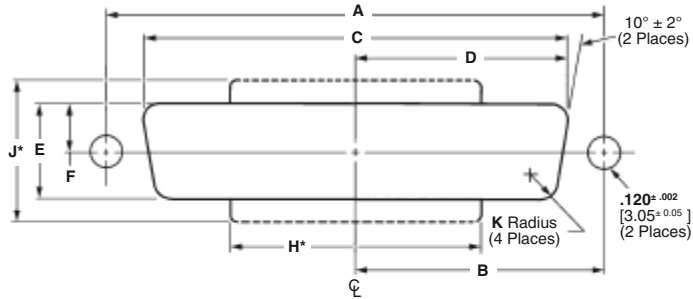


Typical Front-Panel Mounted HDF-20 Plug



Typical Rear-Panel Mounted HDF-20 Plug

### Panel Cutouts



Cutout for Rear Mount and Short Latching Blocks

Shell Size (Pos.)	Mounting Method Front/Rear Panel	Dimensions								
		A	B	C	D	E	F	H*	J*	K
1 (9)	Front	.984 24.99	.492 12.50	.874 22.20	.437 11.10	.513 13.03	.257 6.53	—	—	.083 2.11
	Rear	.984 24.99	.492 12.50	.806 20.47	.403 10.24	.449 11.41	.225 5.72	13.97	19.05	.132 3.35
2 (15)	Front	1.312 33.33	.656 16.66	1.202 30.53	.601 15.27	.513 13.03	.257 6.53	—	—	.083 2.11
	Rear	1.312 33.33	.656 16.66	1.134 28.80	.567 14.40	.449 11.41	.225 5.72	18.54	19.05	.132 3.35
3 (25)	Front	1.852 47.04	.926 23.52	1.743 44.27	.872 22.15	.513 13.03	.257 6.53	—	—	.083 2.11
	Rear	1.852 47.04	.926 23.52	1.674 42.52	.842 21.39	.449 11.41	.225 5.72	32.39	19.05	.132 3.35
4 (37)	Front	2.500 63.50	1.250 31.75	2.391 60.73	1.196 30.38	.513 13.03	.257 6.53	—	—	.083 2.11
	Rear	2.500 63.50	1.250 31.75	2.326 59.08	1.163 29.54	.449 11.41	.225 5.72	46.05	16.13	.132 3.35
5 (50)	Front	2.406 61.11	1.203 30.56	2.297 58.34	1.149 29.19	.623 15.82	.312 7.93	—	—	.083 2.11
	Rear	2.406 61.11	1.203 30.56	2.218 56.34	1.109 28.17	.555 14.10	.278 7.06	44.52	19.05	.132 3.35

\*Panel cutout configuration with H and J dimensions provides clearance for mounting connectors with cable clamps.

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## HDF-20 Application Tooling

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### Application Tooling



**Hand Tool Kit No. 768340-1**

Consists of a hand tool frame, a universal base assembly, a bench mount kit, and connector-specific tooling for AMP-LATCH Standard and Novo Receptacles, Card-Edge Connectors, and AMPLIMITE HDF-20 Connectors.




**Note:** For 50-position HDF connectors, you must also order Connector-Specific Kit No. 768350-1.

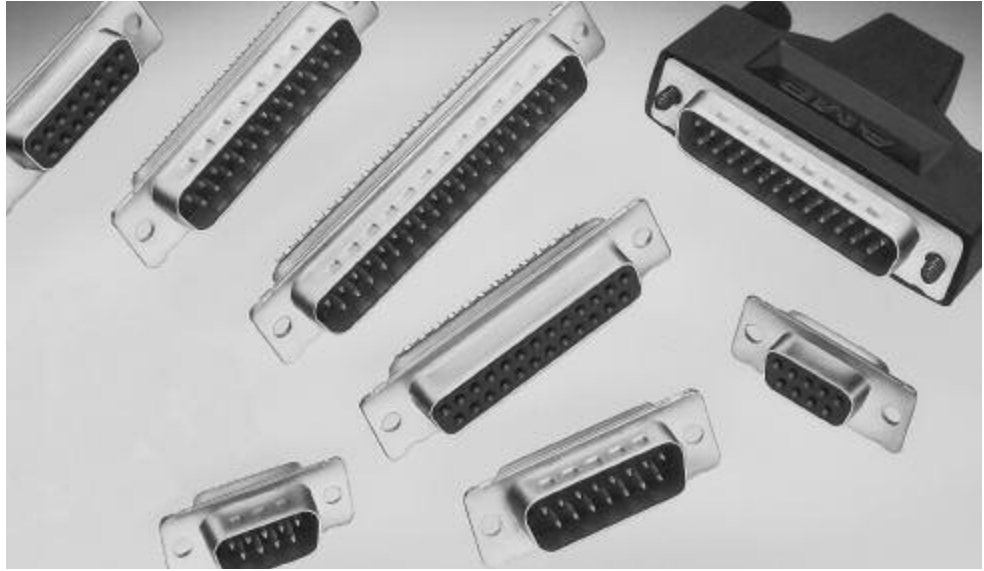
**Note:** All part numbers are RoHS compliant.



## HD-20 Solder Cup Connectors

### Product Facts

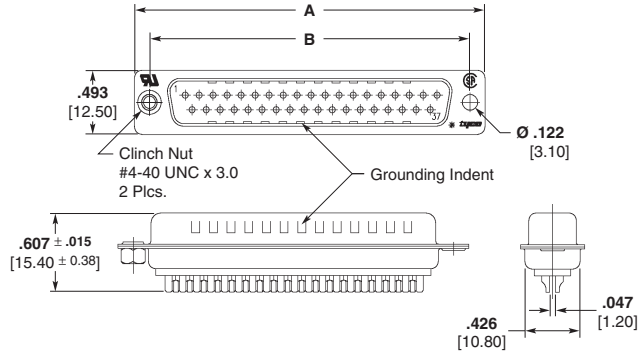
- Preloaded duplex-plated solder cup contacts
- Shell finish in choice of standard zinc or tin
- Two-piece 94V-0 rated plastic insert
- Anti-solderwicking contact design
- Intermateable with other subminiature D connectors
- Available in 9, 15, 25 and 37 position (shell sizes 1-4) plugs and receptacles
- Easy application without special application tools
- Shields offer full EMI shielding and ESD insulation
- Crimped shield termination for low impedance
- Shield crimp provides strain relief
- Shields may be post molded or covered with enclosures
- Recognized under the Component Program of Underwriters Laboratories, Inc.,  File No. E28476
- Listed under Underwriters Laboratories Inc., connectors for use in data, signal, control & Power Applications — components,  File No. E127344
- Certified by Canadian Standards Association,  File No. LR 97981



**HD-20 Solder Cup Connectors** (Continued)



**Plug**



**Material and Finish:**

**Shell**—Steel, tin or zinc plated  
**Insert**—94V-0 rated thermoplastic, black  
**Contacts**—Phosphor bronze; duplex plated with gold flash on mating end, tin on solder cup, with entire contact nickel underplated

**Related Product Data:**

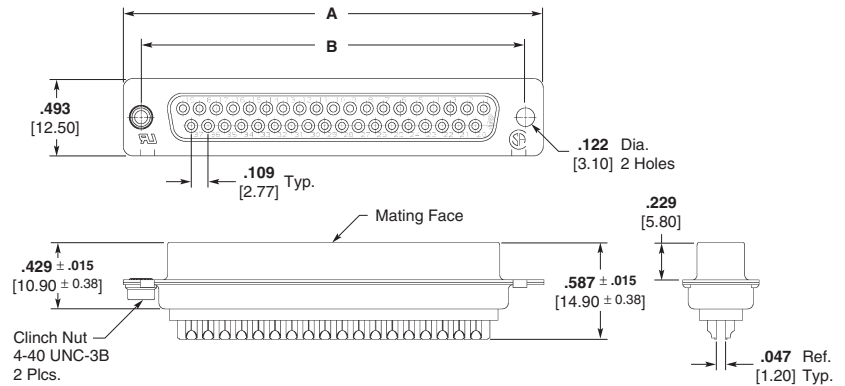
- Mateable Connectors:**  
**HDE**—pages 110-119  
**HDF**—pages 124-126  
**HDP**—pages 90-101  
**HD-20 Solder Cup**—pages 128-130  
**HD-20 Board Mount**—pages 54-71, 78-85, 87-89  
**Cable Clamps**—pages 132, 133, 135-137, 140, 141, 144, 145  
**Mating Hardware**—pages 146-150, 151-154

**Technical Documents:**

- Product Specification**  
 108-40031  
**Instruction Sheet**  
 408-9193



**Receptacle**



Shell Size	No. of Contact Positions	Dimensions		Plug Part Numbers		Receptacle Part Numbers	
		A	B	Tin Plated Shell	Zinc Plated Shell	Tin Plated Shell	Zinc Plated Shell
1	9	1.210 30.80	.984 24.99	5-747904-2	5-747904-2	5-747905-2	5-747905-2
2	15	1.544 39.20	1.313 33.32	5-747908-2	5-747908-2	5-747909-2	5-747909-2
3	25	2.089 53.01	1.853 47.04	5-747912-2	5-747912-2	5-747913-2	5-747913-2
4	37	2.734 69.40	2.502 63.50	5-747916-2	5-747916-2	5-747917-2	747917-4

**Note:** All part numbers are RoHS compliant.

## HD-20 Solder Cup Shielding Hardware Enclosure Kits

### Plug and Receptacles



**Each kit contains**

- Connector with preloaded, nonremovable contacts
- Shield
- Enclosure
- Two jackscrews

**Material and Finish:**

**Connector Shell**—Steel, tin plated

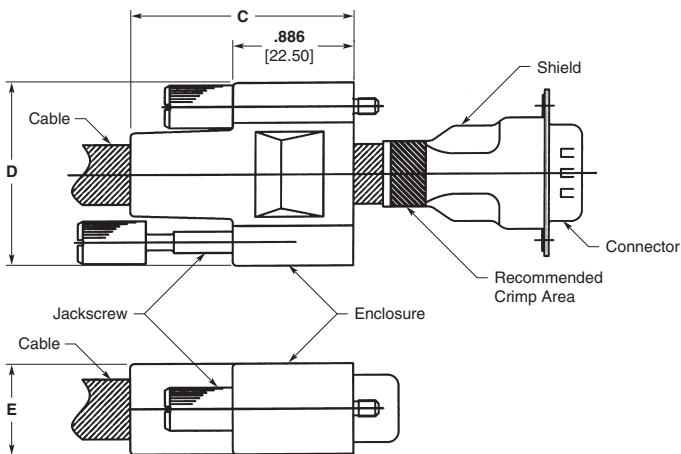
**Connector Insert**—94V-0 rated thermoplastic, black

**Shields**—Steel, tin plated

**Enclosure**—PVC, black

**Jackscrews**—Brass, zinc coated

**Contacts**—Phosphor bronze; duplex plated with gold flash on mating end, tin on solder cup, with entire contact nickel underplated



Shell Size	No. of Contact Positions	Dimensions			Cable Insulation Diameter	Kit Part Numbers		Shielding Enclosure Expansion Tool	
		C	D	E		Plug	Receptacle	Cable O.D. (Max.)	Part Number
1	9	1.64 41.67	1.33 33.74	.659 16.74	.217-.270 5.51-6.86	1571650-4	1571654-4	.355 9.02	58241-4
					.270-.324 6.86-8.23	1571650-5	1571654-5		
					.324-.385 8.23-9.78	1571650-6	1571654-6		
2	15	1.64 41.67	1.65 41.86	.659 16.74	.217-.270 5.51-6.86	1571651-4	1571655-4	.355 9.02	58241-4
					.270-.324 6.86-8.23	1571651-5	1571655-5		
					.324-.385 8.23-9.78	1571651-6	1571655-6		
3	25	1.64 41.67	2.20 55.86	.659 16.74	.217-.270 5.51-6.86	1571652-4	1571656-4	.465 11.56	58241-1
					.270-.324 6.86-8.23	1571652-5	1571656-5		
					.324-.385 8.23-9.78	1571652-6	1571656-6		
4	37	2.35 59.67	2.82 71.63	.659 16.74	.455-.480 11.58-12.19	1571653-2	1571657-2	.562 14.28	58241-2

**Note:** Components of the kits are shipped unassembled and bulk-packaged in quantities of 100 pieces.

**Related Product Data:**

**Mateable Connectors:**

**HDE**—pages 110-119

**HDF**—pages 124-126

**HDP**—pages 90-101

**HD-20 Solder Cup**—pages 128-130

**HD-20 Board Mount**—pages 82-85, 87-89

**Technical Documents:**

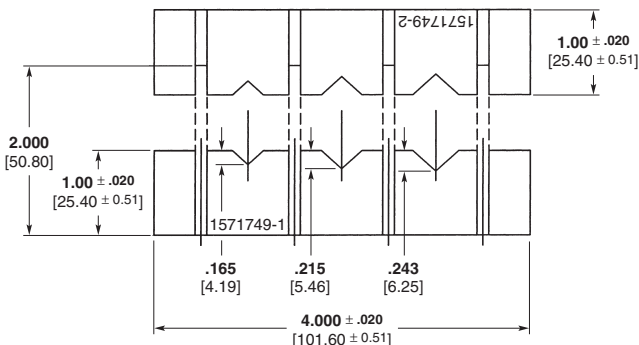
**Product Specification**

108-40031

**Instruction Sheets**

408-9193

### HD-20 Solder Cup Shielding Hardware Crimping Tool



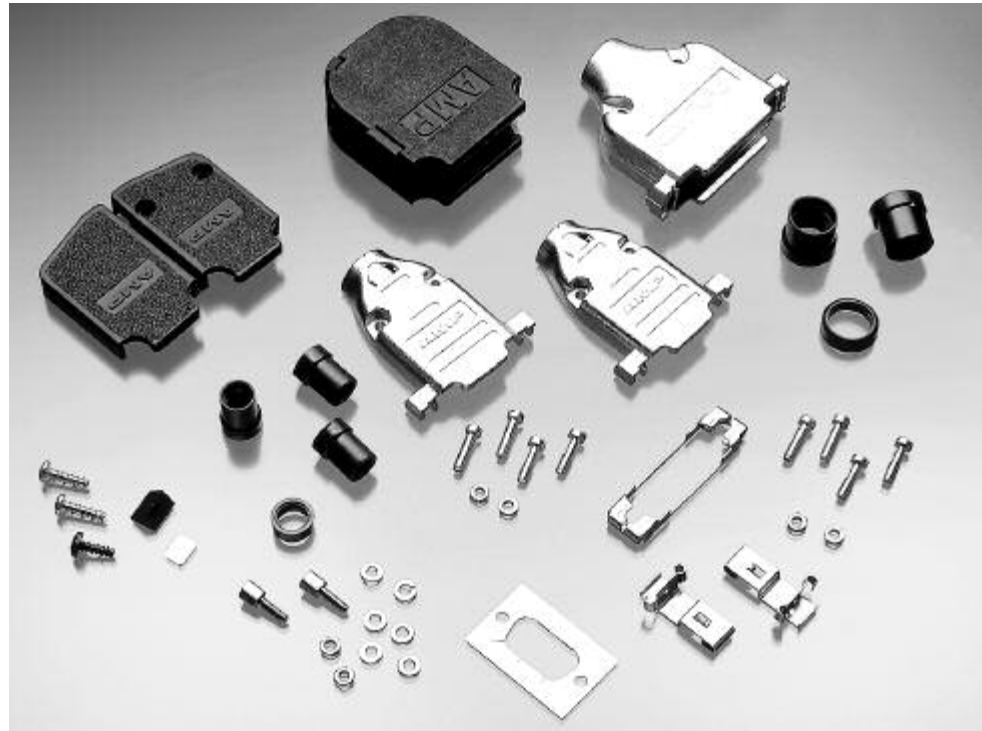
**Assembled Tooling: Part Number 1571750-1**  
**Individual Tools (for customer fabrication):**  
**1571749-1 & 1571749-2**

**Note:** All part numbers are RoHS compliant.

## Accessories

Numerous accessories are available for strain relief and cable clamping, shielding, connector-to-connector mating, connector-to-connector pc board mounting, and keying. These accessories are illustrated and tabled on the following pages.

To help discern the accessories available for a particular connector type, refer to the Product Selection Guide at the beginning of the connector section. Also, the connector the accessory is used with is listed under the Related Product Data heading next to the accessory listing.



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#### Shielded Cable Clamps

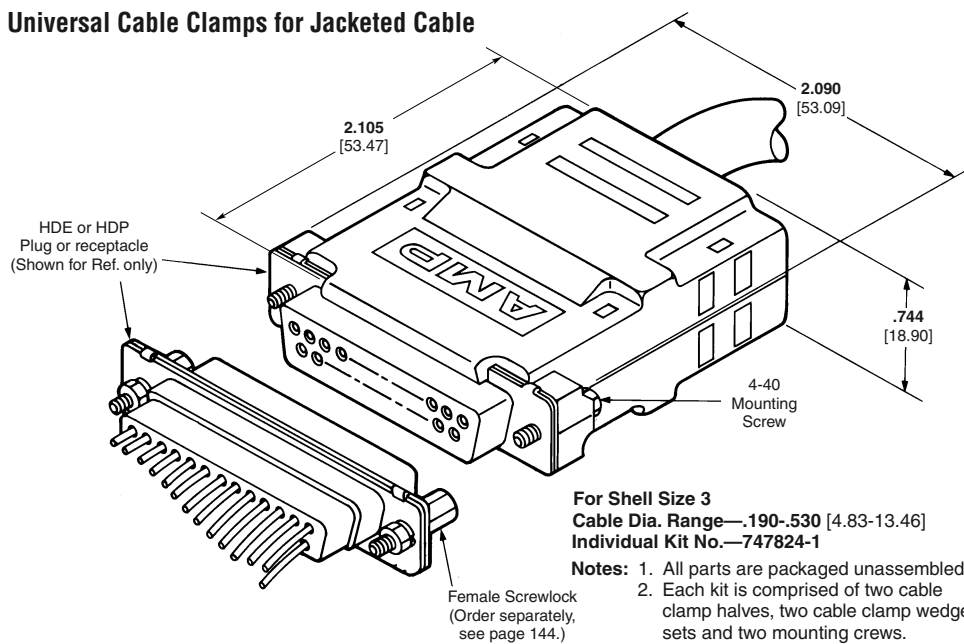
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## Unshielded Cable Clamps

### Universal Cable Clamps for Jacketed Cable



**For Shell Size 3**  
**Cable Dia. Range—190-530 [4.83-13.46]**  
**Individual Kit No.—747824-1**

- Notes:** 1. All parts are packaged unassembled.  
 2. Each kit is comprised of two cable clamp halves, two cable clamp wedge sets and two mounting crews.

**Material and Finish:**

**Cable Clamp Housing**—  
Thermoplastic, black

**Cable Clamp Wedge Set**—  
Thermoplastic, black

**4-40 Mounting Screws**—  
Steel, zinc plated

**Related Product Data:**

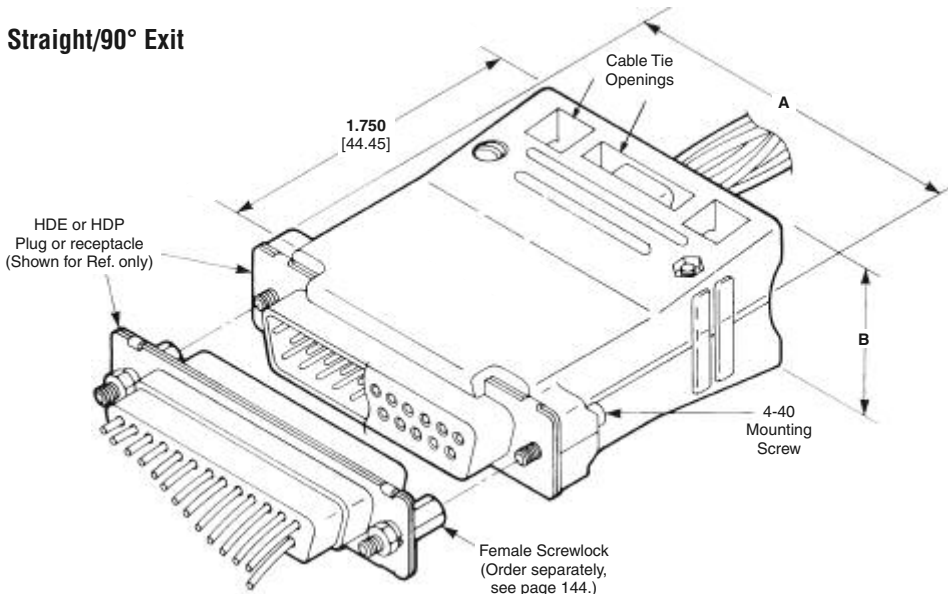
**Connectors used with:**  
**HDE Metal-Shell**—pages 114 & 115  
**HDP Metal-Shell**—pages 90-102

**Other accessory capabilities:**  
**Spring Latches (Two Piece)**—  
page 152

**Technical Documents:**

**Instruction Sheet**—408-9238

### Straight/90° Exit



**Material and Finish:**

**Cable Clamp Housing**—  
Thermoplastic, gray

**4-40 Mounting Screws**—  
Steel, zinc plated

**4-40 Housing Screws & Hex Nuts**—  
Steel, zinc plated

**Related Product Data:**

**Connectors used with:**  
**HDE All-Plastic**—pages 112 & 113  
**HDE Metal-Shell**—pages 114 & 115  
**HDP Metal-Shell**—pages 90-102

**Other accessory capabilities:**  
**Spring Latches (Two Piece)**—  
page 152

**Technical Documents:**

**Instruction Sheet**—408-7555

Shell Size	Dimensions		Cable Dia. (Max.)	Cable Clamp Kit No.
	A	B		Individual
2	1.550	.826	.350	5206471-1
	39.37	20.98	8.89	
3	2.090	.826	.335	5206472-1
			8.51	
			.460	
11.68	5745134-1			
4	2.738	.826	.675	5745081-1
			17.15	
5	2.644	.938	.775	5745082-1
			67.16	

- Notes:** 1. All parts are packaged unassembled.  
 2. Straight or 90° cable exit is achieved by inserting AMP-TY Cable Ties through cable tie openings and clamping the cable to one housing half only.

**Note:** All part numbers are RoHS compliant.

**Unshielded Cable Clamps** (Continued)

The TE Quik-Snap Backshell Kit is a one-piece, all-plastic cable clamp kit designed for use with either the AMPLIMITE HDP-20, HDP-22, or HDE, all-plastic or metal-shell connectors.

Kits are available for connector sizes 1, 2, 3, and 4 with a cable exit option of 180° or 120°.

**Each kit contains:**

- 1-Hinged, plastic clamp
- 2-Self-tapping screws
- 1-Strain relief clip
- 1-Cable exit gate plug (Used to close unused exit)

(For metal-shell connector applications an optional kit with 2 retainer clips and screws is available.)

**Material and Finish:**

- Cover**—Polypropylene, black
- Strain Relief Clip**—Stainless steel
- Retainer Clip**—Stainless steel
- Screws**—Carbon steel, zinc plated
- Cable Gate**—Polypropylene, Black

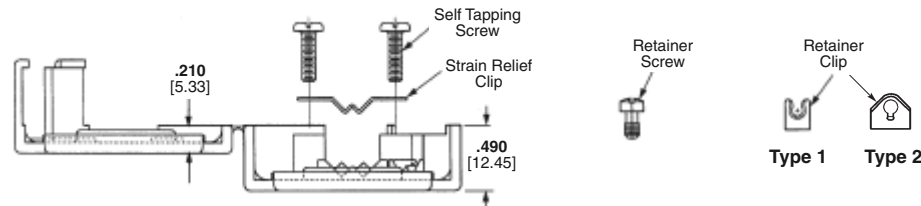
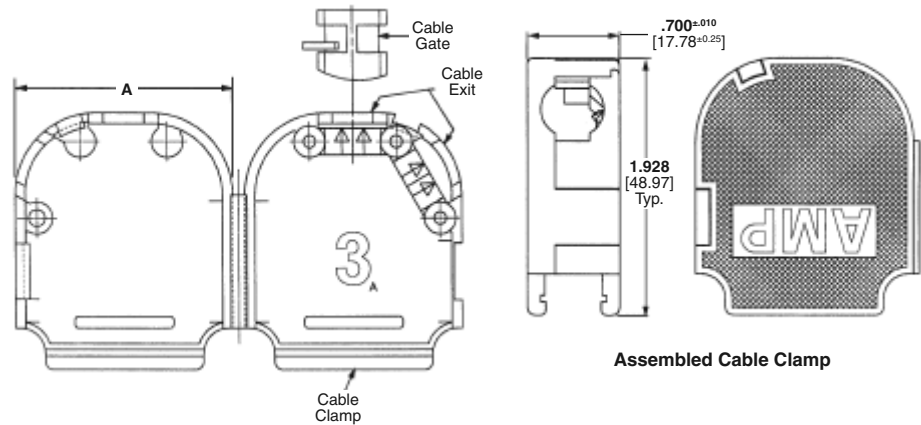
**Related Product Data:**

- Connectors used with:**
- HDP Metal-Shell**—pages 90-102
- HDE All-Plastic**—pages 112 & 113
- HDE Metal-Shell**—pages 114 & 115

**Technical Documents:**

**Instruction Sheet**—408-7837

**One-Piece, All-Plastic Cable Clamp for Jacketed Cable, 180°/120° Exit (HDP and HDE) (Quik-Snap)**



Cable Connectors

Shell Size	Cable Dia. Range (Ref.)	Dimension A	Kit Number* with Retainer Screws and Clips	Kit Number*** without Retainer Screws and Clips	Packaging
1	.075-.250 1.91-6.35	.785 19.94	5749914-1	—	Bulk Pkg.
			5749914-2	5750100-1	Unit Kit
			5749914-4**	—	
3	.180-.460 4.57-11.68	1.650 41.91	5749626-2	5750078-1	Unit Kit
			5749916-2	—	Bulk Pkg.
4	.250-.550 6.35-13.97	2.285 58.04	5749916-2	—	Unit Kit

\*For metal-shell connectors only.  
 \*\*Type 2 Retainer Clip  
 \*\*\*For Metal-Shell or All-Plastic Connectors

**Note:** All part numbers are RoHS compliant.

## Unshielded Cable Connector and Clamp Kits

The AMPLIMITE Quik-Snap Backshell and Connector kit presents a complete package for your unshielded subminiature D connector needs. Kits are available for Shell Sizes 1, 2 and 3, and are packaged 25 and 100 kits per unit.

**Each kit contains:**

- 1-Hinged Plastic Clamp
- 2-Retention Screws
- 2-Retention Clips
- 1-Cable Gate Plug
- 1-Strain Relief Clip
- 2-Self Tapping Screws
- 1-Connector and Contacts

**Material and Finish:**

- Cover**—Polypropylene, black
- Retention Screws**—Steel, zinc plated
- Retention Clips**—Stainless steel
- Cable Gate Plug**—Polypropylene, Black
- Strain Relief Clip**—Stainless steel
- Self Tapping Screws**—Steel, zinc plated
- Contacts**—Brass (HDP Pins), Phosphor Bronze (All Others), plated gold flash on the mating end, .000100 [0.00254] min. tin or tin on the terminating end, all over .000030 [0.00076] min. nickel underplating
- Housing**—Polyester or nylon, glass-filled, UL rated 94V-0, black
- Shell**—Steel, plated .000200 [0.00508] min. tin over .000050 [0.00127] min. copper

**Technical Documents:**

**HDE Connectors:**  
**Instruction Sheets**—  
 408-6621

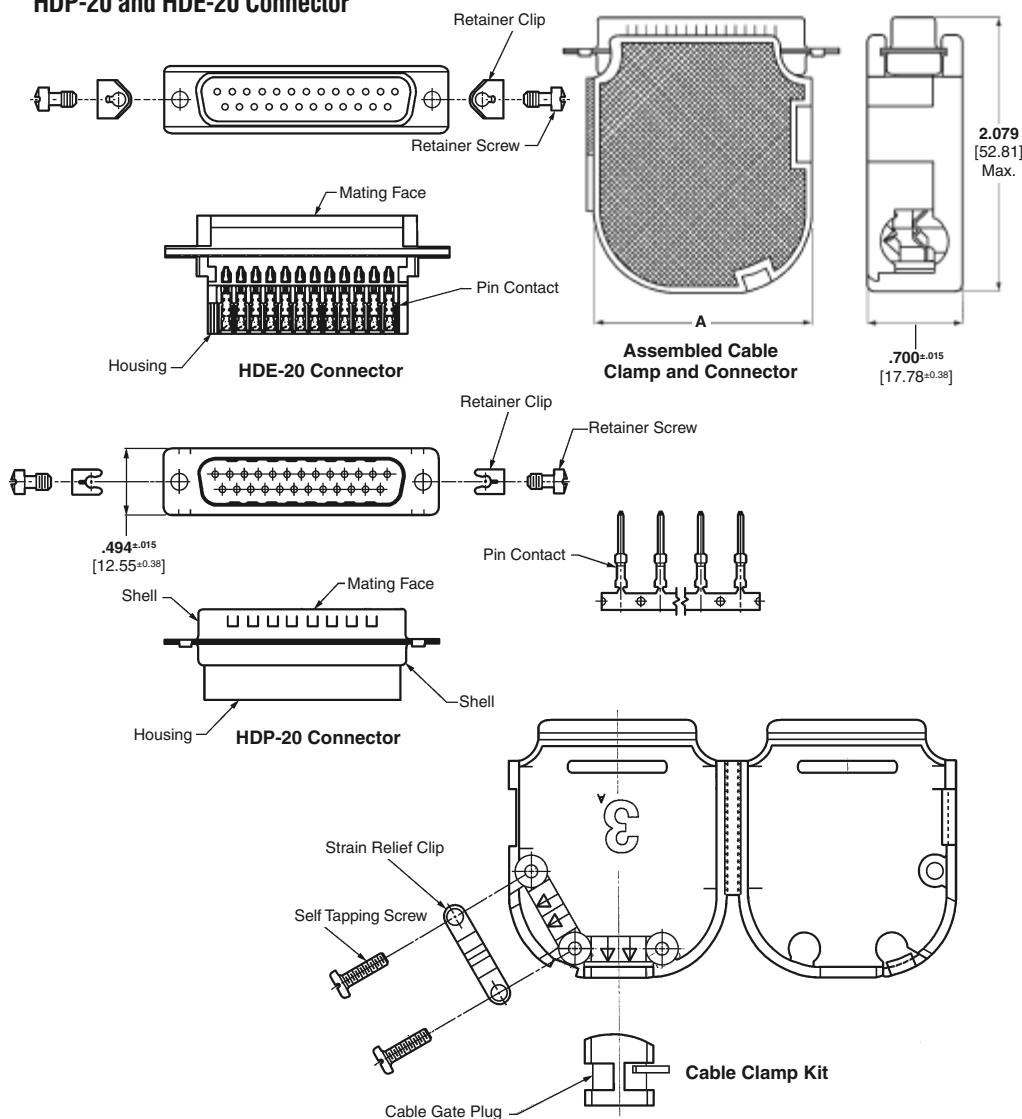
**Application Specifications**—  
 114-40002  
 114-40003

**HDP Connectors:**  
**Application Specifications**—  
 114-10000  
 114-40030

**Cable Clamps:**  
**Instruction Sheet**—408-9544

**Retention Clips:**  
**Instruction Sheet**—408-7837

**One-Piece, All-Plastic Cable Clamp for Jacketed Cable, 180°/120° Exit and HDP-20 and HDE-20 Connector**



**Unshielded Cable Clamp Kits with HDP-20 Connectors**

Shell Size	Cable Dia. Range (Ref.)	Dimension A	Plug Kit Part No.	Receptacle Kit Part No.	Packaging
1	.075-.250 1.91-6.35	.785 19.94	749808-8	749812-7	100/pack
2	.170-.380 4.32-9.65	1.110 28.19	749808-9	—	100/pack
3	.180-.460 4.58-11.68	1.650 41.91	749808-7	1-749812-1	100/pack

**Unshielded Cable Clamp Kits with HDE-20 All-Plastic Connectors**

Shell Size	Cable Dia. Range (Ref.)	Dimension A	Plug Kit Part No.	Receptacle Kit Part No.	Packaging
3	.180-.460 4.58-11.68	1.650 41.91	749809-9	749813-8	100/pack

**Note:** All part numbers are RoHS compliant.

## Unshielded Cable Clamps

Low Profile Cable Clamps feature a two-piece construction which allows the two cover halves to be snapped together, no hardware is required for assembly. They can be used on plugs or receptacles and will not interfere with commonly used mating hardware. Sufficient Cable Support Gates (or a Cable Support Gate Latch) are supplied with each cable clamp kit to achieve adjustable clamping over a wide range of jacketed cable diameters.

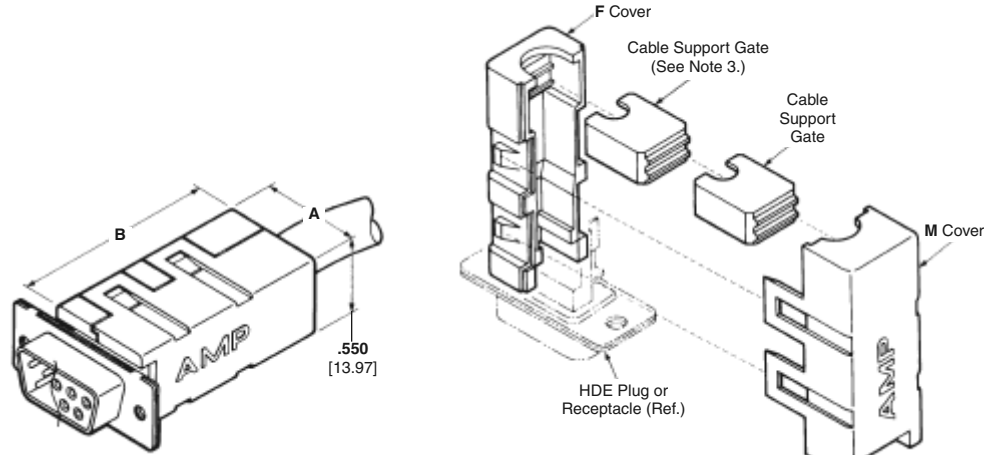
### Material

Black thermoplastic

### Related Product Data:

- Connectors used with:**
- HDE All-Plastic**—pages 112 & 113
- HDE Metal-Shell**—pages 114 & 115
- Other accessory capabilities:**
- Male Screw Retainers**—pages 146 & 147
- Female Screwlocks**—page 148
- Locking Posts and Slide Latches**—pages 149-151
- Latching Blocks**—pages 153 & 154

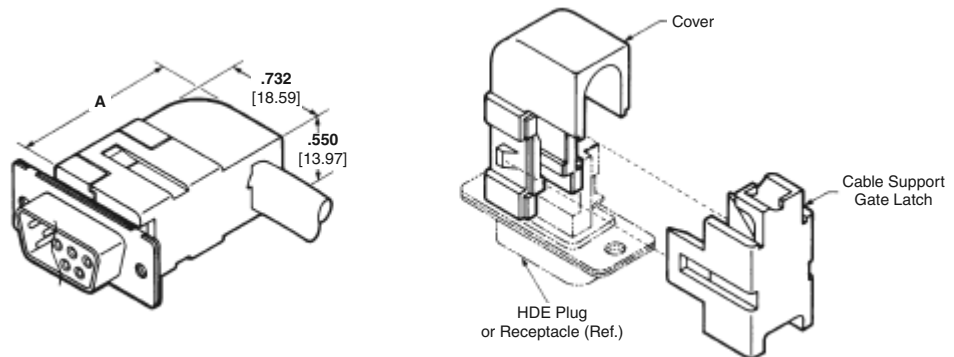
### Straight Exit Low Profile for Jacketed Cable



Shell Size	Dimensions		Cable Dia. (Max.)	Cable Clamp Kit No.	
	A	B		Individual	Bulk Packed*
1	.732 18.59	When used On Plug: 1.582 40.18 When used on Receptacle: 1.533 38.94	.330 8.38	745547-1	745547-2
2	1.056 26.82	When used On Plug: 1.582 40.18 When used on Receptacle: 1.533 38.94	.425 10.80	745553-1	745553-2
3	1.604 40.74	When used On Plug: 1.700 43.18 When used on Receptacle: 1.651 41.94	.550 13.97	745560-1	745560-2

- \*Each part is individually bulk packed for multiple kit orders.
- Notes:**
1. All parts are packaged unassembled.
  2. Each kit is comprised of two cover halves (F and M) and an assortment of cable support gates.
  3. Cable support gate must be used as shown for small diameter cable.

### 90° Exit Low Profile for Jacketed Cable



Shell Size	Dimension A		Cable Dia. (Max.)	Cable Clamp Kit No.
	When used on Plug	When used on Receptacle		Individual
1	1.290 32.77	1.241 31.52	.330 8.38	745550-1

- Notes:**
1. All parts are packaged unassembled.
  2. Each kit is comprised of a cover half and an assortment of cable support gate latches.

**Note:** All part numbers are RoHS compliant.



**Unshielded Cable Clamps** (Continued)

**Material**

Black thermoplastic

**Slide-On Back Covers**

**Related Product Data:**

**Connectors used with:**

**HDE All-Plastic**—pages 112 & 113

**HDE Metal-Shell**—pages 114 & 115

**Other accessory capabilities:**

**RFI/EMI Metal Shields**—pages 141 & 142

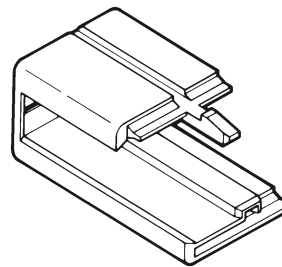
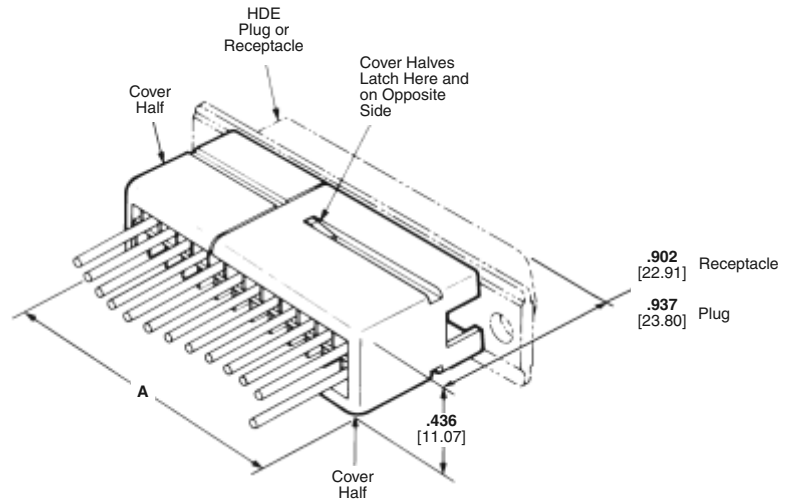
**Male Screw Retainers**—pages 146 & 147

**Locking Posts and Slide Latches**—pages 149-151

**Latching Blocks**—pages 153 & 154

**Technical Documents:**

**Instruction Sheet**—408-6658



**Back Cover Half**  
(See Note 2.)

Shell Size	Dim. A	Back Cover Kit No. Individual
1	.610 15.49	745530-1
2	.934 23.72	745530-2
3	1.482 37.64	745530-3
4	2.134 54.20	745530-4

**Notes:** 1. All parts are packaged unassembled.  
2. Each slide-on back cover kit includes two identical cover halves which snap together over the connector.

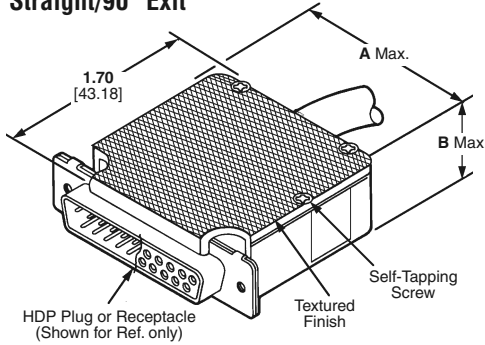
**Note:** All part numbers are RoHS compliant.

**Unshielded Cable Clamps (Continued)**

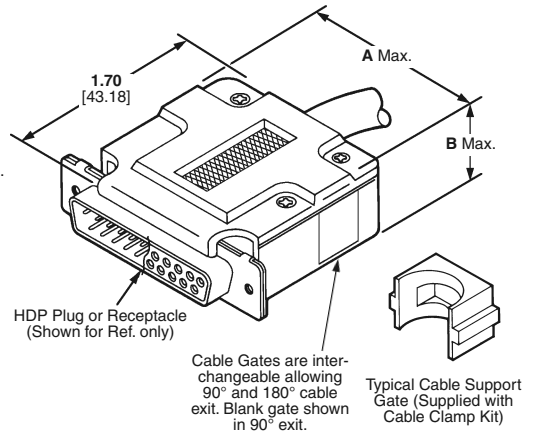
Box and Lid Cable Clamps can be used on either plugs or receptacles and will not interfere with commonly used hardware. Their hinged construction allows easy assembly to a harness. A wide range of cable diameters are accommodated through the use of cable support gates, supplied with each cable clamp.

Cable clamps are available in kits with appropriate hardware for convenient plug/receptacle mating. See below for kits with Male Screw Retainers.

**Box and Lid Straight/90° Exit**



Shell Size 1 & 2



Shell Size 3 & 4 & 5

**Material and Finish:**

- Cable Clamp Housing**—Thermoplastic, black with textured finish
- Gates**—Thermoplastic, black
- Flat Head Screws**—Steel, black, zinc plated

**Related Product Data:**

- Connectors used with:**
- HDP Metal-Shell**—pages 90-102
- Other accessory capabilities:**
- Male Screw Retainers**—pages 146 & 147
- Female Screwlocks**—page 148
- Locking Posts and Slide Latches**—pages 149-151
- Spring Latches (Two Piece)**—page 152
- Latching Blocks**—pages 153 & 154

**Technical Documents:**

**Instruction Sheet**—408-7555

**Material and Finish:**

- Cable Clamp Housing**—Thermoplastic, black with textured finish
- Gates**—Thermoplastic, black
- Flat Head Screws**—Steel, black, zinc plated
- Male Screw**—Steel, zinc plated yellow chromate
- Retaining Clip**—Stainless steel

**Related Product Data:**

**Connectors used with:**  
**HDP Metal-Shell**—pages 90-102

**Technical Documents::**

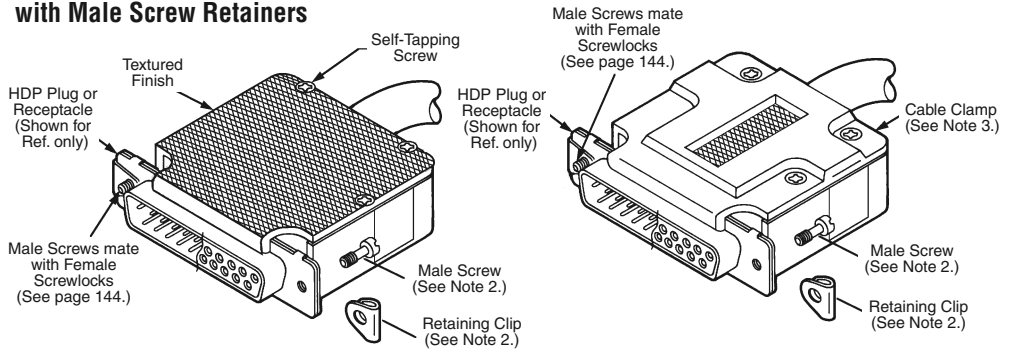
**Instruction Sheets**—  
408-7555  
408-7837

Shell Size	Dimensions		Cable Dia. Max. (Ref.)		Cable Clamp Kit No.	
	A	B	Straight Cable Exit	90° Cable Exit	Individual	Bulk Packed*
1	.755 19.18	.630 16.00	.160 4.06	.160 4.06	207467-1	207467-2
2	1.078 27.38	.630 16.00	.320 8.13	.320 8.13	207470-1	—
3	1.620 41.15	.770 19.56	.390 9.91	.390 9.91	207345-1	207345-2
4	2.268 57.61	.770 19.56	.640 16.26	.405 10.29	207473-1	207473-2
5	2.178 55.32	.880 22.35	.490 12.45	.490 12.45	207476-1	—

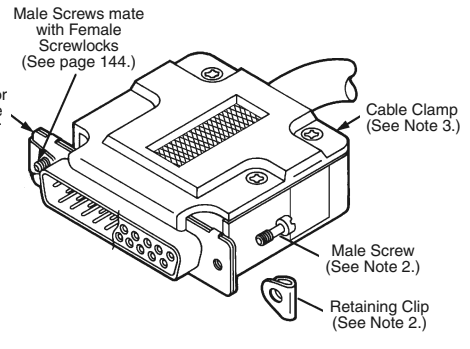
\*Each part is individually bulk packed for multiple kit orders.

- Notes:**
1. All parts are packaged unassembled.
  2. Cable diameter is adjustable by changing cable support gates. Use the flat side of cable support gates for discrete wire, and the semicircle side for jacketed cable.
  3. Cable clamp assemblies are available in kits with male screw retainers, see below.

**Box and Lid Straight/90° Exit Cable Clamp Kits with Male Screw Retainers**



Shell Size 1 & 2



Shell Size 3 & 4 & 5

Shell Size	Cable Clamp Kit No.
1	5207908-1
2	5207908-4
3	5207908-7
4	1-5207908-0
5	1-5207908-3

- Notes:**
1. All parts are packaged unassembled.
  2. Each kit is comprised of a cable clamp and male screw retainer hardware (2 each). Male screw retainers are also available in kit form, see page 146.
  3. For ordering cable clamps separately, see above.

**Note:** All part numbers are RoHS compliant.

**Unshielded Cable Clamps (Continued)**

Straight/45° Exit Cable Clamps can be used on either a plug or receptacle and will not interfere with commonly used hardware, such as Male Screw Retainers, Female Screw-locks or Spring Latches and Latching Blocks. Their hinged construction allows easy assembly to a harness. Also, the straight or 45° angle of the cable exit is achieved by merely positioning the Cable Support Gate for the desired angle prior to installing the assembly onto the plug or receptacle. Adjustable screws are used to tighten cable strain reliefs.

Cable Clamp assemblies are available in kits with appropriate hardware for convenient plug/receptacle mating.

**Material and Finish:**

- Cable Clamp Housing**—Thermoplastic, black with textured finish
- Gates**—Thermoplastic, black
- Pan Head Screws, 6-32 Set Screw and 6-32 Square Nut**—Steel, zinc plated (sizes 1 and 2 include self-tapping screws only)

**Related Product Data:**

- Connectors used with:**
- HDP Metal-Shell**—pages 90-102
- Other accessory capabilities:**
- Male Screw Retainers**—pages 146 & 147
- Female Screwlocks**—page 148
- Locking Posts and Slide Latches**—pages 149-151
- Spring Latches (Two Piece)**—page 152
- Latching Blocks**—pages 153 & 154

**Technical Documents:**

**Instruction Sheet**—408-7555

**Material and Finish:**

- Cable Clamp Housing**—Thermoplastic, black with textured finish
- Gates**—Thermoplastic, black
- Pan Head Screws, 6-32 Set Screw and 6-32 Square Nut**—Steel, zinc plated (sizes 1 and 2 include self-tapping screws only)
- Male Screw**—Steel, zinc plated yellow chromate
- Retaining Clip**—Stainless steel

**Related Product Data:**

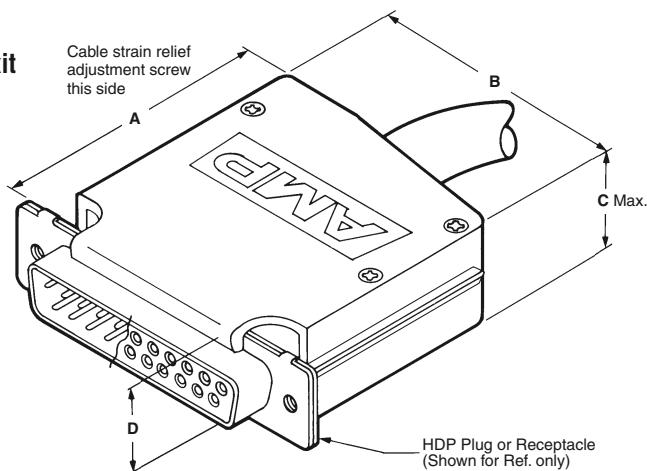
**Connectors used with:**  
**HDP Metal-Shell**—pages 90-102

**Technical Documents:**

**Instruction Sheets**—408-7555  
408-7837

**Note:** All part numbers are RoHS compliant.

**Clam Shell Straight/45° Exit**

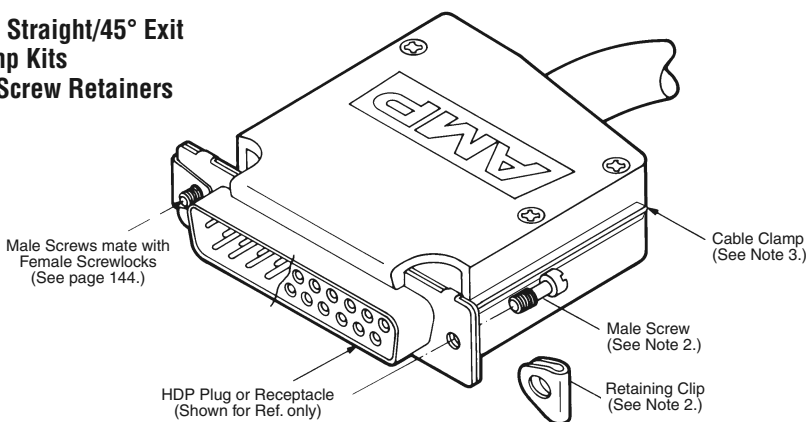


Shell Size	Dimensions				Cable Dia. (Max.)	Short Cable Clamp Part No.		Standard Cable Clamp Part No.	
	A	B	C	D		Individual	Bulk Packed*	Individual	Bulk Packed*
1	1.625	.750	.640	.640	.256	—	—	5205729-1	5205729-3
	41.28	19.05	16.26	16.26	6.30	—	—	—	—
2	1.250	1.073	.600	.640	.320	5206393-1	—	—	—
	31.75	27.25	15.24	16.26	8.13	—	—	5205730-1	5205730-3
3	1.625	1.073	.640	.640	.320	—	—	5205730-1	5205730-3
	41.28	27.25	16.26	16.26	8.13	—	—	—	—
3	1.250	1.615	.600	.640	.420	5206390-1	5206390-3	—	—
	31.75	41.02	15.24	16.26	10.67	—	—	5205718-1	5205718-4
4	1.625	1.615	.640	.640	.420	—	—	5205718-1	5205718-4
	41.28	41.02	16.26	16.26	10.67	—	—	—	—
4	1.625	2.263	.640	.640	.490	—	—	5205731-1	—
	41.28	57.48	16.26	16.26	12.45	—	—	—	—

\*Each part is individually bulk packed for multiple assembly orders.

- Notes:**
1. All parts are packed unassembled.
  2. Quantity of pan head screws supplied with cable clamp assembly varies with shell size.
  3. Cable clamps are available in kits with male screw retainers, see below.
  4. All pan head screws have combination cross-recessed and slotted heads.

**Clam Shell Straight/45° Exit Cable Clamp Kits with Male Screw Retainers**



Shell Size	Short Cable Clamp Kit No.		Standard Cable Clamp Kit No.	
	Individual	Bulk Packed*	Individual	Bulk Packed*
1	—	—	5206478-1	—
2	—	—	5206478-2	—
3	1-5206478-2	2-5206478-6	5206478-3	2-5206478-2
4	—	—	5206478-4	—
5	—	—	5206478-5	—

\*Each part is individually bulk packed for multiple assembly orders.

- Notes:**
1. All parts are packaged unassembled.
  2. Each kit is comprised of a cable clamp and male screw retainer hardware (2 each). Male screw retainers are also available in kit form, see page 146.
  3. For ordering cable clamps separately, see above.

## Unshielded Cable Clamps (Continued)

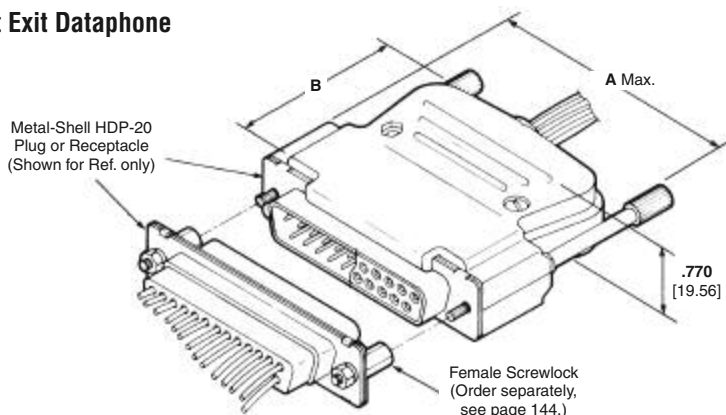
### Material and Finish:

- Cable Clamp Housing**—Nylon, black
- 4-40 Fillister Head Screws & Hex Nuts**—Steel, clear zinc plated
- Jackscrews**—Steel, black zinc plated

### Related Product Data:

- Connectors used with:**
- HDP Metal-Shell**—pages 90-102

### Straight Exit Dataphone



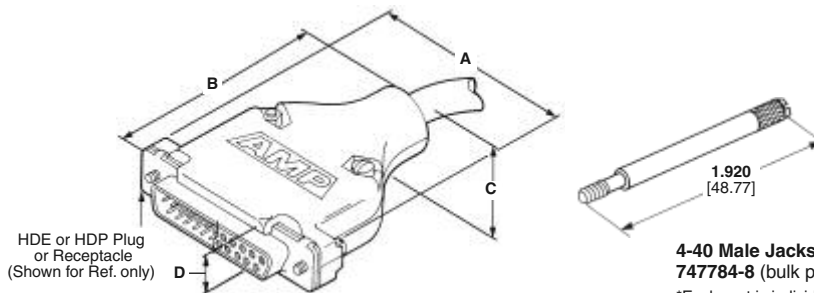
Shell Size	Dimensions		Max. Cable Dia. (without Gate)	Max. Cable Dia. (with Gate)	Cable Gate Identification*	Thread Size	Cable Clamp Kit No.
	A	B					
2	1.575 40.01	1.312 33.32	.400 10.16	.200 5.08	2A	4-40	5745122-2
				.260 6.60	2B		
				.320 8.13	2C		
3	2.115 53.72	1.421 36.09	.500 12.70	.250 6.35	3A	4-40	5745121-2
				.340 8.64	3B		
				.420 10.67	3C		

\*Molded-in identification (as shown in chart above) is provided on cable support gates to facilitate proper selection with regard to shell size and maximum acceptable cable diameter.

- Notes:** 1. All parts are packaged unassembled.  
2. Cable diameter is adjustable by changing cable support gates.

### Straight Exit for Jacketed Cable (Two-Piece)

This cable clamp allows cable to be fully prepared and terminated before the clamp is installed.



### Material and Finish:

- Cable Clamps**—ABS black
- 4-40 Fillister Head Screws and Hex Nuts**—Steel, zinc plated
- 4-40 Mounting Screws**—Steel, zinc plated
- Jackscrews**—Stainless steel, passivated

### Related Product Data:

- Ferrules**—pages 143-145
- Connectors used with:**
- HDE Metal-Shell**—pages 114 & 115
- HDP Metal-Shell**—pages 90-102
- Other accessory capabilities:**
- Spring Latch (Two-Piece)**—page 152

### Technical Documents:

- Instruction Sheet**—408-6609

### Cable Clamp Kits with Grommets

Shell Size	Dimensions				Cable O.D. Range	No. of Grommets Per Set	Kit Numbers
	A	B	C	D			
1	1.215 30.86	1.910 48.51	.570 14.48	.630 16.00	.185-.320 4.70-8.13	4	5748678-1
2	1.545 39.24	1.910 48.51	.620 15.75	.620 15.75	.185-.320 4.70-8.13	4	5748678-2
3	2.090 53.09	1.920 48.77	.680 17.27	.640 16.26	.255-.470 6.48-11.94	6	5748678-3
4	2.738 69.55	1.920 48.77	.800 20.32	.620 15.75	.255-.470 6.48-11.94	6	5748678-4
5	2.644 67.16	1.920 48.77	.900 22.86	.730 18.54	.255-.470 6.48-11.94	6	5748678-5

- Notes:** 1. All parts are packaged unassembled.  
2. Jackscrews must be purchased separately.  
3. Split-ring and crimp ferrules are shown on pages 143-145.  
4. Shielded cable clamps will not accept connector housings with clinch nuts.

**Note:** All part numbers are RoHS compliant.

**Unshielded Cable Clamps** (Continued)

Straight/90° Exit Cable Clamps can be used on a plug or receptacle and will not interfere with commonly used mating hardware. Their three-piece construction allows easy assembly to a cable harness. Also, the same cable clamp components are used for both straight and 90° cable exit applications. This is accomplished by simply positioning the Male and Female Panels on the Yoke for the desired angle.

**Material**

Black thermoplastic

**Related Product Data:**

**Connectors used with:**

**HDE All-Plastic**—pages 112 & 113

**HDE Metal-Shell**—pages 114 & 115

**HDP Metal-Shell**—pages 90-102

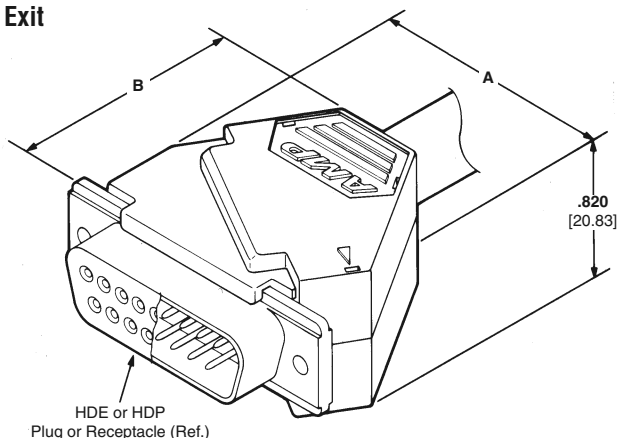
**Other accessory capabilities:**

**Female Screwlocks**—page 148

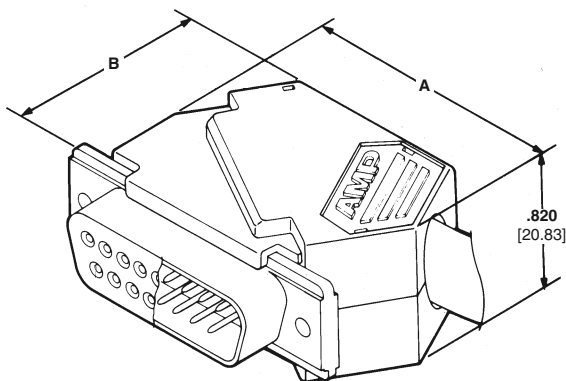
**Locking Posts and Slide Latches**—pages 149-151

**Latching Blocks**—pages 153 & 154

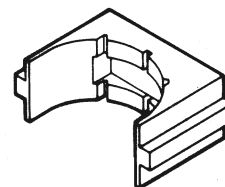
**Straight/90° Exit**



**Straight Cable Exit Application**



**90° Cable Exit Application**



**Typical Cable Support Gate**  
(Supplied with Cable Clamp Kit)

Shell Size	Cable Clamp Configuration	Dimensions		Cable Dia.	Cable Clamp Kit No. Individual
		A	B		
3	Straight Exit	1.906	1.672	.550	745306-1
	90° Exit	2.066	1.396		
4	Straight Exit	2.424	1.820	.750	745311-1
	90° Exit	2.638	1.596		

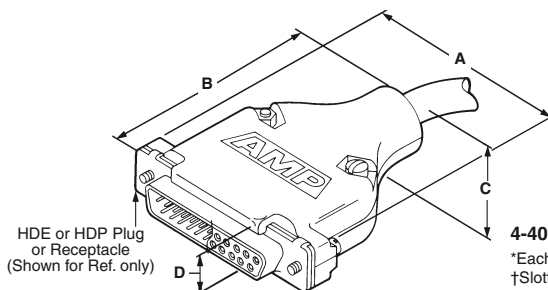
- Notes:** 1. All parts are packaged unassembled.  
 2. Each cable clamp assembly includes a yoke, male panel, female panel and four cable support gates. The cable diameter is adjustable by changing the cable support gates.

**Note:** All part numbers are RoHS compliant.

## Shielded Cable Clamps

### Straight Exit RFI/EMI Shields for Jacketed Cable (Two-Piece)

This RFI/EMI shield allows cable to be fully prepared and terminated to the connector before the shield is installed. During installation, the shield of the jacketed cable is folded back and compressed into the cable opening of the RFI/EMI shield. For greater cable support and/or shielding effectiveness, split-ring and crimp ferrules are available (pages 143-145).



HDE or HDP Plug or Receptacle (Shown for Ref. only)

4-40 Male Jackscrew Kit Nos.: 747784-8 (bulk packed)\*†  
\*Each part is individually bulk packed for multiple kit orders.  
†Slotted for screwdriver use.

### Material and Finish:

**Die Cast Shield**—Zinc alloy, plated bright nickel over bright copper

**Metal-Plated Plastic Shield**—Thermoplastic, plated nickel over copper

**4-40 Fillister Head Screws and Hex Nuts**—Steel, zinc plated

**4-40 Mounting Screws**—Steel, zinc plated

**Jackscrews**—Stainless steel, passivated

### Related Product Data:

**Ferrules**—pages 143-145

**Connectors used with:**

**HDE Metal-Shell**—pages 114 & 115

**HDP Metal-Shell (Tin plated only)**—pages 90-102

**Other accessory capabilities:**

**Spring Latch (Two-Piece)**—page 152

### Technical Documents:

**Product Specification**—108-40032

**Instruction Sheet**—408-6609

Shell Size	Dimensions				Cable O.D. (Max.)	Die Cast Shield Kit Numbers	Metal-Plated Plastic Shield Kit Numbers	Grommet Sets		Part Number
	A	B	C	D				Cable O.D. Range	No. of Grommets Per Set	
1	1.215 30.86	1.910 48.51	.550** 13.97	.620** 15.75	.200 5.08	5745171-2	5745854-5	—	—	—
					.250 6.35	5745171-1	5745854-3	—	—	—
					.370 9.40	5745171-5	5745854-1	.185-.320 4.70-8.13	4	747746-1
2	1.545 39.24	1.910 48.51	.620 15.75	.620 15.75	.225 5.72	5745172-3	5747099-7	—	—	—
					.300 7.62	5745172-2	5747099-5	—	—	—
					.375 9.53	5745172-1	5747099-3	.185-.320 4.70-8.13	4	747746-1
3	2.090 53.09	1.920 48.77	.680 17.27	.620** 15.75	.430 10.92	1-5745172-3	5747099-1	—	—	—
					.280 7.11	5745173-5	5745833-9	—	—	—
					.350 8.89	5745173-4	5745833-7	—	—	—
4	2.738 69.55	1.920 48.77	.800 20.32	.620 15.75	.430 10.92	5745173-3	5745833-5	—	—	—
					.480 12.19	5745173-2	5745833-4	—	—	—
					.530 13.46	5745173-1	5745833-1	.255-.470 6.48-11.94	6	747973-1
5	2.644 67.16	1.920 48.77	.900 22.86	.730 18.55	.350 8.89	5745174-5	5747100-9	—	—	—
					.425 10.80	5745174-4	5747100-7	—	—	—
					.500 12.70	5745174-3	—	—	—	—
6	2.738 69.55	1.920 48.77	.800 20.32	.620 15.75	.530 13.46	2-5745174-7	—	.255-.470 6.48-11.94	6	747973-1
					.575 14.61	5745174-2	5747100-3	—	—	—
					.650 16.51	5745174-1	5747100-1	—	—	—
7	2.644 67.16	1.920 48.77	.900 22.86	.730 18.55	.375 9.53	5745175-6	—	—	—	—
					.450 11.43	5745175-5	—	—	—	—
					.525 13.34	5745175-4	—	.255-.470 6.48-11.94	6	747973-1
8	2.644 67.16	1.920 48.77	.900 22.86	.730 18.55	.600 15.24	5745175-3	—	—	—	—
					.675 17.15	5745175-2	—	—	—	—
					.750 19.05	5745175-1	5747098-1	—	—	—

### Cable Clamp Kits with Grommets

Shell Size	Dimensions				Cable O.D. Range	No. of Grommets Per Set	Kit Numbers	
	A	B	C	D			Die Cast Shield With Grommets	Metal-Plated Plastic Shield With Grommets
1	1.215 30.86	1.910 48.51	.550** 13.97	.620** 15.75	.185-.320 4.70-8.13	4	5748676-1	5748677-1
2	1.545 39.24	1.910 48.51	.620 15.75	.620 15.75	.185-.320 4.70-8.13	4	5748676-2	5748677-2
3	2.090 53.09	1.920 48.77	.680 17.27	.620** 15.75	.255-.470 6.48-11.94	6	5748676-3	5748677-3
4	2.738 69.55	1.920 48.77	.800 20.32	.620 15.75	.255-.470 6.48-11.94	6	5748676-4	5748677-4
5	2.644 67.16	1.920 48.77	.900 22.86	.730 18.54	.255-.470 6.48-11.94	6	5748676-5	5748677-5

- Notes:**
- All parts are packaged unassembled.
  - Jackscrews must be purchased separately.
  - Split-ring and crimp ferrules are shown on pages 143-145.
  - Shielded cable clamps will not accept connector housings with clinch nuts.

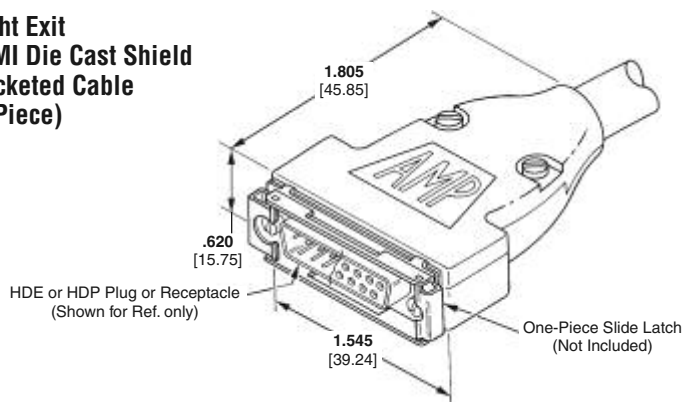
\*\* The following dimensions apply to metal-plated plastic cable clamps: Size 1: C = .570 [14.48], D = .630 [16.0]  
Size 3: D = .640 [16.26]

**Note:** All part numbers are RoHS compliant.

**Shielded Cable Clamps** (Continued)

Both the straight exit and the 90° exit die cast RFI/EMI shield allows cable to be fully prepared and terminated to the connector before the shield is installed. During installation, the shield of the jacketed cable is folded back and compressed into the cable opening of the RFI/EMI shield. For greater cable support and/or shielding effectiveness, splitting and crimp ferrules are available (pages 143-145).

**Straight Exit RFI/EMI Die Cast Shield for Jacketed Cable (Two-Piece)**



**Material and Finish:**

**Shield**—Zinc alloy, plated nickel over copper

**4-40 Pan Head Screws & Latch Screws (90° Exit Only)**—Steel, zinc plated

**One-Piece Slide Latch (90° Exit Only)**—Stainless steel

**Related Product Data:**

**Ferrules**—pages 143-145

**Connectors used with:**  
**HDE Metal-Shell**—pages 114 & 115  
**HDP Metal-Shell (Tin plated only)**—pages 90-102

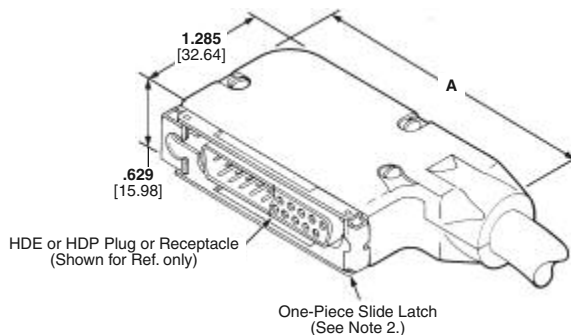
**Technical Documents:**

**Product Specification**—108-40032  
**Instruction Sheet**—408-6769

Shell Size	No. of Positions	ID Letter	Cable Dia. w/Ferrules	Part Number	Grommet Kit
2	15	E	.260-.300 6.60-7.72	5745919-3	—
		H	.190-.375 4.83-9.53	5745919-2	747746-1*
		K	.190-.430 4.83-10.92	5745919-1	—

- \*Cable Dia. Range using Grommet is .185-.320 [4.70-8.13].  
**Notes:** 1. All parts packaged unassembled.  
 2. Each kit comprised of a two-piece shield with 2 pan head screws.  
 3. Split-ring and crimp ferrules are shown on pages 143-145.

**90° Exit RFI/EMI Die Cast Shields for Jacketed Cable (Two-Piece)**



Shell Size	Dimension A	Cable Dia. w/Ferrules	Shield with Slide Latch Kit Numbers (See Note 2)	Shield without Slide Latch Kit Numbers (See Note 3)	Grommet Kit
2	2.310 58.67	.185-.225 4.70-6.48	5745652-4	—	—
		.260-.300 6.60-7.62	5745652-3	—	—
		.190-.375 4.83-9.53	5745652-2*	—	747746-1
		.190-.430 4.83-10.92	5745652-1	—	—
		.240-.280 6.10-7.11	5745653-5	—	—
		.315-.355 8.00-9.02	5745653-4	—	—
3	2.850 72.39	.190-.430 4.83-10.92	5745653-3	5747194-3	—
		.440-.480 11.18-12.19	5745653-2	—	—
		.380-.530 9.65-13.46	5745653-1*	—	747973-1

- \* Cable Dia. with Grommet Kit: Size 2 = .185-.320 [4.70-8.13]; Size 3 = .255-.470 [6.48-11.94].  
**Notes:** 1. All parts are packaged unassembled.  
 2. Each kit is comprised of a two-piece shield with three pan head screws and a slide latch with two 4-40 slide latch screws.  
 3. Each kit is comprised of a two-piece shield with three pan head screws.  
 4. Split-ring and crimp ferrules are shown on pages 143-145.

**Note:** All part numbers are RoHS compliant.

## Shielded Cable Clamps (Continued)

### Material and Finish:

**Outer Ferrule**—Copper, plated .000100 [0.00254] min. tin  
**Inner Ferrule**—.023 [0.58] thick brass, plated .000050 [0.00127] tin over copper

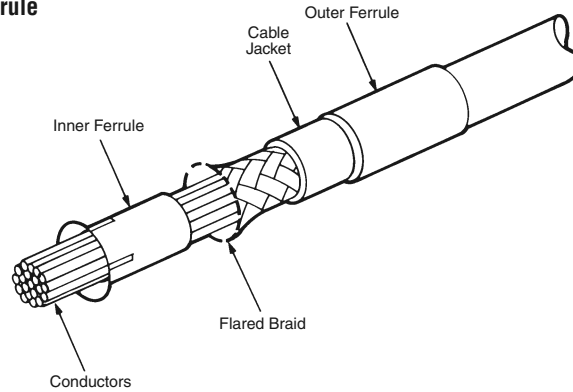
### Related Product Data:

**Shields used with:**  
**Straight Exit**—pages 141 & 142  
**90° Exit**—page 142

### Technical Documents:

**Product Specification**—108-40032  
**Instruction Sheets**—408-9315 Hand Tool  
 408-9318 Die Sets

### Crimp Ferrules for Braided Cable Shield (See pages 144 & 145 for Inner and Outer Ferrule Part Numbers.)



### Application Tooling

**Note:** Crimp ferrules are for use with braided shields only. Crimp ferrules require application tooling with die sets for attachment to cable.



**Pneumatic Bench Tool No. 312522-2**  
 (Requires Die Set Holder No. 58449-1.)



**AMP Hand Tool No. 543344-1**  
 (See pages 144 & 145 for Hand Tool Die Set Numbers)

### Split-Ring Ferrules for Foil or Braided Cable Shield (See pages 144 & 145 for Split-Ring Ferrule Part Numbers.)

### Material:

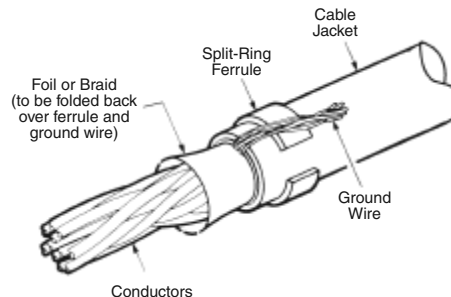
Aluminum

### Related Product Data:

**Shields used with:**  
**Straight Exit**—pages 141 & 142  
**90° Exit**—page 142

### Technical Document

**Product Specification**—108-40032



**Note:** Split-ring ferrules cannot be used with outer and inner ferrules. Split-ring ferrules are suitable for both foil and braided shields. The ferrules do not require tooling for assembly.

**Note:** All part numbers are RoHS compliant.



**Shielded Cable Clamps** (Continued)

**Crimp and Split-Ring Ferrules**

Cable Connectors

Shell Size	Cable Dia. (Max.)	← When using these Shield Kits →				← Use these Ferrules →				
		Straight Exit Shield Kit No.		90° Exit Die Cast Shield Kit No.		Split-Ring* Ferrule No.	Crimp Ferrule No. and Tooling No.**			
		Die Cast	Metal-Plated Plastic	With Slide Latch	Without Slide Latch		Inner	Outer	Die Set For Hand Tool 543344-1	Applicator Die Set
1	.200 5.08	5745171-2	5745854-5	—	—	745508-2	—	—	—	—
	.240 6.10	5745171-5	5745854-1	—	—	—	7-745129-8	3-745130-8	543013-2	813809-1
	.250 6.35	5745171-1	5745854-3	—	—	745508-3	—	—	—	—
	.280 7.11	5745171-5	5745854-1	—	—	—	7-745129-9	4-745130-5	1-543013-7	813809-7
	.370 9.40	5745171-5	5745854-1	—	—	745508-6	6-745129-9	4-745130-0	543013-6	813809-5
	.225 5.72	5745172-3	5747099-7	5745652-4	—	745508-3	—	—	—	—
2	.240 6.10	5745172-1	5747099-3	5745652-2	—	—	7-745129-8	3-745130-8	543013-2	813809-1
	.240 6.10	1-5745172-3 5745919-1	5747099-1	5745652-1	—	—	7-745129-3	3-745130-8	543013-3	813809-1
	.280 7.11	1-5745172-3 5745919-1	5747099-1	5745652-1	—	—	7-745129-8	4-745130-5	1-543013-6	813809-7
	.300 7.62	5745172-2 5745919-3	5747099-5	5745652-3	—	745508-4	—	—	—	—
	.350 8.90	1-5745172-3 5745919-1	5747099-1	5745652-1	—	—	7-745129-2	3-745130-9	543013-4	813809-2
	.365 9.27	5745172-1	5747099-3	5745652-2	—	—	6-745129-9	4-745130-0	543013-6	813809-5
	.375 9.53	5745172-1 5745919-2	5747099-3	5745652-2	—	745508-6	—	—	—	—
	.430 10.92	1-5745172-3 5745919-1	5747099-1	5745652-1	—	745508-1	7-745129-1	4-745130-1	543013-7	813809-3
	.240 6.10	5745173-3	5745833-5	5745653-3	5747194-3	—	7-745129-3	3-745130-8	543013-3	813809-1
	.280 7.11	5745173-5	5745833-9	5745653-5	—	745508-4	—	—	—	—
3	.280 7.11	5745173-3	5745833-5	5745653-3	5747194-3	—	7-745129-8	4-745130-5	1-543013-6	813809-7
	.350 8.90	5745173-4	5745833-7	5745653-4	—	745508-5	—	—	—	—
	.350 8.90	5745173-3	5745833-5	5745653-3	5747194-3	—	7-745129-2	3-745130-9	543013-4	813809-2
	.430 10.92	5745173-3	5745833-5	5745653-3	5747194-3	745508-1	7-745129-1	4-745130-1	543013-7	813809-3
	.430 10.92	5745173-1	5745833-1	5745653-1	—	—	7-745129-5	4-745130-1	543013-8	813809-3
	.480 12.19	5745173-2	—	5745653-2	—	745508-8	—	—	—	—
	.530 13.46	5745173-1	5745833-1	5745653-1	—	745508-9	7-745129-4	4-745130-2	1-543013-0	813809-4

\*For split-ring ferrules, Min. O.D. is .040 [1.02] smaller than Max. O.D.

\*\*For inner and outer ferrules, Min. O.D. is .050 [1.27] smaller than Max. O.D. At the Max. cable O.D. the Min. insulation thickness is .060 [1.52].

Continued on Page 145

**Note:** All part numbers are RoHS compliant.

**Shielded Cable Clamps** (Continued)

**Crimp and Split-Ring Ferrules** (Continued)

Shell Size	Cable Dia. (Max.)	← When using these Shield Kits →				← Use these Ferrules →				
		Straight Exit Shield Kit No.		90° Exit Die Cast Shield Kit No.		Split-Ring* Ferrule No.	Crimp Ferrule No. and Tooling No.**			
		Die Cast	Metal-Plated Plastic	With Slide Latch	Without Slide Latch		Inner	Outer	Die Set for Hand Tool 54334-1	Applicator Die Set
4	.240 6.10	5745174-4	5747100-7	—	—	—	7-745129-3	3-745130-8	543013-3	813809-1
	.280 7.11	5745174-4	5747100-7	—	—	—	7-745129-8	4-745130-5	1-543013-6	813809-7
	.350 8.90	5745174-5	5747100-9	—	—	745508-5	—	—	—	—
	.350 8.90	5745174-4	5747100-7	—	—	—	7-745129-2	3-745130-9	543013-4	813809-2
	.430 10.92	5745174-4	5747100-7	—	—	745508-1	7-745129-1	4-745130-1	543013-7	813809-3
	.500 12.70	5745174-3	—	—	—	745508-8	—	—	—	—
	.525 13.34	5745174-1	5747100-1	—	—	—	7-745129-6	4-745130-2	1-543013-1	813809-4
	.575 14.61	5745174-2	5747100-3	—	—	1-745508-0	—	—	—	—
	.650 16.51	5745174-1	5747100-1	—	—	1-745508-1	—	—	—	—
	5	.240 6.10	5745175-6	—	—	—	—	7-745129-0	3-745130-8	543013-2
.365 9.27		5745175-6	—	—	—	—	6-745129-9	4-745130-0	543013-6	813809-5
.375 9.53		5745175-6	—	—	—	745508-6	—	—	—	—
.430 10.92		5745175-4	—	—	—	—	7-745129-5	4-745130-1	543013-8	813809-3
.450 11.43		5745175-5	—	—	—	745508-7	—	—	—	—
.525 13.34		5745175-4	—	—	—	745508-9	—	—	—	—
.530 13.46		5745175-4	—	—	—	—	7-745129-4	4-745130-2	1-543013-0	813809-4
.600 15.24		5745175-3	—	—	—	1-745508-0	—	—	—	—
.650 16.51		5745175-1	5747098-1	—	—	—	1-745508-1	4-745130-3	1-543013-4	—
.675 17.15		5745175-2	—	—	—	1-745508-1	—	—	—	—
.750 19.05	5745175-1	5747098-1	—	—	1-745508-2	—	—	—	—	

\*For split-ring ferrules, Min. O.D. is .040 [1.02] smaller than Max. O.D.  
 \*\*For inner and outer ferrules, Min. O.D. is .050 [1.27] smaller than Max. O.D. At the Max. cable O.D. the Min. insulation thickness is .060 [1.52].  
**Note:** Refer to page 143 for Application Tooling for ferrules.

**Note:** All part numbers are RoHS compliant.

## Hardware

### Commoning Strip (for HDF-20 Plugs, Size 20 Pin Contacts)

**Material and Finish:**

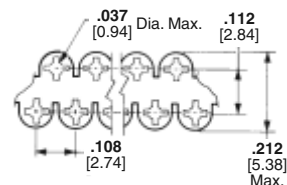
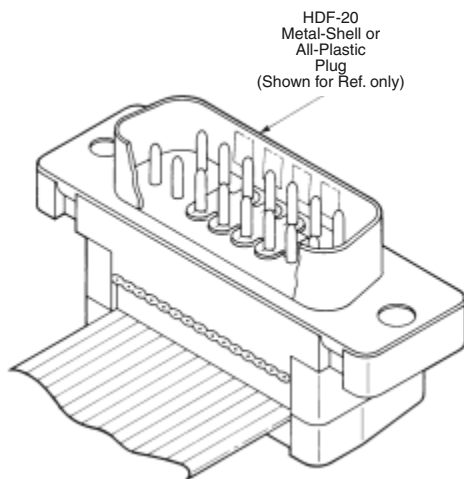
Brass, .004 [0.10] thick, tin plated

**Part No. 206918-2**

(Continuous Strip)

**Related Product Data:**

Used with HDF-20 Plugs—  
page 126



**Notes:**

1. Use punching tool to remove undesired pin commoning locations on commoning strip. Use mating receptacle to seat strip over pins in plug. Punching tool is not supplied by TE.
2. Sold in strip form, strip contains 10,000 commoning locations.

### Male Screw Retainers for Metal-Shell Connectors (HDE and HDP)

**Material and Finish:**

**Male Screw**—Steel, zinc plated clear or yellow chromate

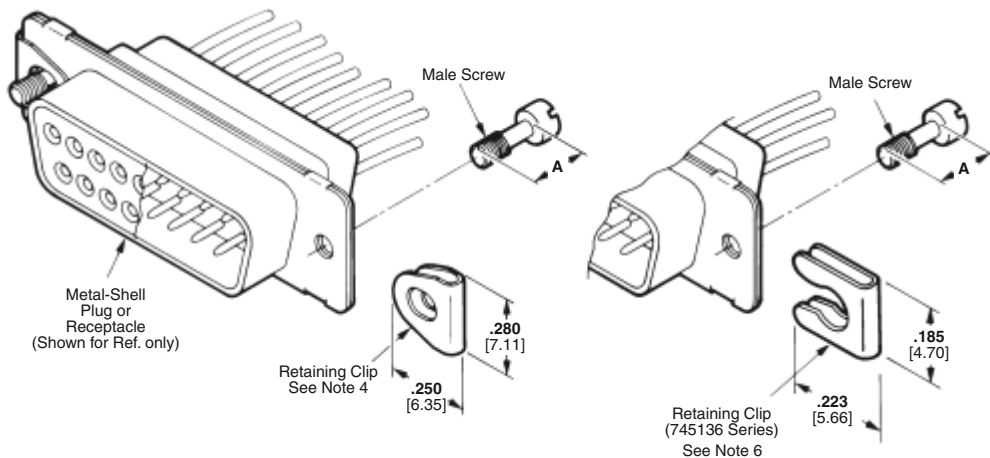
**Retaining Clip**—.012 [0.31] stainless steel

**Related Product Data:**

**Connectors used with:**  
**HDE Metal-Shell**—pages 114 & 115  
**HDP Metal-Shell**—pages 90-102

**Technical Documents:**

**Instruction Sheet**—408-7837



Male Screw Finish	Thread Size	Dimension A	Male Screw Retainer Kit No.	
			Individual	Bulk Packed*
Yellow Chromate	4-40	.220 5.59	5205980-1	5205980-3
		.200 5.08	5787354-1**	—
	M3 (Metric)	.225 5.72	5745136-1	5745136-2
		.200 5.08	5207871-1	—
Clear Chromate	4-40	.220 5.59	5205980-4	5205980-5
		.200 5.08	5745136-3	5745136-4

\*Each part is individually bulk packed for multiple kit orders.

\*\* Phillips Head Screw

- Notes:**
1. All parts are packaged unassembled.
  2. Each kit is comprised of two male screws and two retaining clips. Male screw retainers are also furnished as part of cable clamp kits (pages 137 and 138).
  3. Male screw retainers mate with female screwlocks (page 144), with HDF metal-shell connectors featuring 4-40 threaded inserts (page 148) and with HD metal-shell board mount connectors featuring 4-40 threaded inserts or female screwlocks.
  4. Retaining clip must be assembled onto connector flanges with threaded hole toward wire side of connector.
  5. All screws have straight slotted heads except where noted.
  6. Retaining clip must be assembled onto connector flanges with notched side of retainer toward mating side of connector.

**Note:** All part numbers are RoHS compliant.

**Hardware** (Continued)

**Material and Finish:**

**Male Screw**—Steel, zinc plated yellow chromate

**Retaining Clip**—.012 [0.51] stainless steel

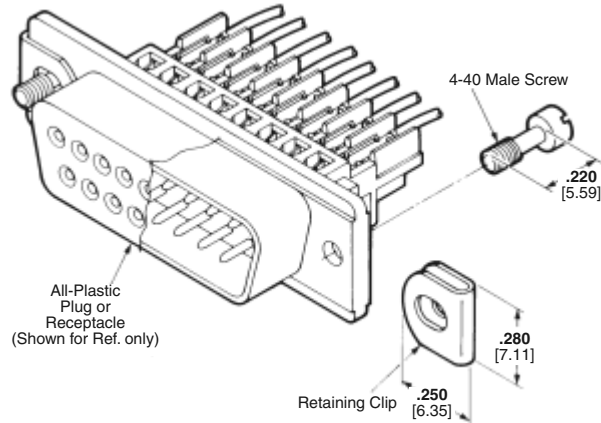
**Related Product Data:**

**Connectors used with:**  
**HDE All-Plastic**—pages 112 & 113

**Technical Documents:**

**Instruction Sheet**—408-7837

**Male Screw Retainers for All-Plastic Connectors (HDE)**



**Kit Numbers:**

**745647-1** (Individually packaged, see Note 2)

**745647-2** (Bulk packed)\*

\*Each part is individually bulk packed for multiple kit orders.

- Notes:**
1. All parts are packaged unassembled.
  2. Each kit is comprised of two 4-40 male screws and two retaining clips.
  3. Male screw retainers mate with female screwlocks (page 148), with HDF All-Plastic connectors featuring 4-40 threaded inserts (page 125), with HD All-Plastic board mount connectors featuring integral standoffs with 4-40 threaded inserts and female screwlocks.
  4. Retaining clips must be assembled onto connector flanges with threaded hole toward wire side of connector.

**Material and Finish:**

**Male Screw**—Steel, zinc plated clear chromate

**Retaining Clip**—.012 [0.51] stainless steel

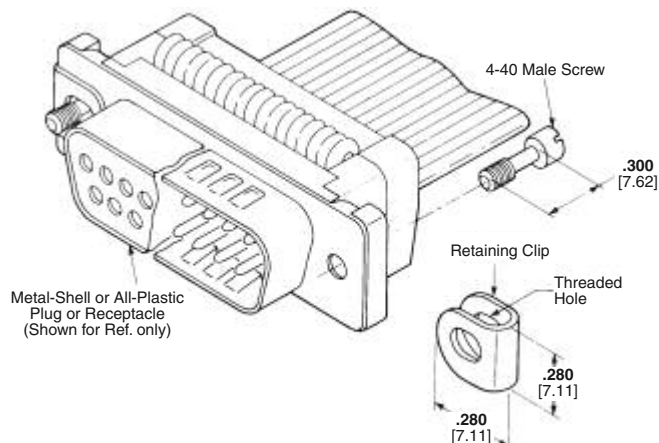
**Related Product Data:**

**Connectors used with:**  
**HDF Metal-Shell and All-Plastic**—pages 125 & 126

**Technical Documents:**

**Instruction Sheet**—408-7837

**Male Screw Retainers for Metal-Shell and All-Plastic Connectors (HDF)**



**Kit Numbers:**

**746881-1** (Individually packaged, see Note 2)

**746881-2** (Bulk packed)\*

\*Each part is individually bulk packed for multiple kit orders.

- Notes:**
1. All parts are packaged unassembled.
  2. Each kit is comprised of two male screws and two retaining clips.
  3. Male screw retainers mate with female screwlocks (page 148), and with HD board mount connectors featuring female screwlocks.
  4. Retaining clips must be assembled onto connector flanges with threaded hole toward wire side of connector.

**Note:** All part numbers are RoHS compliant.

**Hardware** (Continued)

**Material and Finish:**

**All Parts**—Cold rolled steel, zinc plated clear or yellow chromate

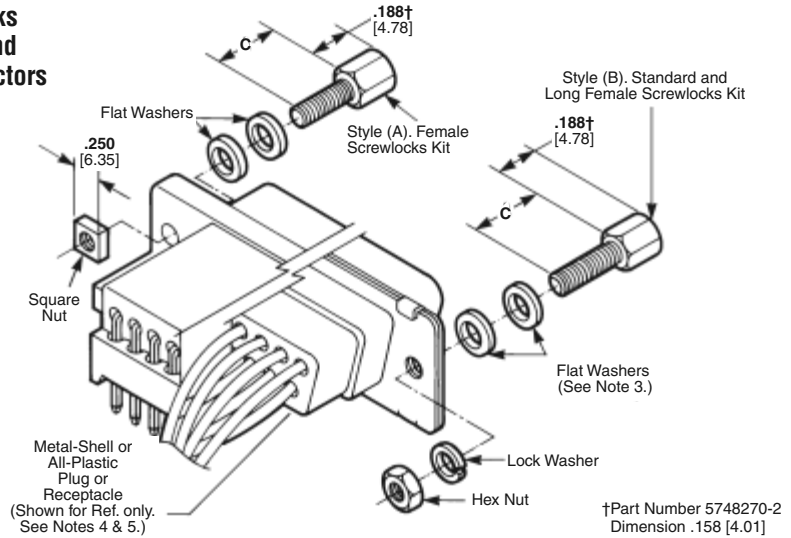
**Related Product Data:**

**Connectors used with:**  
**HDE Metal-Shell or All-Plastic**—pages 112-115  
**HDF Metal-Shell or All-Plastic**—pages 125 & 126  
**HDP Metal-Shell**—pages 90-102  
**HD Board Mount**—pages 54-71, 78-85, 87-89

**Technical Documents:**

**Instruction Sheet**—408-7837

**Female Screwlocks for Metal-Shell and All-Plastic Connectors (HDE, HDF, HDP)**



Connector Used with	Style	Dimension C	Thread Size	Finish	Kit Number	
					Individual	Bulk Packed <sup>Δ</sup>
HD All-Plastic Right-Angle Plugs and Receptacles	(A)	.250 6.35	4-40	Yellow Chromate	5207952-1	—
				Clear Chromate	5207952-3	—
HDE Metal-Shell or All-Plastic Plugs and Receptacles	(B)	.250 6.35	4-40	Yellow Chromate	5745563-1	5745563-1
				Clear Chromate	5745563-3	5745563-4
HDP or HDF Metal-Shell or All-Plastic Plugs and Receptacles	(B)	.312 7.93	4-40	Yellow Chromate	5205817-1	5205817-2
				Clear Chromate	5205817-3	5205817-4
			M3 (Metric)	Yellow Chromate	5207872-1	—
				Clear Chromate	5207872-3	—
HD or HDF All-Plastic Plugs and Receptacles with Integral Standoffs	(B)	.560 14.22	4-40	Yellow Chromate	5207719-1	5207719-2
				Clear Chromate	5207719-3	5207719-4
			2-56*	Clear Chromate	5747223-3	—

\* 2-56 is the male thread size. The female thread size is 4-40.

<sup>Δ</sup> Each part is individually bulk packed for multiple kit orders.

**Notes:** 1. All parts are packaged unassembled.

2. Each female screwlock kit is comprised of two assemblies as illustrated above.

3. One or two flat washers may be required for panel thicknesses less than .060 [1.52]. Female screwlocks are not recommended for panel thicknesses greater than .060 [1.52].

4. Female screwlocks with 2-56 thread size are to be used with cable clamps with mounting flanges. Female screwlocks with 4-40 and M3 (Metric) thread sizes can be used with all other cable clamps.

5. Female screwlocks mate with male screw retainers (pages 146 and 147).

6. Short female screwlocks cannot be used with HDF connectors (pages 125 & 126)



**Nut Driver, Part No. 811262-1**

(Used for assembling female screwlocks to connector flange)

**Individual Screwlocks**

(Washers and Nuts not included)

Connector Used with	Style	Dimension C	Thread Size	Finish	Screwlocks	
					Individual	Bulk Packed <sup>Δ</sup>
HD All-Plastic Right-Angle Plugs and Receptacles	(A)	.250 6.35	4-40	Yellow Chromate	5207953-2	—
				Clear Chromate	5207953-3	—
				Clear Chromate	—	5205818-3 <sup>ΔΔ</sup>
HDP or HDF Metal-Shell or All-Plastic Plugs and Receptacles	(B)	.312 7.93	4-40	Yellow Chromate	5748270-2	5205818-2 <sup>ΔΔ</sup>
				Clear Chromate	5749765-3	—
			M2.6** (Metric)	Clear Chromate	5747404-3	—
				M3*** (Metric)	Clear Chromate	5747404-3
(Special)	.185 4.70	4-40	Clear Chromate	5747877-3	—	

<sup>Δ</sup> Each part is individually bulk packed for multiple kit orders.

<sup>ΔΔ</sup>With captivated star washer. No additional hardware included.

<sup>†</sup>Part No. 5748270-2 Dimension .158 [4.01]

\*\*M2.6 is the female thread size. The male thread size is 4-40.

\*\*\*M3 is the female thread size. The male thread size is 4-40.

**Note:** All part numbers are RoHS compliant.

**Hardware** (Continued)

**Slide Latches**

**Material and Finish:**

**4-40 Screws, Washers and Hex Nuts**—Steel, zinc plated yellow chromate

**2-56 Screws, Washers and Hex Nuts**—Steel, zinc plated clear chromate

**Slide Latch**—Stainless steel

**Related Product Data:**

**Connectors used with:**

**HDE Metal-Shell or All-Plastic**—pages 112-115

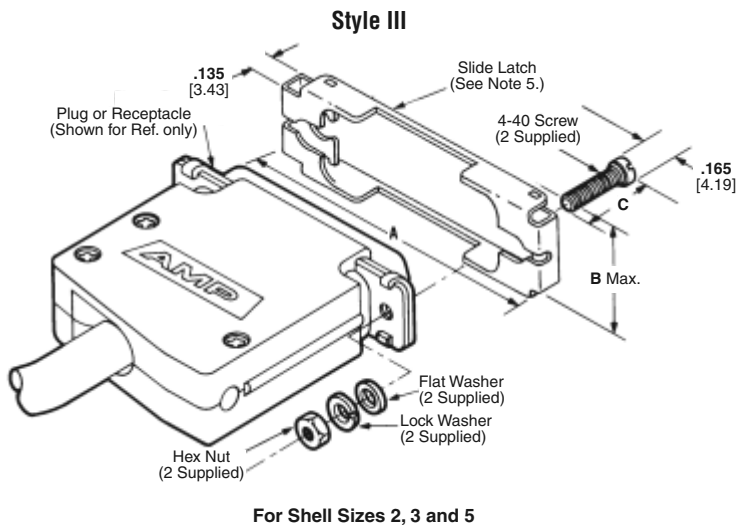
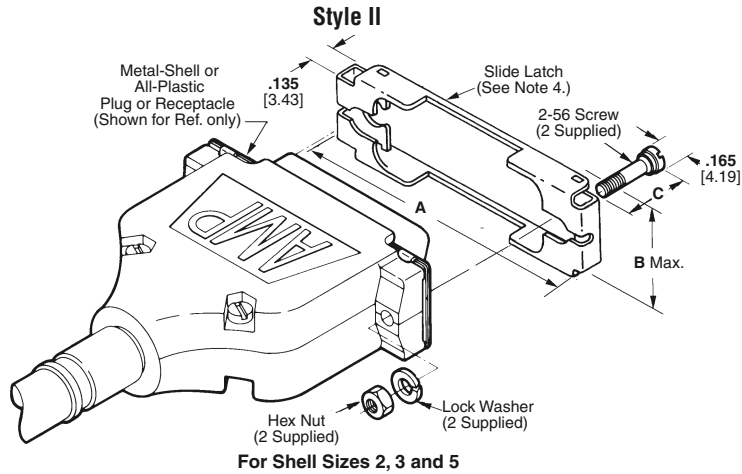
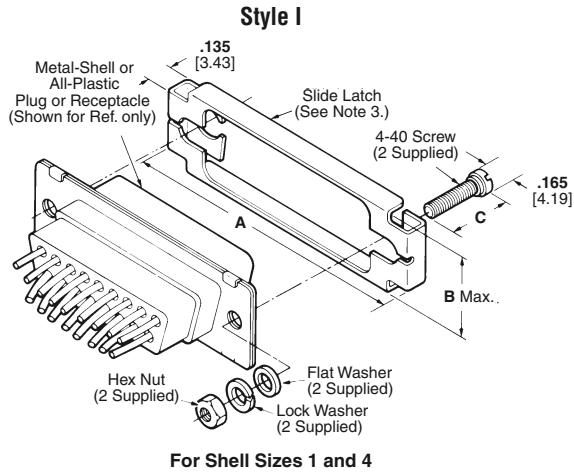
**HDF Metal-Shell or All-Plastic**—pages 125 & 126

**HDP Metal-Shell**—pages 90-102

**HD Board Mount**—pages 54-71, 78-85, 87-89

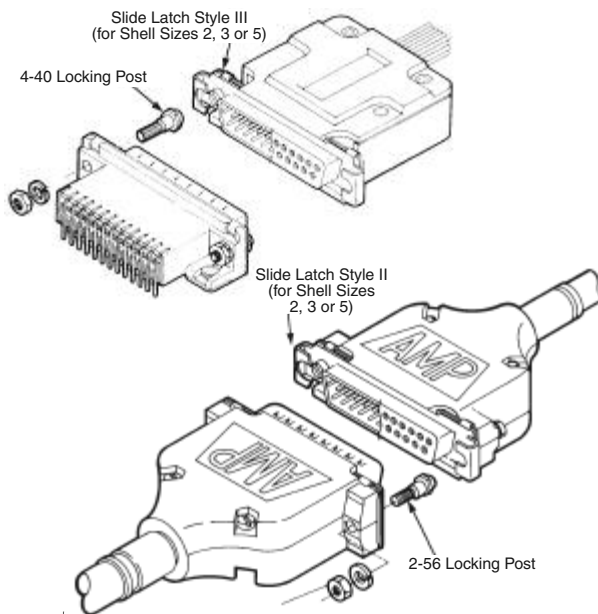
**Technical Documents:**

**Instruction Sheet**—408-6551



**Hardware** (Continued)

**Slide Latches**



Typical Applications of Locking Posts and Slide Latches

Shell Size	Style	Dimensions			Slide Latch Kit Numbers		Side Latch Only
		A	B	C	Individual	Bulk Packed*	
1	I	1.397 35.48	.490 12.45	.415 10.54	5745404-1	—	164890-1
	II	1.725 43.82	.470 11.94	.547 13.89	5745583-1	—	749027-1
2	II	1.725 43.82	.470 11.94	.415 10.54	5745583-5	—	749027-1
		1.725 43.82	.470 11.94	.450 11.43	5745583-7	—	—
	III	1.725 43.82	.470 11.94	.415 10.54	—	5748653-1	—
		1.725 43.82	.490 12.45	.290 7.37	5749028-1 <sup>7</sup>	—	—
	III	1.725 43.82	.437 11.10	.415 10.54	—	5786138-1 <sup>7</sup>	—
		II	2.265 57.53	.470 11.94	.547 13.89	5745584-1	—
3	III	2.265 57.53	.470 11.94	.415 10.54	5745584-3	—	749996-1
	I	2.913 73.99	.490 12.45	.415 10.54	5745407-1	—	164890-4
4	I	2.913 73.99	.490 12.45	.415 10.54	5745407-1	—	164890-4
5	III	2.819 71.60	.575 14.61	.415 10.54	5745578-3	—	749997-1
		2.819 71.60	.575 14.61	.415 10.54	5745578-3	—	749997-1

\*Each part is individually bulk packed for multiple kit orders.

- Notes:**
1. All parts are packaged unassembled.
  2. Each kit is comprised of a slide latch and two screws, flat washers (if required), lock washers and hex nuts. Style I slide latches are also furnished as part of cable clamp kits (page 142).
  3. Style I slide latches can be used with cable clamps that do not extend beyond the front flange of the connector or on connectors without cable clamps.
  4. Style II slide latches can be used with any cable clamp that has the mounting ear configuration as shown above.
  5. Style III slide latches can be used on connectors without cable clamps or with cable clamps that do not have the mounting ear configuration shown with Style II above.
  6. Slide latches mate with locking posts (page 151).
  7. No nuts, washers, or lockwashers.

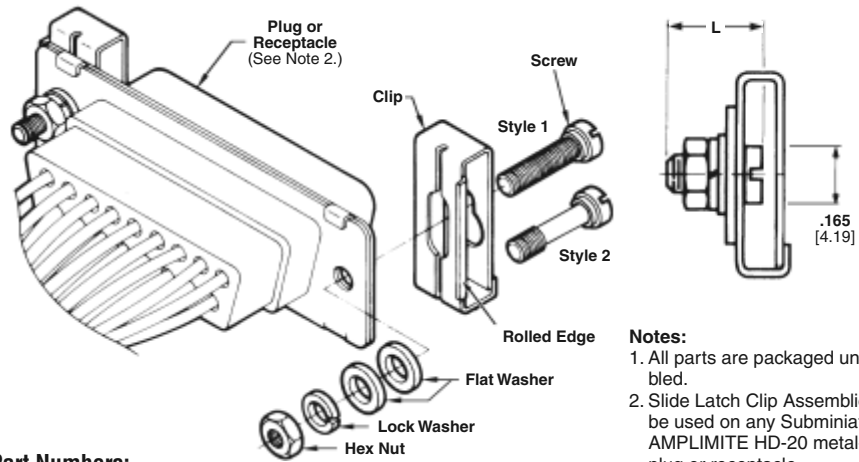
**Note:** All part numbers are RoHS compliant.

**Hardware** (Continued)

**Slide Latch Clip Assembly for Unfiltered Mating Half**

**Material and Finish:**  
**Screw, Washers and Hex Nut**—Cold rolled steel, zinc plated clear chromate  
**Clip**—Stainless steel

**Technical Documents:**  
**Instruction Sheet**—408-7785



- Notes:**
1. All parts are packaged unassembled.
  2. Slide Latch Clip Assemblies can be used on any Subminiature D AMPLIMITE HD-20 metal-shell plug or receptacle.
  3. Slide Latch Clip Assemblies mate with Locking Post Assemblies shown below.

**Kit Part Numbers:**

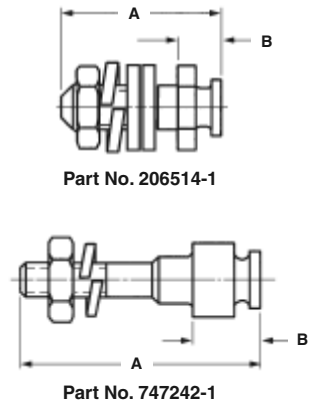
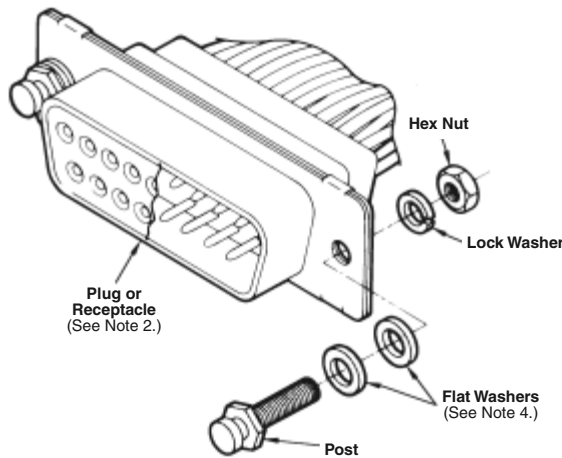
Thread Size	Screw Length L	Pkg.	Screw Style	Part No.
4-40	.415	Unit†	1	5206942-1
	10.54	Bulk		5206942-2
2-56	.547	Unit	2	5748078-1**
	13.89	—		—

† Two assemblies per package.  
 \* Each part is individually bulk packed for multiple kit orders.  
 \*\* Designed for cable clamps with mounting ears. No flat washers included.

**Locking Post Assembly**

**Material and Finish:**  
**All Parts**—Cold rolled steel, zinc plated clear or yellow chromate

**Related Product Data:**  
**Connectors used with:**  
**HDE Metal-Shell or All-Plastic**—pages 112-115  
**HDF Metal-Shell or All-Plastic**—pages 125 & 126  
**HDP Metal-Shell**—pages 90-102  
**HD Board Mount**—pages 54-71, 78-85, 87-89  
**Instruction Sheets**—408-6551, 408-7785



- Notes:**
1. All parts are packaged unassembled.
  2. Each kit is comprised of two complete assemblies, as illustrated above.
  3. For front panel mounting, it is recommended that a shim be used between the connector flange and panel to prevent bowing of the flange.
  4. Locking posts with 2-56 thread size are to be used with cable clamps with mounting flanges. Locking posts with 4-40 thread size can be used with all other cable clamps
  5. Locking posts mate with slide latches (page 149).

Thread Size	Locking Post Finish	Dimensions		Locking Post Kit Number (See Note 4)	
		A	B	Individual	Bulk Packed*
4-40	Yellow Chromate	.410 10.41	.110 2.79	5206514-1	5206514-3
	Clear Chromate	.410 10.41	.110 2.79	5206514-4	—
	Yellow Chromate	.560 14.22	.110 2.79	5206514-6	5206514-7
2-56	Yellow Chromate	.615 15.62	.172 4.37	5747242-1	—

\*Each part is individually bulk packed for multiple kit orders.

**Note:** All part numbers are RoHS compliant.



**Hardware** (Continued)

**Material**

.015 [0.38] Stainless steel

**Related Product Data:**

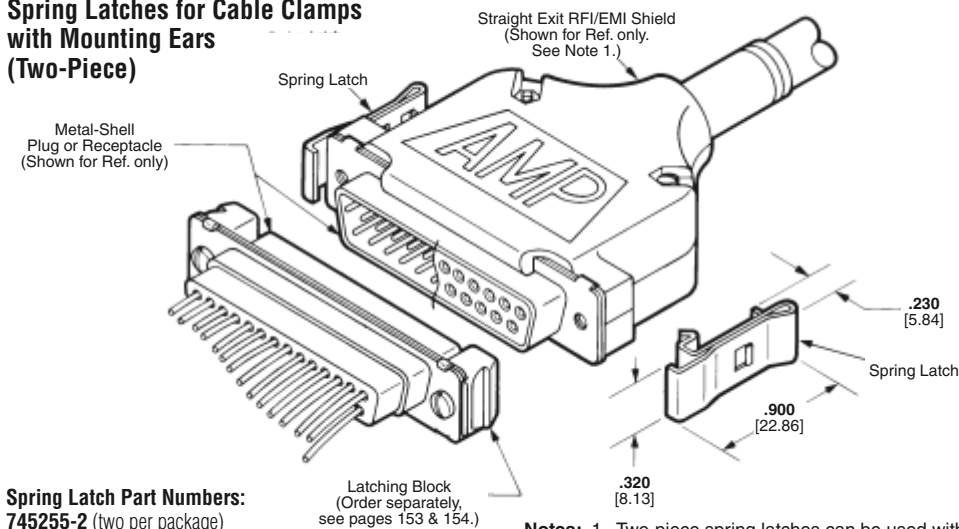
**Connectors used with:**

**HDE Metal-Shell**—pages 114 & 115  
**HDP Metal-Shell (Tin plated only)**—pages 90-102

**Technical Documents:**

**Instruction Sheet**—408-9130

**Spring Latches for Cable Clamps with Mounting Ears (Two-Piece)**



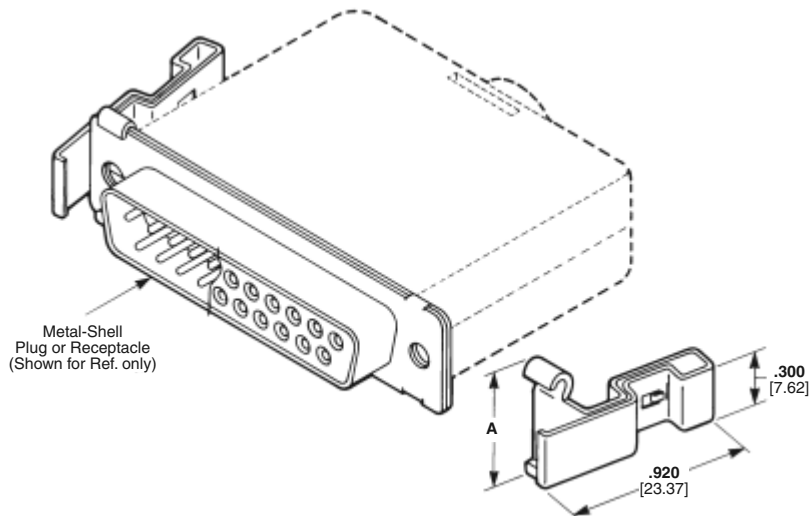
**Spring Latch Part Numbers:**  
**745255-2** (two per package)  
**745255-3** (bulk packed)\*

\*Two-piece spring latches are individually bulk packed for multiple part orders.

- Notes:**
1. Two-piece spring latches can be used with RFI/EMI shields (pages 141).
  2. Two-piece spring latches mate with latching blocks (pages 153 & 154).

**Typical Application of Two-Piece Spring Latches with Straight Exit RFI/EMI Shield**

**Spring Latches (Two-Piece)**



**Material:**

Stainless steel

**Related Product Data:**

**Connectors used with:**

**HDE Metal-Shell**—pages 114 & 115  
**HDP Metal-Shell**—pages 90-102

**Technical Documents:**

**Instruction Sheet**—408-9131

**Spring Latch Part Numbers**

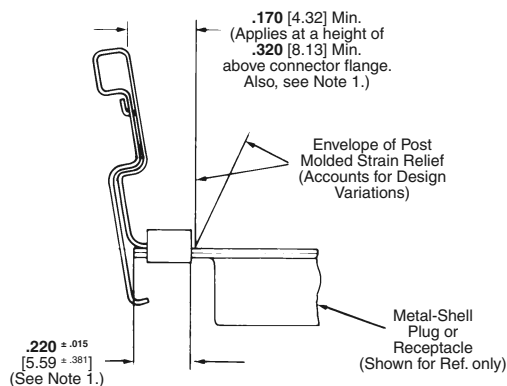
Size	Dimension A	Two Per Package	Bulk Packed*
1-4	.540 13.72	745779-2	745779-3
5	.650 16.51	745779-5	—

\*Two-piece spring latches are individually bulk packed for multiple part orders.

- Notes:**
1. These dimensions must be maintained to assure satisfactory operation of the spring latches.
  2. Two-piece spring latches mate with latching blocks (pages 153 & 154).

**Note:** All part numbers are RoHS compliant.

**Typical Application of Two-Piece Spring Latches with Post Molded Strain Relief**



**Hardware** (Continued)

**Material and Finish:**  
**Latching Blocks**—Zinc  
**Pan Head Screws**—Steel, zinc plated

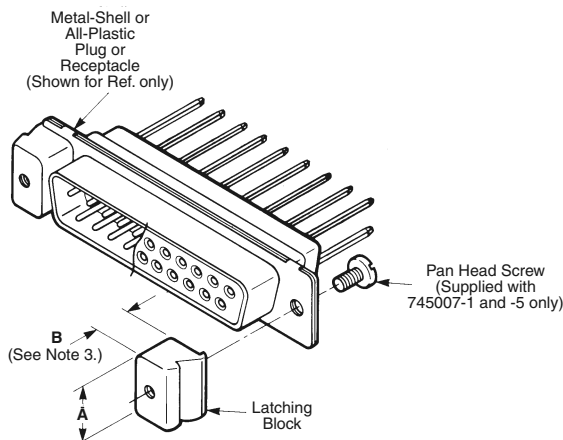
**Related Product Data:**

**Connectors used with:**  
**HDE Metal-Shell or All-Plastic**—  
 pages 112-115  
**HDF Metal-Shell or All-Plastic**—  
 pages 125 & 126  
**HDP Metal-Shell**—pages 90-102  
**HD Board Mount**—pages 54-71,  
 78-85, 87-89  
**Mating/Panel Mounting**—page 136

**Technical Documents:**

**Instruction Sheet**—408-9128

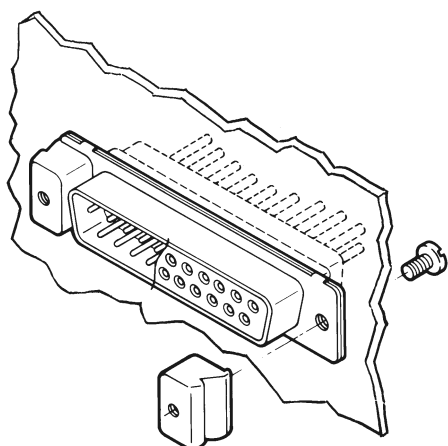
**Latching Blocks with Threaded Hole**



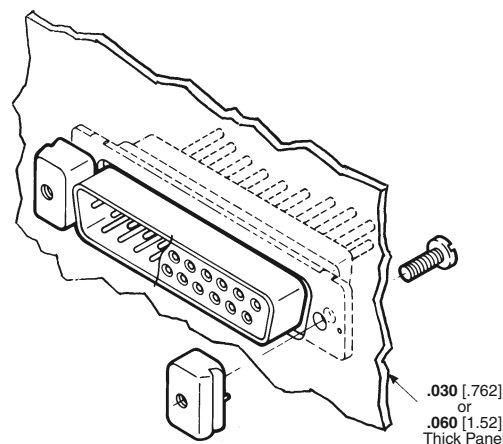
Shell (No. of Contact Pos.)	Dimensions		Panel Thickness	Thread Size	Rear-Panel Latching Block Part No.		Front-Panel Latching Block Part No.	
	A	B			Individual	Bulk Packed*	Individual	Bulk Packed*
1 thru 4 (9 thru 37)	.400 10.16	.190 4.83	.060 1.52	M3 (Metric)	—	745403-2	—	—
				4-40	745403-8	—	—	
	.400 10.16	.220 5.59	.030 0.76	4-40	747717-2	—	—	
				—	—	—	—	
5 (50)	.400 10.16	.250 6.35	—	M3 (Metric)	—	—	5745007-1	—
				4-40	—	—	208101-1	208101-2
	.530 13.46	.250 6.35	—	4-40	—	—	208101-8	208101-9
				—	—	—	1-208101-1	—

\*Bulk packed for multiple part orders.  
 \*\*Individual kits contain two latching blocks per package.

- Notes:**
1. All parts are packaged unassembled.
  2. Each front panel latching block kit is comprised of two latching blocks. Two pan head screws of the appropriate length and thread size to be supplied by customer.
  3. B dimension .250 [6.35] is for connector flange mounting, .220 [5.59] is for use with .030 [0.76] thick panels, and .190 [4.83] is for use with .060 [1.52] thick panels.
  4. Latching blocks mate with spring latches (page 152).



**Typical Application of Front-Panel Mounted Subminiature D Connector using Front-Panel Latching Blocks**



**Typical Application of Rear-Panel Mounted Subminiature D Connector using Rear-Panel Latching Blocks**

**Note:** All part numbers are RoHS compliant.

**Hardware** (Continued)

**Material**

Latching Blocks—Zinc

**Related Product Data:**

Connectors used with:  
**HDE Metal-Shell or All-Plastic**—  
 pages 112-115

**HDF Metal-Shell or All-Plastic**—  
 pages 125 & 126

**HDP Metal-Shell**—pages 90-102

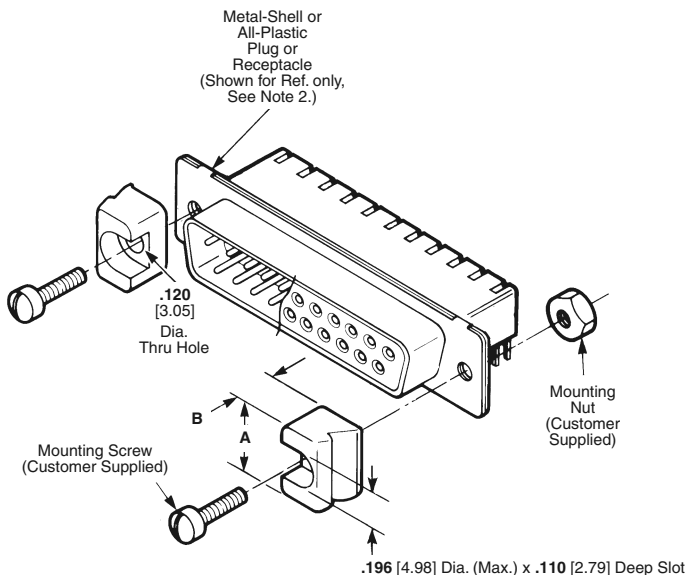
**HD Board Mount**—pages 54-71,  
 78-85, 87-89

**Mating/Panel Mounting**—page 136

**Technical Documents:**

Instruction Sheet—408-9128

**Latching Blocks with Slot Recess and Thru Hole**

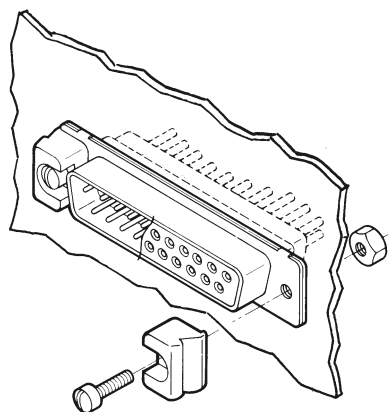


Shell (No. of Contact Pos.)	Dimensions		Panel Thickness	Rear-Panel Latching Block Part No.		Front-Panel Latching Block Part No.
	A	B		Individual	Bulk Packed*	Individual
1 thru 4 (9 thru 37)	.400 10.16	.160 4.06	.090 2.29	747080-2	—	—
		.190 4.83	.060 1.52	745245-2	745245-3	—
		.250 6.35	—	—	—	745286-2
5 (50)	.530 13.46	.190 4.83	.060 1.52	—	—	745245-5

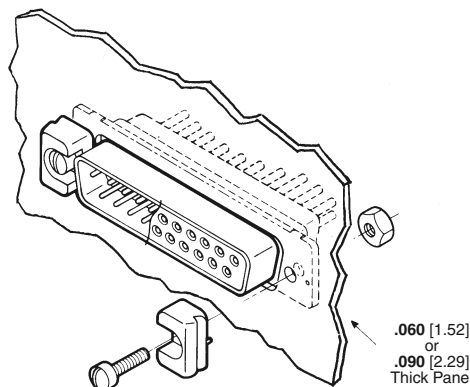
\*Bulk packed for multiple part orders.

\*\*Individual kits contain two latching blocks per package.

- Notes:**
1. Mounting screws and nuts are to be supplied by Customer.
  2. These latching blocks allow mounting screws to be installed thru the front of the block and to be screwed into the bracket of a right-angle connector, a fixed insert in a connector mounting flange, or a nut behind the connector mounting flange (as illustrated above).
  3. Latching blocks mate with spring latches (page 152).



**Typical Application of Front-Panel Mounted Subminiature D Connector using Front-Panel Latching Blocks**



**Typical Application of Rear-Panel Mounted Subminiature D Connector using Rear-Panel Latching Blocks**

**Note:** All part numbers are RoHS compliant.

**Hardware** (Continued)

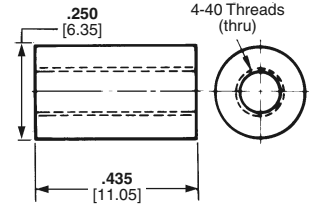
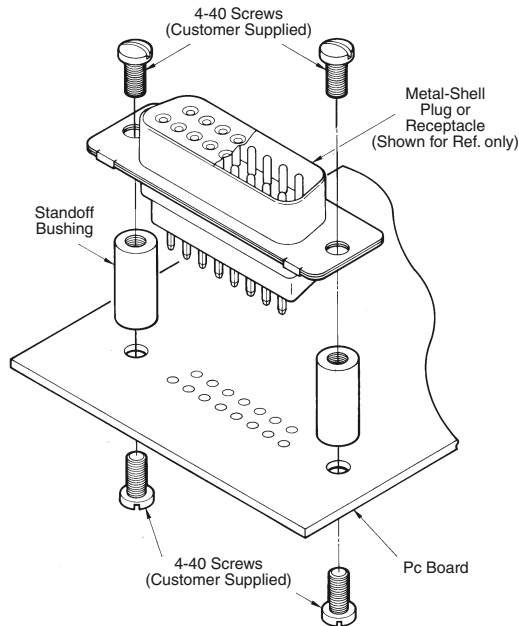
**Standoff Bushings**

**Material:**

Aluminum

**Related Product Data:**

**Connectors used with:**  
**HD Straight Posted**—  
 pages 76-85, 87-89



**Kit Numbers:**

**205933-3** (two bushings per package)

**205933-4** (bulk packed)\*

\*Parts are individually bulk packed for multiple part orders.

**Keying Plug**  
 (for Size 20 Socket Contacts)

**Material:**

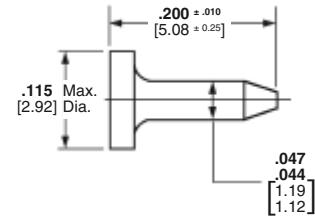
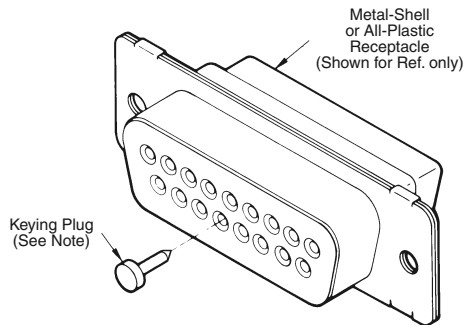
Polyphenylene oxide

**Related Product Data:**

**Connectors used with:**  
**All HDE, HDP and HD Receptacles**  
**with Socket Contacts**

**Keying Plug**

**499712-1 AMP-LATCH** (electrical connectors) can be used on **HD22 Socket Contacts**



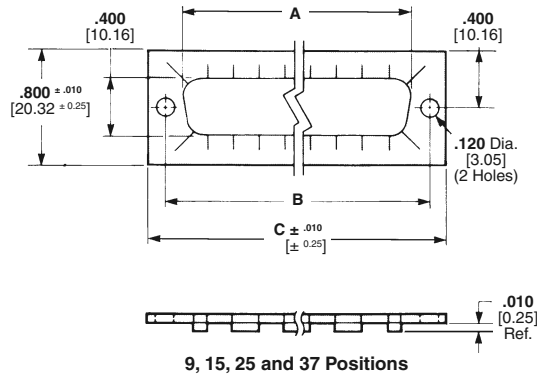
**Part Number: 206509-1**

- Notes:** 1. Keying plug is installed taper-end first into front of receptacle.  
 2. Sold individually.

**EMI/RFI Gaskets**

**Material and Finish:**

Brass, .006 [0.15] thick; bright tin plated



9, 15, 25 and 37 Positions

Shell Size (No. of Contact Pos.)	Dimensions			Gasket Part No.
	A	B	C	
1 (9)	.746 18.95	.984 24.99	1.220 30.99	5747024-3
2 (15)	1.074 27.28	1.312 33.32	1.555 39.50	5747025-3
3 (25)	1.614 41.00	1.852 47.04	2.100 53.34	745776-4
4 (37)	2.266 57.56	2.500 63.50	2.730 69.34	745777-4

**Note:** All part numbers are RoHS compliant.

## Part Number Index

**Note:** This index lists all cataloged parts by base no. only. Complete part nos. (with prefixes and/or suffixes) are shown on the page(s) indicated.

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# DATA COMMUNICATIONS

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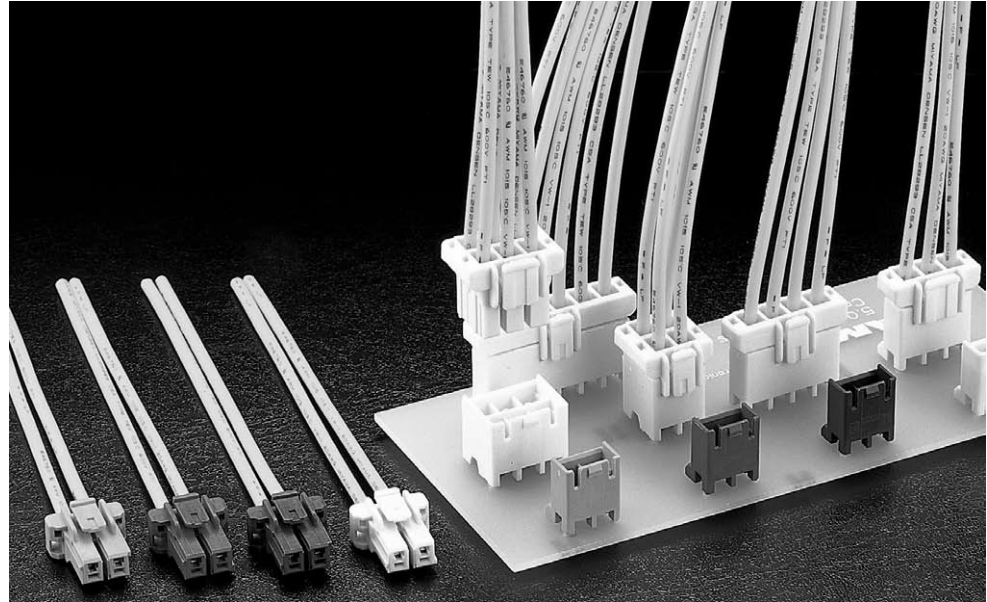
SOFT SHELL PIN & SOCKET CONNECTORS CATALOG

Browse Products: <http://www.te.com/usa-en/solutions/data-communications.html>

## 5.0 mm Power Key Connectors (5.0 PKC) (Wire-to-Board)

### Product Facts

- Compact design with 19.4 mm mated height
- Power circuit connector with 5.0 mm contact centerline
- Wire-to-board connectors consisting of plug housings for wires and PCB header assemblies
- With a clear clicking sound, contact insertions can be made easier. The double lock plate provides for complete loading of contacts
- Locking levers are surrounded by walls, which protect levers and prevent tangling with wires
- Connector is designed to release bubbles created by the process of potting (PC board coating)
- Housing lances also help prevent tangling of wired contacts
- Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476
- Certified by Canadian Standards Association, File No. LR7189



5.0 mm Power Key Connectors are for power circuits of home appliances, especially targeting gas appliances. The connector features four kinds of keying per housing.

Only color-coding of housings limited the efficiency of blind mating where you could not see connectors. However, the new keying mechanism not only improves assembly efficiency but also helps prevent mismatching.

Part numbers involved can be reduced so that purchasing and stock level control can be made simpler.

### Performance Characteristics

**Voltage Rating**—300 VAC<sup>1</sup>

**Current Rating**—10A max.<sup>2</sup>

**Operating Temperature**—  
-30°C ~ +105°C

**Applicable Wire**—24-16 AWG

**Applicable PC Board Thickness**—  
1.6 mm

1 Excludes header tyne round space. Usable for 150 VAC applications when the round dimensions are 3 mm or less.

2 Specified values vary according to the number of contacts and the wire used. The 10 A maximum value applies to 16 AWG wire used with 2 contacts.

### Technical Documents

**Product Specification**

108-5699

**Application Specification**

114-5292

**5.0 mm Power Key Connectors (5.0 PKC) (Wire-to-Board)** (Continued)

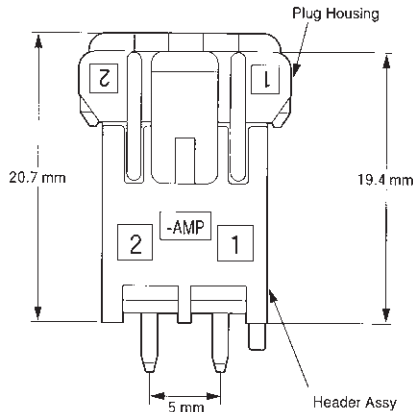
**Quick Reference Chart for Mating Part Numbers**

No. of Pos.	Plug Housing		Applicable Double Lock Plate Part Number	Mating Header Assy. Part Number	
	Type of Keying/Color	Part Number			
2	Type A/Natural	1376388-1	1376394-1	1376382-1	
	Type B/Red	1-1376388-2	1376394-1	1-1376382-2	
	Type C/Blue	2-1376388-3	1376294-1	2-1376382-3	
	Type D/Yellow	3-1376388-4	1376394-1	3-1376382-4	
3	Type A/Natural	1376389-1	1376395-1	1376383-1	1376421-1
	Type B/Red	1-1376389-2	1376395-1	1-1376383-2	1-1376421-2
	Type C/Blue	2-1376389-3	1376395-1	2-1376383-3	2-1376421-3
	Type D/Yellow	3-1376389-4	1376395-1	3-1376383-4	3-1376421-4
4	Type A/Natural	1376390-1	1376396-1	1376384-1	
	Type B/Red	1-1376390-2	1376396-1	1-1376384-2	
	Type C/Blue	2-1376390-3	1376396-1	2-1376384-3	
	Type D/Yellow	3-1376390-4	1376396-1	3-1376384-4	
6	Type A/Natural	1376391-1	1376397-1	1376385-1	
	Type B/Red	1-1376391-2	1376397-1	1-1376385-2	
	Type C/Blue	2-1376391-3	1376397-1	2-1376385-3	
	Type D/Yellow	3-1376391-4	1376397-1	3-1376385-4	
<b>2 Row</b>					
4	Type A/Natural	1376392-1	1376394-1	1376386-1	
	Type B/Red	1-1376392-2	1376394-1	1-1376386-2	
	Type C/Blue	2-1376392-3	1376394-1	2-1376386-3	
	Type D/Yellow	3-1376392-4	1376394-1	3-1376386-4	
6	Type A/Natural	1376393-1	1376395-1	1376387-1	
	Type B/Red	1-1376393-2	1376395-1	1-1376387-2	
	Type C/Blue	2-1376393-3	1376395-1	2-1376387-3	
	Type D/Yellow	3-1376393-4	1376395-1	3-1376387-4	

\*Included in Header Assy. line are Tube Stick version. Refer to the appropriate description in the catalog.

**Note:** All part numbers are RoHS Compliant.

**Mating Configurations**



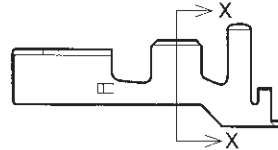
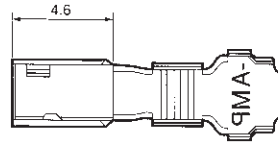
**Note:** Dimensions shown are metric.

5.0 mm Power Key Connectors .197 [5.00] Centerline Standard Density

**5.0 mm Power Key Connectors (5.0 PKC) (Wire-to-Board)** (Continued)

**Receptacle Contacts**

**Material and Finish**  
Pre-tinned Copper Alloy



Wire Range		Wire Ins. Dia.	Receptacle Contact Part No.	Applicator Part No.
AWG	mm <sup>2</sup>			
24~20	0.22~0.53	1.89~2.7	1376348-1 (Strip Form)	*
20~16	0.5~1.25	2.0~3.1	1376347-1 (Strip Form)	*

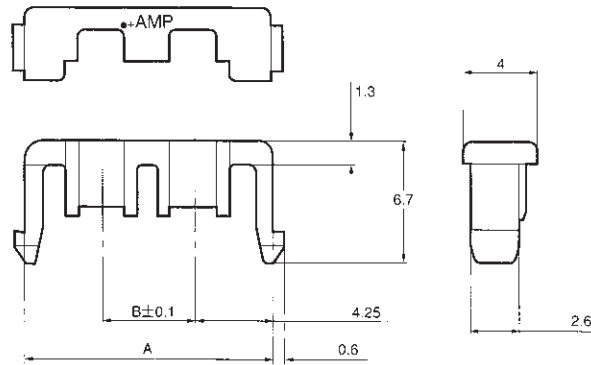
\* Contact the Tooling Assistance Center (TAC) at 1-800-722-1111 for Applicator Part Number.

**Note:** Dimensions shown are metric.

**Note:** All part numbers are RoHS Compliant.

**Double Lock Plates**

**Material and Finish**  
UL94V-0, 6/6 Nylon, glass filled, Black



No. of Pos.	Dimensions (Double Lock Plate)		Double Lock Plate Part No.	Applicable Plug Part No.	
	A	B			
2	13.5	5	1376394-1	□-1376388-□	□-1376392-□
3	18.5	10	1376395-1	□-1376389-□	□-1376393-□
4	23.5	15	1376396-1	□-1376390-□	
6	33.5	25	1376397-1	□-1376391-□	

\* Contact the Tooling Assistance Center (TAC) for Applicator Part Number.

**Note:** Dimensions shown are metric.

**Note:** All part numbers are RoHS Compliant.

Standard Density

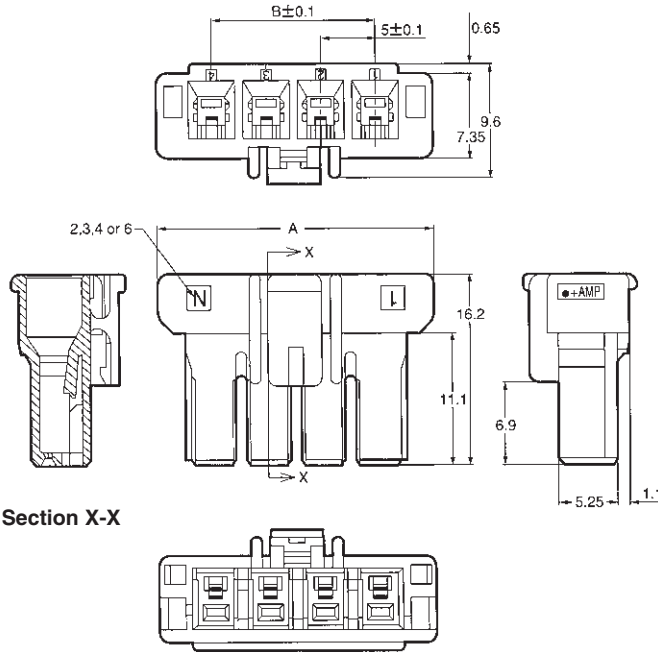
5.0 mm Power Key Connectors  
.197 [5.00] Centerline

**5.0 mm Power Key Connectors (5.0 PKC) (Wire-to-Board)** (Continued)

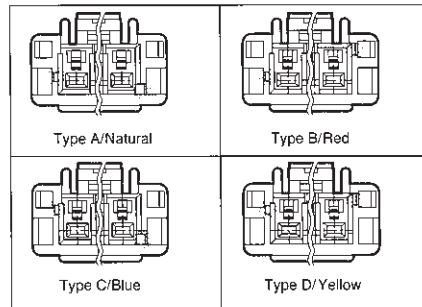
**Plug Housings  
(For Receptacle Contacts)**

**Material and Finish**  
Housing—6/6 Nylon, glass filled

**Related Product Data**  
Receptacle Contacts—page 137  
Double Lock Plates—page 137  
Mating Headers—page 140



**Type of Keying/Color**



No. of Pos.	Dimensions		Plug Housing Part No.				Applicable Double Lock Plate Part Number	Mating Header Assy. Part Number
	A	B	Type of Keying/Color					
			Type A Natural	Type B Red	Type C Blue	Type D Yellow		
2	15	—	1376388-1	1-1376388-2	2-1376388-3	3-1376388-4	1376394-1	□-1376382-□
3	20	10	1376389-1	1-1376389-2	2-1376389-3	3-1376389-4	1376395-1	□-1376383-□ □-1376421-□
4	25	15	1376390-1	1-1376390-2	2-1376390-3	3-1376390-4	1376396-1	□-1376384-□
6	35	25	1376391-1	1-1376391-2	2-1376391-3	3-1376391-4	1376397-1	□-1376385-□

**Note:** Dimensions shown are metric.

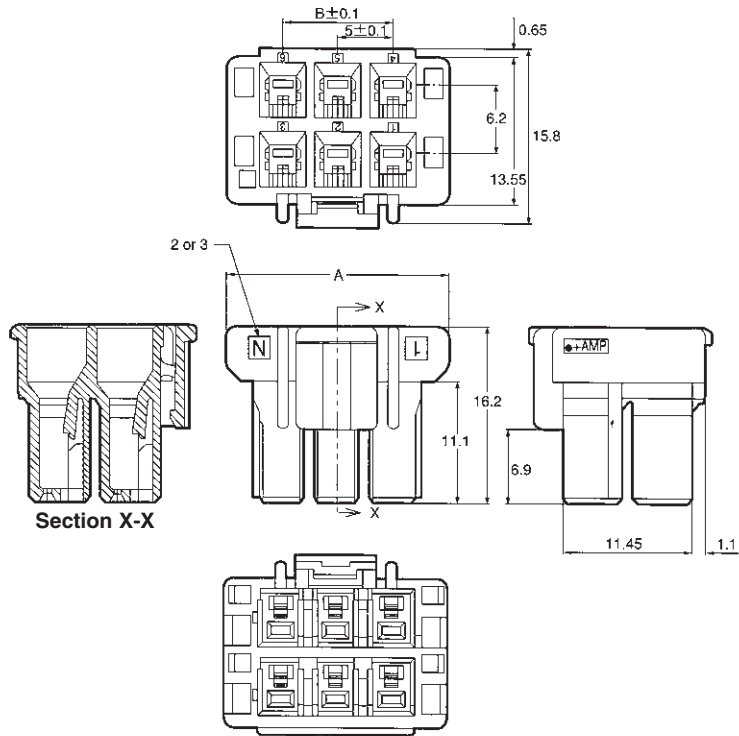
**Note:** All part numbers are RoHS Compliant.

**5.0 mm Power Key Connectors (5.0 PKC) (Wire-to-Board)** (Continued)

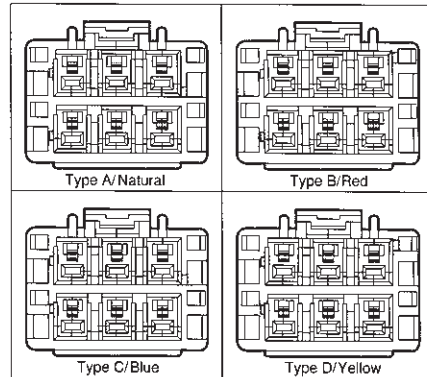
**Plug Housing (2 Rows)  
(For Receptacle Contacts)**

**Material and Finish**  
Housing—6/6 Nylon, glass filled

**Related Product Data**  
Receptacle Contacts—page 137  
Double Lock Plates—page 137  
Mating Headers—page 141



**Type of Keying/Color**



No. of Pos.	Dimensions		Plug Housing Part No.				Applicable Double Lock Plate Part Number	Mating Header Assy. Part Number
	A	B	Type of Keying/Color					
			Type A Natural	Type B Red	Type C Blue	Type D Yellow		
4	15	—	1376392-1	1-1376392-2	2-1376392-3	3-1376392-4	1376394-1	□-1376386-□
6	20	10	1376393-1	1-1376393-2	2-1376393-3	3-1376393-4	1376395-1	□-1376387-□

**Note:** Dimensions shown are metric.

**Note:** All part numbers are RoHS Compliant.

Standard Density

5.0 mm Power Key Connectors  
.197 [5.00] Centerline





**5.0 mm Power Key Connectors (5.0 PKC) (Wire-to-Board)** (Continued)

**Vertical Header Assembly  
(2 Rows)**

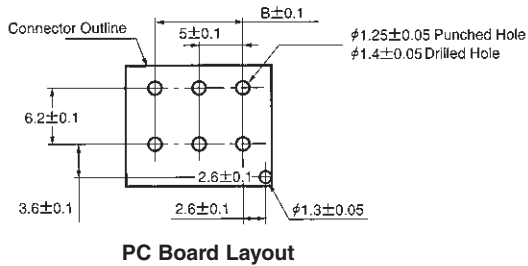
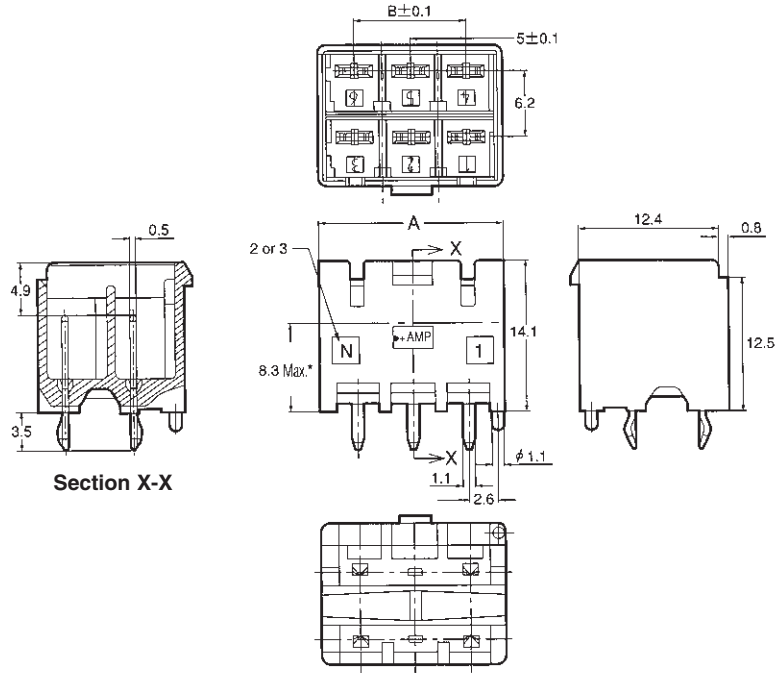
**Material and Finish**

**Housing**—6/6 Nylon, glass filled

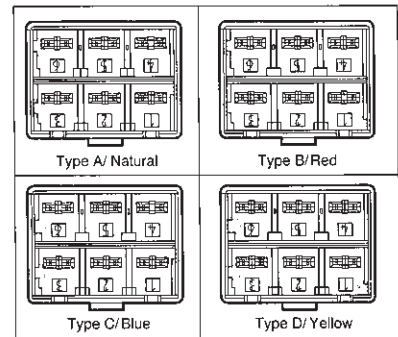
**Tab Contacts**—Copper Alloy, Tin plated

**Related Product Data**

**Mating Plug Housings**—page 139



**Type of Keying/Color**



No. of Pos.	Dimensions		Loose Piece Tube (Qty.)	Vertical Header Assy. Part No.				Mating Plug Housing Part Number
	A	B		Type of Keying/Color				
				Type A Natural	Type B Red	Type C Blue	Type D Yellow	
4	11.6	—	L.P.	1376386-1	1-1376386-2	2-1376386-3	3-1376386-4	□-1376392-□
			Tube	1376442-1 (40)	1-1376442-2 (40)	2-1376442-3 (40)	3-1376442-4 (40)	
6	16.6	10	L.P.	1376387-1	1-1376387-2	2-1376387-3	3-1376387-4	□-1376393-□
			Tube	1376443-1 (25)	1-1376443-2 (25)	2-1376443-3 (25)	3-1376443-4 (25)	

**Note:** Dimensions shown are metric.



**Note:** All part numbers are RoHS Compliant.

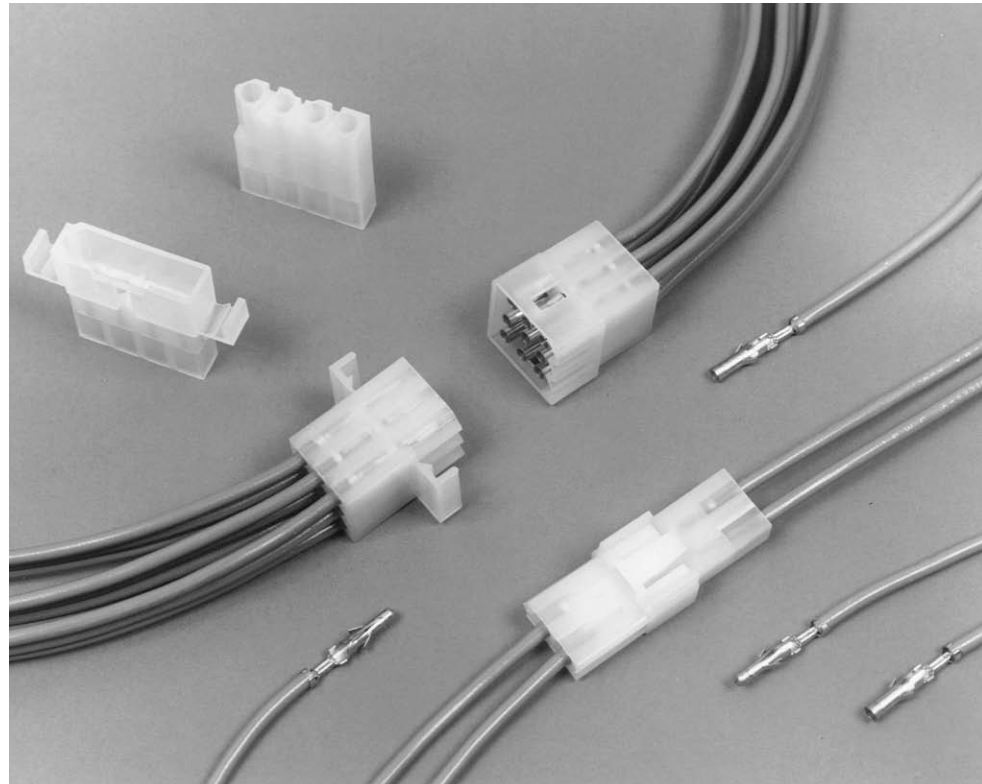
Standard Density

5.0 mm Power Key Connectors  
.197 [5.00] Centerline

## .093 [2.36] Commercial Pin and Socket Connectors

### Product Facts

- Polarized
- Cavity identification
- Low contact-mating force
- Dual locking lances
- Detent and positive locking
- Contacts available in brass and phosphor bronze with tin and gold plating
- Panel mounting and free-hanging styles
- "F" crimp contacts
- Applicator and hand tool available
- Economical commercial-grade connectors
- Compatible with high-speed application machinery and competitive soft shells
- Wire range 24 to 14 AWG [0.2 to 2 mm<sup>2</sup>]
- Accepts wires with insulation diameters as large as .180 [4.57]
- Housings available in 1 to 15 positions
- .093 plug and receptacle housings accept pin or socket contacts. The preferred convention is to use socket contacts with receptacle housings
- Not for interrupting current
- Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476 
- Certified by Canadian Standards Association, File No. LR 7189 



### Performance Characteristics

The .093 Commercial Pin and Socket Connectors performance characteristics found on pages 143-144 are based on free-hanging and panel mount connectors, loaded with contacts crimped on stranded wire.

**Thermal Shock**— -55°C to +105°C

**Temperature-Humidity Cycling**— +25°C to +65°C at 90–95% RH

**Corrosion**—48 hr. at 5% salt concentration

**Vibration**—10-55-10 cycles per minute at .06 [1.52] total excursion

**Physical Shock**—18 shocks, 50 Gs sawtooth in 11 milliseconds

**Durability**—50 mating cycles

**Dielectric Withstanding Voltage**— 1.0 kVAC

**Insulation Resistance**— 1000 megohms min. initial

**Voltage Rating**—250 V AC or DC

**Connector Mating**— 2.5 lb. [11.1 N] max. per contact

**Connector Unmating**— 1.5 lb. [6.7 N] min. per contact

**Contact Retention**— 10 lb. [44.5 N] min.

### Technical Documents

**Application Specification**  
114-49000 .093 Commercial Pin and Socket Connectors

**Product Specification**  
108-1038 .093 Commercial Pin and Socket Connectors

**.093 [2.36] Commercial Pin and Socket Connectors** (Continued)

**Performance Characteristics** (continued)

**Maximum Current**—Maximum current rating of .093 Commercial Pin and Socket Connectors is limited by the maximum operating temperature of the housings which is 105°C including the temperature rise of the contacts which is a maximum of 30°C. There are several variables which have a direct effect on this maximum current-carrying capability for a given connector and must be considered for each application. These variables are:

**Wire Size**—Larger diameter wire will carry more current since it has less internal resistance to current flow and thus generates less heat. Longer wire lengths also enhance current-carrying capabilities since the wire conducts heat away from the connector.

**Connector Size**—In general, the more circuits in a connector, the less current can be carried.

**Ambient Temperature**—The higher the ambient temperature, the less current can be carried in any given connector.

**Related Product Data**

**Product Specification** — 108-1038

**Current Rating Verification for 30°C Maximum Temperature Rise 100% Energized**

**Wire-to-Wire**

**.093 Commercial Pin and Socket Connectors — Calculated Current Table**

Number of Circuits	Wire AWG					
	14	16	18	20	22	24
2	13.00	12.00	11.00	8.00	6.00	6.00
3	13.00	11.00	10.00	8.00	6.00	5.00
4 In-Line	11.00	10.00	9.00	7.00	5.00	4.00
4 Matrix	11.00	10.00	9.00	7.00	5.00	4.00
5	10.00	9.00	8.00	6.00	5.00	4.00
6	10.00	9.00	8.00	6.00	4.00	4.00
9	9.00	7.00	6.00	5.00	4.00	3.00
12	8.00	7.00	6.00	4.00	3.00	3.00
15	7.00	6.00	5.00	4.00	3.00	3.00

Values are based on initial Temperature Rise versus Current Testing and are intended to be a guide in the selection of a connector family. All applications should be tested by the end user. The values listed are per circuit for fully loaded housings being 100% energized. **Note:** All combinations were not tested and this chart contains interpolated and extrapolated values.

**Minimum Wire Lengths for T-Rise vs. Current Testing**

AWG	Min. Length (in.)	AWG	Min. Length (in.)
30	2.6	18	9.4
28	3.2	16	11.3
26	4.1	14	13.7
24	5.1	12	16.4
20	7.8	10	19.3

**Note:** If wire lengths used are less than those listed above, the current-carrying ability of the system will be reduced due to less heat being conducted away from the connector. The customer should fully test all applications.

**Termination Resistance/Contact Crimp Tensile Force**

Wire Size		Termination Resistance		Contact Crimp Tensile Force	
AWG	mm <sup>2</sup>	Test Current (Amps)	Resistance Milliohms (Max. Init.)	Force (Min.)	
				lbs.	N
24	0.2	2.0	4.0	8	35.6
22	0.3–0.4	3.0	4.0	10	44.5
20	0.5–0.6	4.5	4.0	15	66.7
18	0.8–0.9	6.0	3.5	25	111.2
16	1.25–1.4	8.0	3.5	25	111.2
14	2	10.0	3.0	30	133.4

**Note:** This is the total resistance between wire crimps of a mated pin and socket.

**.093 [2.36] Commercial Pin and Socket Connectors** (Continued)

**Contacts**

Pin Diameter .093 [2.36]

**Material**

.010 [0.25] Stock Thickness  
Pin and socket contacts can be used in either plug or receptacle housings.

**Related Product Data**

**Product Specification** — 108-1038

**Application Specification**  
114-49000

**Performance Characteristics** —  
pages 143-144

**Housings**

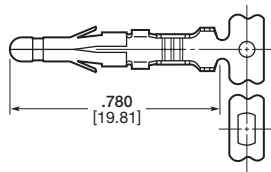
.198 [5.03] Centerline—pages 146-147  
.250 [6.35] Centerline—pages 148-149

**Panel Cutouts**

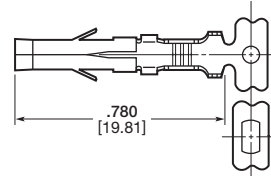
.198 [5.03] Centerline Housings—  
page 147  
.250 [6.35] Centerline Housings—  
page 148

**Technical Documents**—pages 143  
and 205-206

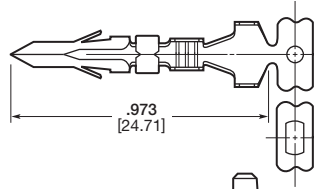
**Application Tooling**—pages 207-210



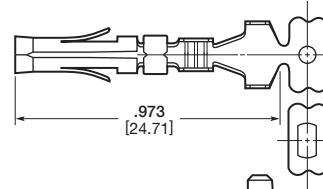
Pin



Socket



Pin  
Part No. 770385-1



Socket  
Part No. 770383-1



**Contact Insertion Tool  
(For Pins and Sockets)**  
Part No. 91002-1  
IS 408-7347



**Contact Extraction Tool**  
Part No. 318837-1  
IS 408-4375

Wire Size AWG	mm <sup>2</sup>	Ins. Dia.	Material & Finish	Contact Part Numbers				HDM Applicator Part No.	Hand Tool Part No.
				Pin		Socket			
				Strip Form	Loose Piece	Strip Form	Loose Piece		
24-18	0.2-0.9	.110 2.79	Brass, Pre-tin	350418-1	770147-1	350417-1	770146-1	466656-15	90872-1
			Brass, Gold <sup>2</sup>	—	—	350417-3 <sup>2</sup>	770146-3 <sup>2</sup>	466656-3 <sup>5</sup>	
			Brass Select Gold <sup>1</sup>	350418-5 <sup>1</sup>	770147-5 <sup>1</sup>	350417-5 <sup>1</sup>	770146-5 <sup>1</sup>		
20-14	0.6-2	.140 3.56	Brass, Pre-tin	350416-1	770145-1	350415-1	770144-1	466878-15	90871-1
			Brass, Select Gold <sup>1</sup>	350416-5 <sup>1</sup>	770145-5 <sup>1</sup>	350415-5 <sup>1</sup>	770144-5 <sup>1</sup>	466878-2 <sup>5</sup>	
			Phos. Brz., Pre-tin	—	—	350415-6	770144-6	466878-3 <sup>5</sup>	
18-14 or 2 (18)	0.8-2 or 2 (0.8-0.9)	.180 4.57	Brass, Pre-tin	770530-1 <sup>4</sup>	—	770529-1 <sup>4</sup>	—	567337-3 <sup>6</sup>	—
			Phos. Brz., Pre-tin	—	—	770529-1 <sup>4</sup>	—	567337-4 <sup>6</sup>	
18-14 or 2 (18)	0.8-2 or 2 (0.8-0.9)	.180 4.57	Brass, Pre-tin	770385-1 <sup>3</sup>	—	—	—	567273-2 <sup>7</sup>	—
			Phos. Brz., Pre-tin	—	—	770383-1 <sup>3</sup>	—	567273-3 <sup>7</sup>	
								567273-4 <sup>7</sup>	

<sup>1</sup>Select Gold — .000030 [.000762] min gold in mating area over .000050 [.00127] min nickel.

<sup>2</sup>Gold — .000030 [.000762] min gold in mating area, overall gold flash over .000050 [.00127] min nickel.

<sup>3</sup>These contacts have a .0125 [.318] stock thickness and accept two wires, each with maximum .180 [4.57] insulation diameters. They can be used only with the following housing part numbers: 770364-1, 770365-1, 770450-1, 770451-1, 770452-1, and 770453-1 (see page 143).

<sup>4</sup>Contact length is .875 [22.23]

<sup>5</sup>HDM Applicator part number ending in -1 is used on AMPOMATOR CLS Machine with T or G Terminators, -2 is used on AMP-O-LECTRIC Model K Machine, -3 is used on AMP-O-LECTRIC Model G Machine. See pages 207-210 for further information.

<sup>6</sup>HDM Applicator part number ending in -3 is used on AMPOMATOR CLS Machine with T or G Terminators, -4 is used on AMP-O-LECTRIC Model K Machine, -6 is used on AMP-O-LECTRIC Model G Machine. See pages 207-210 for further information.

<sup>7</sup>HDM Applicator part number ending in -3 is used on AMPOMATOR CLS Machine with T or G Terminators, -2 is used on AMP-O-LECTRIC Model K Machine, -4 is used on AMP-O-LECTRIC Model G Machine. See pages 207-210 for further information.

**Note:** Phosphor bronze contacts should be used in high-temperature/humidity cycling applications.

**Note:** All part numbers are RoHS Compliant.

Standard Density

.093 [2.36] Commercial Pin and Socket Connectors  
.198 [5.03] Centerline

**.093 [2.36] Commercial Pin and Socket Connectors** (Continued)

**Housings**

**Free-Hanging or Panel Mount**

.198 [5.03] Centerline spacing

**Material**

**Housing**—Nylon, natural color

**Flammability Rating**—

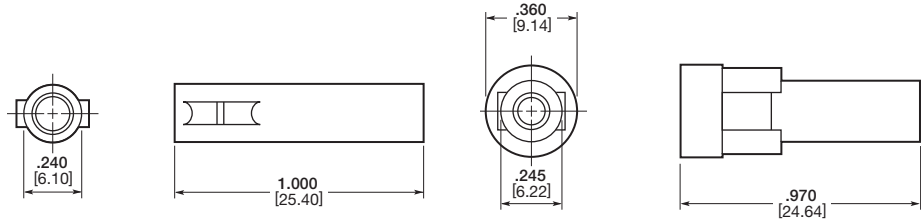
UL94-V-2

**Related Product Data**

**Contacts**—page 145

**Product Specification**—108-1038

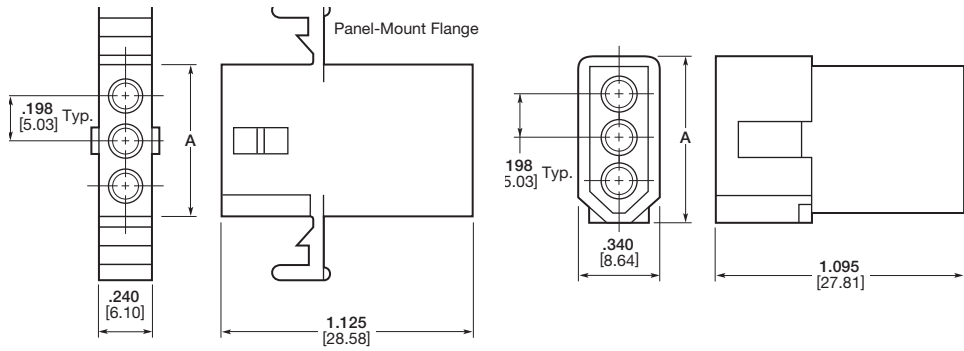
**1 Circuit**



Receptacle

Plug

**2, 3, and 4 Circuit, In-Line**



Receptacle

Plug

No. of Circuits	A Dimension		Receptacle Part Numbers				Plug Part Numbers	
	Receptacle	Plug	Panel Mount		Free-Hanging		Panel Mount	Free-Hanging
			Without Detents	With Detents	Without Detents	With Detents		
1	—	—	—	—	—	770063-1	—	770064-1
2	.540 13.72	.640 16.26	—	770066-11,5	—	770065-11,5 770266 <sup>1,3,5</sup>	770068-1 <sup>1</sup>	770069-1 <sup>1</sup>
3	.670 17.02	.770 19.56	—	770071-1	—	770070-1 770264-1 <sup>3</sup>	770073-1	770074-1
4 (In-Line)	.870 22.10	.970 24.64	—	770076-1	—	770075-1	770077-1	770078-1
4 (Matrix)	.443 11.25	.540 13.71	—	—	—	770843-1	—	770842-1
5	1.070 27.18	1.170 29.72	—	—	—	770083-1 794015-1 <sup>3</sup>	—	770084-1
6 (In-Line)	1.268 32.21	1.378 35.00	—	—	—	770782-1 <sup>4</sup>	—	770892-1 <sup>4</sup>
6 (Matrix)	.435 11.05	.535 13.59	770085-1	770087-1	770088-1	770086-1	770089-1	770090-1
9	.670 17.02	.770 19.56	770091-1	770093-1	770094-1	770092-1	770095-1 <sup>2</sup> 770108-1	770096-1
12	.870 22.10	.970 24.64	770097-1	770099-1	770100-1	770098-1	770101-1	770102-1
15	1.070 27.18	1.170 29.72	770103-1	—	770105-1	—	770106-1	770107-1

<sup>1</sup>2.248 [6.30] centerline.

<sup>2</sup>Mounting ears at wire end.

<sup>3</sup>Tool removable.

<sup>4</sup>Positive lock.

<sup>5</sup>600 V AC or DC

**Note:** All part numbers are RoHS Compliant.

Dimensions are in inches and millimeters unless otherwise specified. Values in brackets are metric equivalents.

Dimensions are shown for reference purposes only. Specifications subject to change.

USA: 1-800-522-6752  
Canada: 1-905-470-4425  
Mexico: 01-800-733-8926  
C. America: 52-55-1106-0803

South America: 55-11-2103-6000  
Hong Kong: 852-2735-1628  
Japan: 81-44-844-8013  
UK: 44-8706-080-208

**.093 [2.36] Commercial Pin and Socket Connectors** (Continued)

**Housings**

**Free-Hanging or Panel Mount**

.198 [5.03] Centerline spacing

**Material**

**Housing**—Nylon, natural color

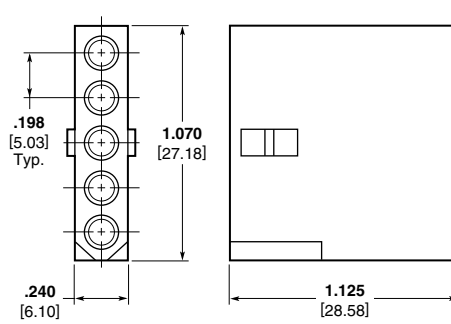
**Flammability Rating**—  
UL94V-2

**Related Product Data**

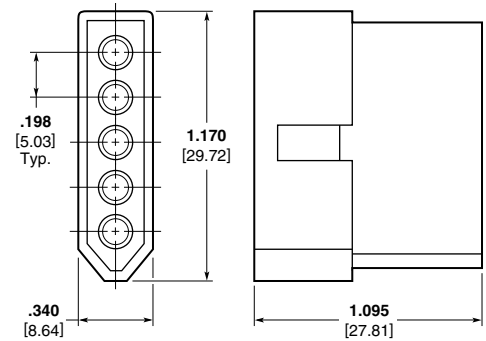
**Contacts**—page 145

**Product Specification**—108-1038

**5 Circuit, In-Line**

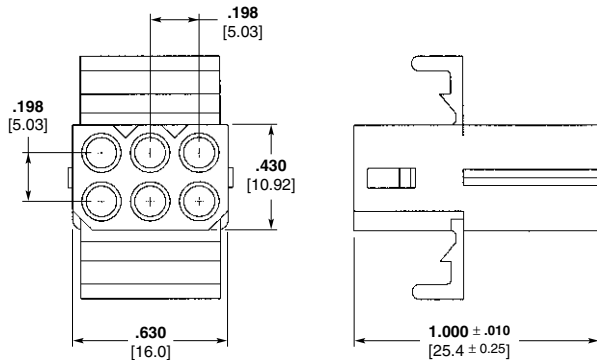


Receptacle (Free-Hanging)

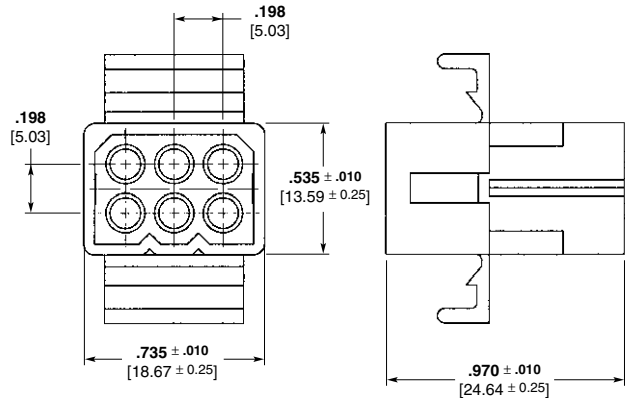


Plug (Free-Hanging)

**4, 6, 9, 12, and 15 Circuit, Matrix**



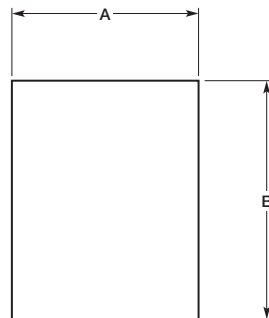
Receptacle



Plug

**Recommended Panel Cutouts**

Maximum panel thickness is  
.090 [2.29].



No. of Circuits	Panel Cutout Dimensions			
	Receptacle		Plug	
	A	B	A	B
2	.312 7.92	.725 18.42	.375 9.53	.800 20.32
3	.312 7.92	.840 21.34	.375 9.53	.933 23.70
4 (In-Line)	.312 7.92	1.038 26.37	.375 9.53	1.131 28.73
6	.600 15.24	.718 18.24	.695 17.65	.750 19.05
9	.725 18.42	.828 21.03	.660 16.76	.937 23.80
12	.725 18.42	1.050 26.67	.760 19.30	1.155 29.34
15	.655 16.64	1.240 31.50	.760 19.30	1.343 34.11

**Note:** The panel should be punched so that the housing enters in the same direction as the punch.

Standard Density

.093 [2.36] Commercial Pin and Socket Connectors  
.198 [5.03] Centerline

**.093 [2.36] Commercial Pin and Socket Connectors** (Continued)

**Housings**

**Free-Hanging or Panel Mount**

.250 [6.35] Centerline spacing

**Material**

**Housing**—Nylon, natural color

**Flammability Rating**—  
UL94V-2

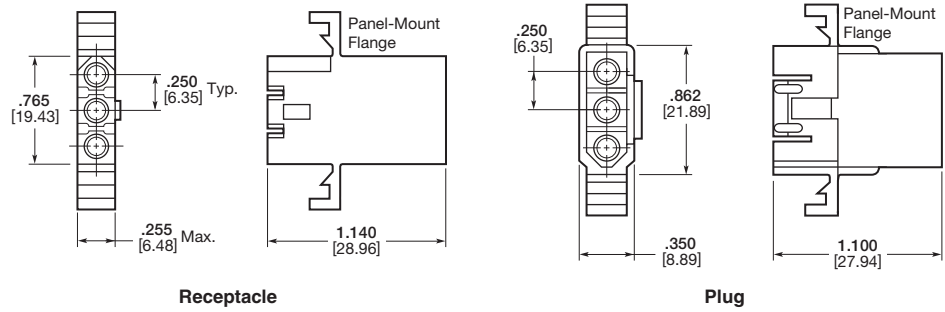
**Voltage Rating**—600 V AC or DC

**Related Product Data**

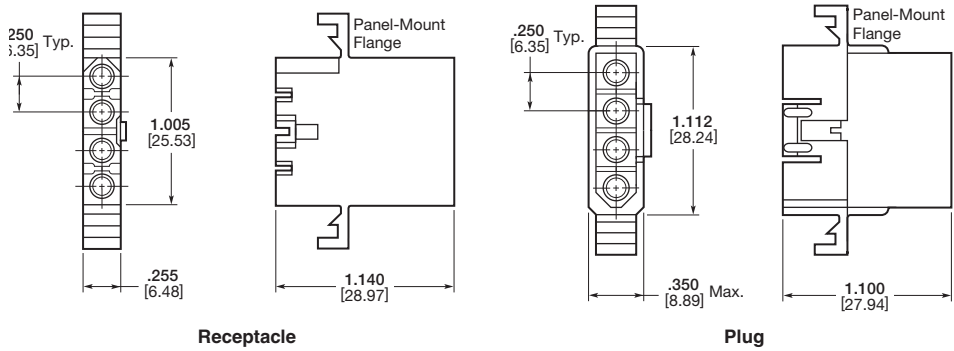
**Contacts**—page 145

**Product Specification**—108-1038

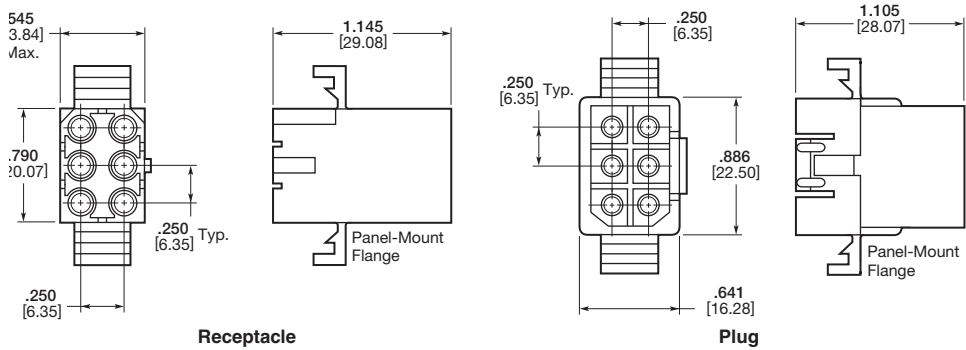
**3 Circuit, In-Line**



**4 Circuit, In-Line**



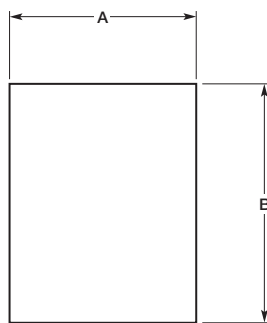
**6 Circuit, Matrix**



**Recommended Panel Cutouts**

Maximum panel thickness is  
.062 [1.57].

**Note:** The panel should be punched so that the housing enters in the same direction as the punch.



No. of Circuits	Receptacle Part Numbers		Plug Part Numbers	
	Panel Mount	Free-Hanging	Panel Mount	Free-Hanging
3	770269-1 770771-1 <sup>1</sup>	770339-1	770338-1	770276-1
4	770329-1	770337-1	770330-1	770336-1
6	770372-1	770360-1	770373-1	770361-1

<sup>1</sup>Pre-bent mounting ears.

No. of Circuits	Panel Cutout Dimensions			
	Receptacle		Plug	
	A	B	A	B
3	.310 7.87	.920 23.37	.365 9.27	1.022 25.96
4	.310 7.87	1.168 29.67	.365 9.27	1.270 32.26
6	.608 15.44	.946 24.03	.658 16.71	1.048 26.62

**Note:** All part numbers are RoHS Compliant.

Dimensions are in inches and millimeters unless otherwise specified. Values in brackets are metric equivalents.

Dimensions are shown for reference purposes only. Specifications subject to change.

USA: 1-800-522-6752  
Canada: 1-905-470-4425  
Mexico: 01-800-733-8926  
C. America: 52-55-1106-0803

South America: 55-11-2103-6000  
Hong Kong: 852-2735-1628  
Japan: 81-44-844-8013  
UK: 44-8706-080-208



**.093 [2.36] Commercial Pin and Socket Connectors** (Continued)

**Housings**

**Free-Hanging or Panel Mount**

.250 [6.35] Centerline spacing

**Material**

**Housing**—Nylon, natural color

**Flammability Rating**—  
UL94V-2

**Voltage Rating**—600 V AC or DC

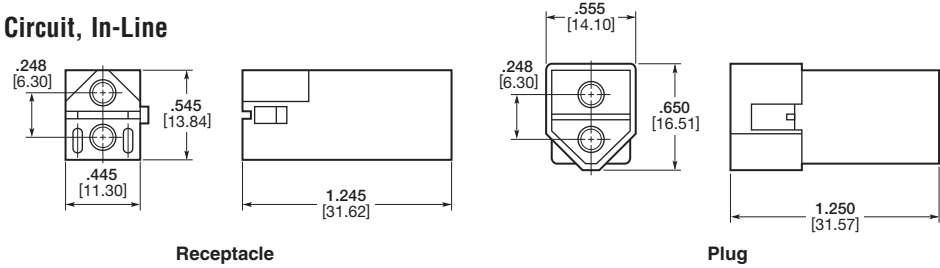
**Related Product Data**

**Contacts**—page 145

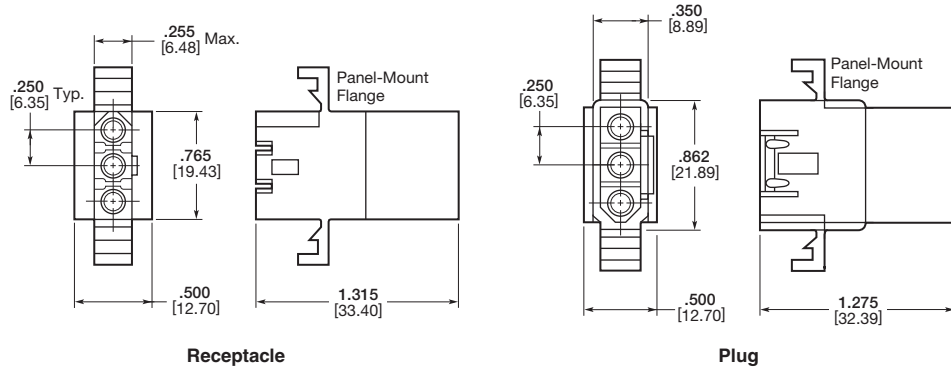
**Product Specification**—108-1038

**Dual Wire**

**2 Circuit, In-Line**



**3 Circuit, In-Line**

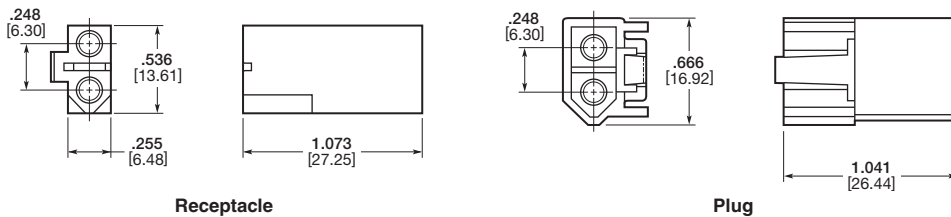


No. of Circuits	Receptacle Part Numbers		Plug Part Numbers	
	Panel Mount	Free-Hanging	Panel Mount	Free-Hanging
2	—	770364-1 <sup>1</sup>	—	770365-1 <sup>1</sup>
3	770453-1 <sup>2</sup>	770451-1	770452-1 <sup>2</sup>	770450-1

<sup>1</sup>1.248 [6.30] centerline.  
<sup>2</sup>See panel cutout dimensions on page 58.

**Positive Lock**

**2, 3 and 4 Circuit, In-Line**



No. of Circuits	Receptacle Part Numbers	Plug Part Numbers
	Free-Hanging	Free-Hanging
2	770424-1 <sup>1</sup>	770425-1 <sup>1</sup>
3	770785-1	770783-1
4	770784-1	770810-1

<sup>1</sup>1.248 [6.30] centerline.

**Note:** All part numbers are RoHS Compliant.

Standard Density

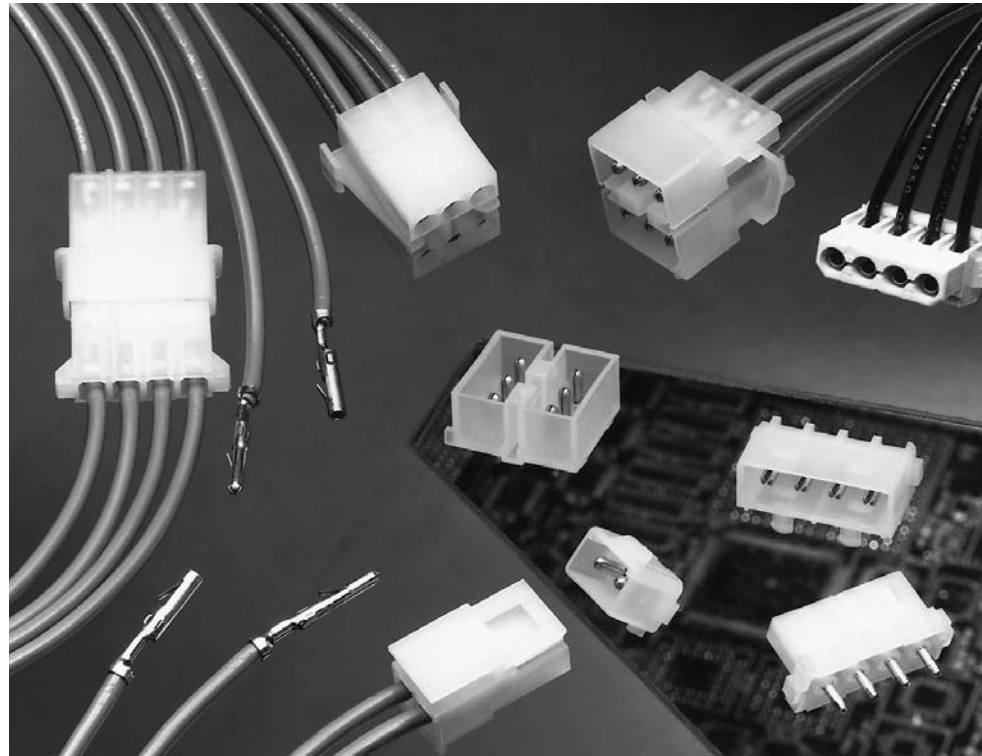
.093 [2.36] Commercial Pin and Socket Connectors  
.198 [5.03] Centerline



## Commercial MATE-N-LOK Connectors

### Product Facts

- Fully polarized nylon housings
- Easy cavity identification
- Locking devices are integral part of design. Connector halves will hold together under severe conditions of vibration and shock
- Built-in contact stabilization and self-aligning features
- Hot side egg-crate design for safety
- Precision molded to exacting tolerances
- Contacts accept a wire size range of 30-14 AWG [.05-2.0 mm<sup>2</sup>]
- Keying plug available
- “Clean” design contact—no sharp projections to impede insertion or damage housings
- Low insertion/extraction forces
- Contacts available in pre-tin or gold over nickel plated to fit the application requirements
- Wire-to-PC Board capability using pin or socket headers
- Solderability—Headers meet MIL-STD 202 method 208
- Four circuit PC Board-to-PC Board capability available by mating vertical socket header with either vertical, right-angle or surface mount pin header
- Four circuit insulation displacement connector (IDC) available
- Ultraviolet (UV) stable housings available in 1, 2 and 3 circuit
- Not for interrupting current
- Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476
- Certified by Canadian Standards Association, File No. LR 7189A



### Performance Characteristics

The Commercial MATE-N-LOK Connector performance characteristics found on pages 151-152 are based on free-hanging and panel mount connectors, loaded with contacts crimped on stranded wire.

**Dielectric Withstanding Voltage**—1.5 KVAC between adjacent circuits

**Insulation Resistance**—500 megohms minimum initial between adjacent circuits

**Voltage Rating**—250 V AC or DC

**Connector Mating**—4 lb. max. per circuit

**Connector Unmating**—0.7 lb. min. per circuit

**Contact Retention**—15 lb. min. per contact

**Durability**—50 cycles, mating and unmating

### Technical Documents

#### Product Specifications

108-1000 Commercial MATE-N-LOK Connectors

108-1077 Commercial MATE-N-LOK PC Board Headers

108-49000 IDC Connectors

#### Application Specifications

114-1012 Commercial MATE-N-LOK Contacts

114-49001 IDC Connectors

#### Instruction Sheets

408-7209, 408-7166, 408-7200, 408-7201, 408-7215, 408-3186, 408-7300

**Commercial MATE-N-LOK Connectors** (Continued)

**Performance Characteristics** (Continued)

**Maximum Current**—Maximum current rating of Commercial MATE-N-LOK connectors is limited by the maximum operating temperature of the housings which is 105°C including the temperature rise of the contacts which is a maximum of 30°C. There are several variables which have a direct effect on this maximum current-carrying capability for a given connector and must be considered for each application. These variables are:

**Wire Size**—Larger diameter wire will carry more current since it has less internal resistance to current flow and thus generates less heat. Longer wire lengths also enhance current-carrying capabilities since the wire conducts heat away from the connector.

**Connector Size**—In general, the more circuits in a connector, the less current can be carried.

**Ambient Temperature**—The higher the ambient temperature, the less current can be carried in any given connector.

**Printed Wiring Board Conductor Size**—The finished trace conductor width and thickness should be maximized to allow for the greatest current-carrying capacity and heat dissipation.

Commercial MATE-N-LOK connectors also will withstand the following tests:

**Vibration**—10-55-10 cycles per minute at .06 inch total excursion

**Physical Shock**—18 drops, 50 G sawtooth at 11 milliseconds

**Housing Panel Mount Retention**—40 lb. min. 3 and 4 circuit  
65 lb. min. 6, 9, 12, and 15 circuit

**Housing Lock Strength with Positive Locking Devices Engaged**—25 lb. min.

**Thermal Shock**—-55°C to +85°C

**Temperature-Humidity Cycling**—25°C to 65°C at 95 RH

**Corrosion**—48 hr. at 5% salt concentration

**Related Product Data**

**Product Specifications**

- 108-1000 Commercial MATE-N-LOK Connectors
- 108-1077 Commercial MATE-N-LOK PC Board Headers

**Current Rating Verification for 30°C Maximum Temperature Rise 100% Energized**

**Wire-to-Wire**

**Motor Mount Calculated Current Table**

Number of Circuits	Wire Gauge						
	14	16	18	20	22	24	30
6	13.00	10.50	9.50	7.50	6.00	5.00	2.50
8	12.00	9.50	8.50	7.00	5.50	4.50	2.50
10	11.00	9.00	8.00	6.50	5.00	4.50	2.00
12	10.50	8.50	7.50	6.00	5.00	4.00	2.00
16	9.50	8.00	7.00	5.50	4.50	3.50	2.00

Values are based on initial Temperature Rise versus Current Testing and are intended to be a guide in the selection of a connector family. All applications should be tested by the end user. The values listed are per circuit for fully loaded housings being 100% energized. **Note:** All combinations were not tested, and this chart contains interpolated and extrapolated values.

**Calculated Current Table**

Number of Circuits	Wire Gauge						
	14	16	18	20	22	24	30
1	19.00	15.50	14.00	11.00	9.00	7.50	4.00
2	18.00	14.50	13.00	10.50	8.50	7.00	4.00
3	16.00	13.00	12.00	9.50	7.50	6.50	3.50
4	15.00	12.50	11.00	9.00	7.00	6.00	3.00
6 Matrix	13.00	10.50	9.50	7.50	6.00	5.00	3.00
8	12.50	10.50	9.00	7.50	6.00	5.00	2.50
9	11.00	9.00	8.00	6.50	5.50	4.50	2.50
10	12.00	9.50	8.50	7.00	5.50	4.50	2.50
12	10.50	8.50	7.50	6.00	5.00	4.00	2.00
15	9.50	8.00	7.00	5.50	4.50	4.00	2.00

Values are based on initial Temperature Rise versus Current Testing and are intended to be a guide in the selection of a connector family. All applications should be tested by the end user. The values listed are per circuit for fully loaded housings being 100% energized. **Note:** All combinations were not tested, and this chart contains interpolated and extrapolated values.

**Wire-to-Board**

Due to the vast differences in trace geometry and printed circuit board configurations, we are unable to provide a separate current carrying chart for our printed circuit board header products. However, the above Wire-to-Wire charts may be used as a guideline for headers if the trace width and thickness is equal to the listed wire gauge. For vertical headers, only 95% of the Wire-to-Wire value should be used. For right-angle headers, only 75% of the Wire-to-Wire value should be used. The chart values are only a tool for connector selection and will require the customer to fully test their application.

**Minimum Wire Lengths for T-Rise vs. Current Testing**

AWG	Min. Length (in.)	AWG	Min. Length (in.)
30	2.6	18	9.4
28	3.2	16	11.3
26	4.1	14	13.7
24	5.1	12	16.4
20	7.8	10	19.3

**Note:** If wire lengths used are less than those listed above, the current carrying ability of the system will be reduced due to less heat being conducted away from the connector. The customer should fully test all applications.

**Termination Resistance/Contact Crimp Tensile Force**

Wire Size		Termination Resistance		Contact Crimp Tensile Force	
AWG	mm <sup>2</sup>	Test Current (Amps)	Resistance Milliohms (Max. Init.)	Force (Min.) lbs.	N
30	.05	.50	4.00	2	9
28	.08	.75	3.50	3	13
26	.12	1.00	3.50	7	31
24	.2	1.5	3.50	10	44
22	.3	3	3.50	15	67
20	.5	4.5	3.00	20	89
18	.8	6	3.00	30	133
16	1.2	8	2.75	30	133
14	2.0	10	2.75	35	156

**Note:** This is the total resistance between wire crimps of a mated pin and socket.

Standard Density

Commercial MATE-N-LOK Connectors  
.200 [5.08] Centerline

**Commercial MATE-N-LOK Connectors** (Continued)

**Commercial MATE-N-LOK Connector Mating Combinations**

Connector Part Number					Mating Connector Part Number							
Number of Circuits	Flammability Rating	Style	Housing Type	Connector Part No.	Housing Part No.	Housing Type	PC Board Headers					
							Plating	Vertical Pin		Right-Angle Pin	Vertical Socket	
							Standard Tail	Long Tail		Standard Tail	Long Tail	
1	UL94V-2	In-Line	Socket: FH	1-480349-0	1-480350-0	Pin: FH	—	—	—	—	—	—
			Socket: FH UV Stable	1-480400-0	1-480401-1	Pin: FH UV Stable	—	—	—	—	—	—
			Socket: FH	1-480318-0	1-480319-0	Pin: FH	Pre-tin	350209-1	350422-1	794120-1	—	—
2	UL94V-2	In-Line	Socket: FH UV Stable	1-480393-1	1-480498-1	Pin: FH UV Stable	—	—	—	—	—	—
			Socket: FH Positive Lock	1-480720-0	794012-1	Pin: FH Positive Lock	Pre-tin	350539-1	350540-1	—	—	—
			Socket: FH	1-480303-0	1-480305-0	Pin: FH	Duplex <sup>1</sup>	1586512-2	—	—	—	—
3	UL94V-2	In-Line	Socket: PM	1-480304-0	—	—	—	—	—	—	—	
			Socket: FH Positive Lock	1-480721-0	—	—	Pre-tin	350541-1	350542-1	—	—	—
			Socket: FH UV Stable	1-480388-0	1-480387-0	Pin: FH UV Stable	Duplex <sup>1</sup>	1586514-2	—	—	—	—
4	See next page for 4 position mating combinations											
6	UL94V-2	Matrix	Socket: FH Positive Lock	1-480270-0	1-480340-0	Pin: FH Positive Lock	Pre-tin	1-380999-0	350425-1	—	—	—
			Socket: PM Positive Lock	1-480273-0	1-480271-0	Pin: MM Positive Lock	Duplex <sup>1</sup>	2-1586546-0	1586526-2	—	—	—
			Pin: PM Positive Lock	1-480276-0	1-480276-0	Socket: PM Positive Lock	Pre-tin	—	—	—	350641-1	350576-1
8	UL94V-2	Dual Row	Socket: FH Positive Lock	1-480283-0	1-480345-0	Pin: FH Positive Lock	Pre-tin	350212-1	350426-1	—	—	—
			Pin: PM Positive Lock	1-480277-0	1-480284-0	Pin: MM Positive Lock	Duplex <sup>1</sup>	1586518-2	1586528-2	—	—	—
9	UL94V-2	Matrix	Pin: PM Positive Lock	1-480277-0	1-480274-0	Socket: PM Positive Lock	Pre-tin	—	—	—	350642-1	350577-1
			Socket: FH Positive Lock	1-480285-0	1-480339-0	Pin: FH Positive Lock	Duplex <sup>1</sup>	—	—	—	—	—
10	UL94V-2	Dual Row	Socket: FH Positive Lock	1-480285-0	1-480286-0	Pin: MM Positive Lock	Duplex <sup>1</sup>	2-1586544-0	—	—	—	—
			Socket: MM Positive Lock	1-480287-0	1-480288-0	Pin: MM Positive Lock	Pre-tin	350213-1	350220-1	—	—	—
12	UL94V-2	Dual Row	Pin: PM Positive Lock	1-480278-0	1-480275-0	Socket: PM Positive Lock	Duplex <sup>1</sup>	—	—	—	350643-1	350578-1
			Socket: MM Positive Lock	1-480324-0	1-480323-0	Socket: PM Positive Lock	Pre-tin	—	—	—	350644-1	350579-1
15	UL94V-2	Matrix	Pin: PM Positive Lock	1-480324-0	1-480439-0	Pin: MM Positive Lock	Pre-tin	350214-1	350427-1	—	—	—
			Socket: MM Positive Lock	1-480438-0	1-480439-0	Pin: MM Positive Lock	Duplex <sup>1</sup>	1586522-2	1586529-2	—	—	—

**FH: Free-Hanging**      **PM: Panel Mount**      **MM: Motor Mount**  
<sup>1</sup>Duplex Finish — Plated with .000030 [.000762] min. gold in mating area, matte tin on solder tail end over .000050 [.00127] min. nickel underplate on entire contact.

**Note: All part numbers are RoHS Compliant.**

Standard Density  
Commercial MATE-N-LOK Connectors  
.200 [5.08] Centerline

Commercial MATE-N-LOK Connectors (Continued)

Commercial MATE-N-LOK 4 Position In-Line Mating Combinations (Note: These connectors are used by the disk drive industry.)

Connector Part Number			Mating Connector Part Number													
Flammability Rating	Connector Type	Connector Part No.	Socket Connectors					PC Board Pin Headers								
			Housing Part No.	Housing Type	Plating	Insulation Displacement Connector	AWG	PC Board Vertical Socket Header	Vertical Standard Tail	Vertical Long Tail	Surface Mount	Standard	Right-Angle W/Fixed Belt	W/Fixed Belt Reverse Pol.		
	Socket Housing Positive Lock	1-480772-0	—	—	Pre-tin	—	—	350543-1	350544-1	—	—	—	—	—	—	—
	Socket Housing Detent Lock	1-480424-0	1-480426-0	Pin	Pre-tin	—	—	350211-1	350424-1	770829-1	641737-1	174804-1	174552-1	—	—	—
	Pin Housing Detent Lock	1-480426-0	1-480424-0	Socket	Pre-tin	770156-2 22	770156-3 18	770997-1	—	—	—	—	—	—	—	—
UL94V-2	Pin Housing Detent Lock	1-480425-0	1-480425-0	Socket PM	Duplex <sup>1</sup>	770156-4 20	770156-5 16	794287-12	—	—	—	—	—	—	—	—
	Pin Housing Detent Lock High Temp	3-480426-0	3-480425-0	Socket High Temp	—	—	—	—	—	—	—	—	—	—	—	—
	Socket Header	770997-1	1-480426-0	Pin	Pre-tin	—	—	350211-1	350424-1	770829-1	641737-1	174804-1	174552-1	—	—	—
	Insulation Displacement Connector (IDC)	770156-2	1-480426-0	Pin	Pre-tin	770156-3	770156-4	770156-5	—	—	—	—	—	—	—	—
	Socket Housing	770827-1	794132-1	Pin	Pre-tin	794287-12	770526-1	18	—	—	—	—	—	—	—	—
	Insulation Displacement Connector (IDC)	794036-1	794132-1	Socket	Pre-tin	794036-2	794036-3	794036-4	—	—	—	—	—	—	—	—
UL94V-0	Right-Angle Pin Header	1-641737-1	770827-1	Socket	Pre-tin	770827-1	770827-1	770827-1	794036-1 18	794036-2 20	794036-3 22	794236-1	—	—	—	—

PM: Panel Mount

<sup>1</sup>Duplex Finish—Plated with .000030 [.000762] min. gold in mating area, matte tin on solder tail end over .000050 [.00127] min. nickel underplate on entire contact.

<sup>2</sup>Surface Mount Compatible.

<sup>3</sup>With Drainholes

Note: All part numbers are RoHS Compliant.

**Commercial MATE-N-LOK Connectors** (Continued)

**Contacts**

Pin diameter .084 [2.13]  
Stock thickness .012 [.305]  
These contacts are to be used in Commercial MATE-N-LOK housings **only**.

**Related Product Data**

**Product Specification**  
108-1000 Commercial MATE-N-LOK Connectors

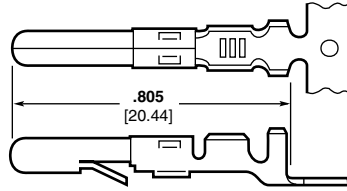
**Application Specification**  
114-1012 Commercial MATE-N-LOK Contacts

**Performance Characteristics**—  
pages 151-152

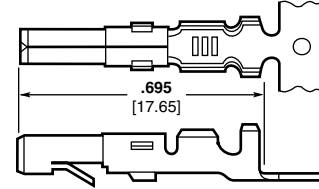
**Housings**—pages 157-159

**Technical Documents**—pages 151 and 205-206

**Application Tooling**—pages 207-210



Pin



Socket

Wire Size Range AWG [mm <sup>2</sup> ]	Ins. Dia. Range	Material & Finish	Contact Part Numbers				HDM Applicator Part No.	Hand Tool Part No.
			Pin		Socket			
			Strip Form	Loose Piece	Strip Form	Loose Piece		
30-22 [.05-.3]	<b>.040-.075</b> 1.02-1.91	Brass, Pre-tin	350079-1	61174-1	350078-1	61173-1	466426-1 <sup>3</sup> 466426-2 <sup>3</sup> 466426-3 <sup>3</sup>	91515-1
		Phos. Brz., Pre-tin	350079-4	—	350078-4	61173-4		
		Brass, Gold <sup>1</sup>	350079-5	61174-5	350078-5	61173-5		
		Brass, Pre-tin	61116-1	60618-1	61314-1	60617-1		
24-18 [.2-.8]	<b>.060-.100</b> 1.52-2.54	Phos. Brz., Pre-tin	61116-4	60618-4	61314-4	60617-4	466320-1 <sup>3</sup> 466320-2 <sup>3</sup> 466320-4 <sup>3</sup>	91512-1 91528-1 <sup>4</sup>
		Brass, Gold <sup>1</sup>	61116-5	60618-5	61314-5	60617-5		
		Phos. Brz., Select Gold <sup>2</sup>	61116-6	60618-6	61314-6	60617-6		
		Brass, Select Gold <sup>2</sup>	61116-7	—	61314-7	—		
20-14 [.5-2.0]	<b>.100-.130</b> 2.54-3.30	Brass, Pre-tin	61118-1	60620-1	61117-1	60619-1	687763-1 <sup>3</sup> 687763-2 <sup>3</sup> 687763-6 <sup>3</sup>	91504-1
		Phos. Brz., Pre-tin	61118-4	60620-4	61117-4	60619-4		
		Brass, Gold <sup>1</sup>	61118-5	60620-5	61117-5	60619-5		
		Phos. Brz., Gold <sup>1</sup>	61118-6	—	61117-6	60619-7		
(2) 18 [.8] or (2) <b>.115 Max.</b> (1) 18 [.8] and 2.92 (1) 16 [1.2] (stacked)		Brass, Pre-tin	350558-1	350639-1	350557-1	—	687898-1 <sup>3</sup> 687898-2 <sup>3</sup> 687898-4 <sup>3</sup>	91504-1
		Phos. Brz., Pre-tin	350558-4	—	350557-4	350638-4		

<sup>1</sup>Gold Finish—Plated with .000030 [.000762] min. gold in mating area and inside wire barrel over .000050 [.00127] min. nickel underplate on entire contact.

<sup>2</sup>Select Gold Finish—Plated with .000030 [.000762] min. gold in mating area over .000050 [.00127] min. nickel underplate on entire contact.

<sup>3</sup>HDM Applicator part number ending in -1 is used on AMPOMATOR CLS Machine with T or G Terminators, -2 is used on AMP-O-LECTRIC Model K Machine; -3, -4, or -6 is used on AMP-O-LECTRIC Model G Machine. See pages 207-210 for further information.

<sup>4</sup>Use Hand Tool No. 91528-1 for .043-.075 [1.09-1.90] insulation diameter.

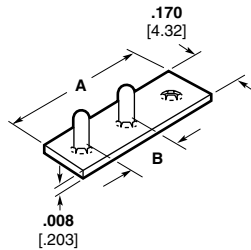
**Notes:**

1. Extraction Tools: Pins — No. **1-305183-1** (IS 408-7158); Sockets — No. **1-305183-2** (IS 408-7158); Pins and Sockets — No. **465644-1** (IS 408-7211)
2. Insertion Tools: No. **455830-1** (IS 408-7984)

**Commoning Tabs**

**Material and Finish**

Brass, tin plated  
Stock thickness .008 [.203]



Number of Holes	Dimensions		Part Number
	A	B	
2	<b>.377</b> 9.58	<b>.203</b> 5.16	60843-1
2	<b>.355</b> 9.02	<b>.195</b> 4.95	350444-1
3	<b>.579</b> 14.71	<b>.203</b> 5.16	60842-1
3	<b>.550</b> 13.97	<b>.195</b> 4.95	350444-2

**Note:** Commoning tabs are designed to be used with pin housings.

**Note:** All part numbers are RoHS Compliant.

Dimensions are in inches and millimeters unless otherwise specified. Values in brackets are metric equivalents.

Dimensions are shown for reference purposes only. Specifications subject to change.

USA: 1-800-522-6752  
Canada: 1-905-470-4425  
Mexico: 01-800-733-8926  
C. America: 52-55-1106-0803

South America: 55-11-2103-6000  
Hong Kong: 852-2735-1628  
Japan: 81-44-844-8013  
UK: 44-8706-080-208

Standard Density

Commercial MATE-N-LOK Connectors  
200 [5.08] Centerline

**Commercial MATE-N-LOK Connectors** (Continued)

**Contacts**

Pin diameter .084 [2.13]  
Stock thickness .012 [.305]  
These contacts are to be used in Commercial MATE-N-LOK housings **only**.

**Related Product Data**

**Product Specification**  
108-1000 Commercial MATE-N-LOK Connectors

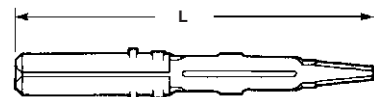
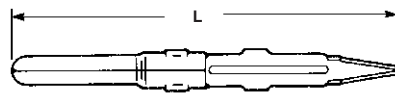
**Application Specification**  
114-1012 Commercial MATE-N-LOK Contacts

**Performance Characteristics**—pages 151-152

**Housings**—pages 157-159  
**Technical Documents**—pages 151 and 205-206

**Application Tooling**—pages 207-210

**PC Board Contacts**



Pin

Socket

Type of Contact	L Dim.		Material & Finish	Part Numbers	
	Pin	Socket		Pin Loose Piece	Socket Loose Piece
PC Board	1.110 [28.19]	1.010 [25.65]	Phos. Brz., Pre-tin	61518-11	61320-11
	1.210 [30.73]	1.110 [28.19]	Phos. Brz., Pre-tin	350074-12	350073-12

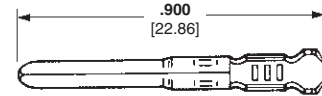
<sup>1</sup>For .062 [1.57] max. board thickness—Board hole size .057 [1.45]

<sup>2</sup>For .125 [3.14] max. board thickness—Board hole size .057 [1.45]

**Grounding Pin**

(.095 [2.41] longer than standard pin)

(Mate first, break last, not for interrupting current)



Wire Size Range AWG [mm <sup>2</sup> ]	Ins. Dia. Range	Material & Finish	Contact Part Numbers		HDM Applicator Part No.	Hand Tool Part No.
			Strip Form	Loose Piece		
24-18 [2-.8]	.060-.100 1.52-2.54	Brass, Pre-tin	61527-2	—	466320-11 466320-21 466320-41	91512-1

<sup>1</sup>HDM Applicator part number ending in -1 is used on AMPOMATOR CLS Machine with T or G Terminators, -2 is used on AMP-O-LECTRIC Model K Machine; -3, -4, or -6 is used on AMP-O-LECTRIC Model G Machine. See pages 207-210 for further information.

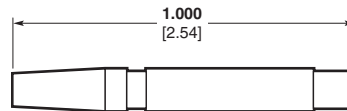
**Keying Plug**

IS 408-7582

**Material**

**Housing**—Nylon, natural color

**Flammability Rating**—UL94V-2



Part Number  
200821-1

Note: Keying plug snaps into socket housing

**Note:** All part numbers are RoHS Compliant.



**Commercial MATE-N-LOK Connectors** (Continued)

**Housings**

**Free-Hanging**

.200 [5.08] Centerline spacing

**Material**

**Housing**—Nylon, natural color

**Flammability Rating**—UL94V-2

**Related Product Data**

**Product Specification**

108-1000 Commercial MATE-N-LOK Connectors

**Performance Characteristics**—pages 151-152

**Contacts**—pages 155-156

**Commoning Tabs**—page 155

**Keying Plug**—page 156

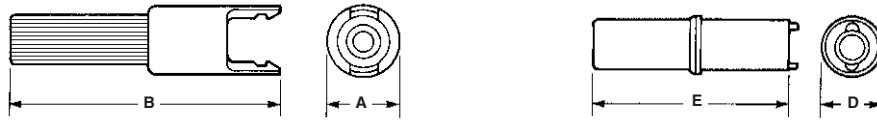
**Technical Documents**—pages 151 and 205-206

**Mating Pin Headers**—pages 161-164

**Mating Socket Headers**—page 162

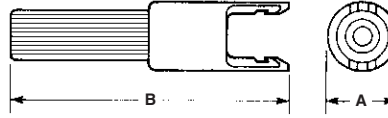
**Mating IDC**—page 163

**1 Circuit**



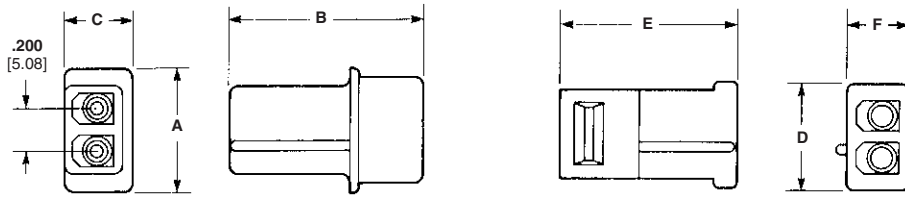
Pin Housing (Cap) Detent Lock

Socket Housing (Plug)



Pin Housing (Cap) Positive Lock

**2, 3 and 4 Circuit, In-Line**



Pin Housing (Cap)

Socket Housing (Plug)

Number of Circuits	Dimensions						Part Numbers	
	A	B	C	D	E	F	Pin Housing (Cap)	Socket Housing (Plug)
1	.300	1.200	—	.260	.870	—	1-480350-0 <sup>1</sup>	1-480349-0
	7.62	30.48	—	6.60	22.10	—	1-480351-0 <sup>2</sup>	1-480349-0
	.300	1.240	—	.260	.870	—	1-480401-0 <sup>1,3</sup>	1-480400-0 <sup>3</sup>
2	.300	1.325	—	.260	.995	—	1-480401-0 <sup>1,3</sup>	1-480400-0 <sup>3</sup>
	7.62	33.65	—	6.60	25.27	—	1-480319-0 <sup>1,5</sup>	1-480318-0 <sup>5</sup>
	.610	.930	.330	.530	.860	.295	1-480498-1 <sup>1,3,5</sup>	1-480393-1 <sup>3,5</sup>
3	.610	.930	.330	.530	.860	.295	1-480305-0 <sup>1,5</sup>	1-480303-0 <sup>5</sup>
	15.49	23.62	8.38	13.46	21.84	7.49	1-480387-0 <sup>1,3,5</sup>	1-480388-0 <sup>3,5</sup>
	.810	.930	.325	.825	.850	.290	1-480387-0 <sup>1,3,5</sup>	1-480388-0 <sup>3,5</sup>
4	.810	.930	.325	.825	.850	.290	1-480426-0 <sup>1,5,6</sup>	1-480424-0 <sup>5,6</sup>
	20.57	23.62	8.25	20.95	21.60	7.37	1-480426-0 <sup>1,5,6</sup>	1-480424-0 <sup>5,6</sup>
	1.010	.930	.330	1.030	.850	.310	794132-14.5 <sup>6</sup>	770827-14.5 <sup>6</sup>
	25.65	23.62	8.38	26.16	21.60	7.88		
	—	—	—	1.030	.850	.310		
				26.16	21.60	7.88		

<sup>1</sup>Detent lock

<sup>2</sup>Positive lock

<sup>3</sup>UV Stable black color

<sup>4</sup>Housing Material UL94V-0 rated

<sup>5</sup>Housing accepts double wire applications where individual insulation diameters do not exceed .115 [2.92].

<sup>6</sup>Used by the disk drive industry.

**Note:** All part numbers are RoHS Compliant.

Dimensions are in inches and millimeters unless otherwise specified. Values in brackets are metric equivalents.

Dimensions are shown for reference purposes only. Specifications subject to change.

USA: 1-800-522-6752  
Canada: 1-905-470-4425  
Mexico: 01-800-733-8926  
C. America: 52-55-1106-0803

South America: 55-11-2103-6000  
Hong Kong: 852-2735-1628  
Japan: 81-44-844-8013  
UK: 44-8706-080-208

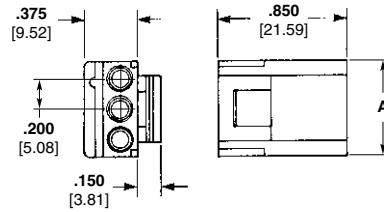
**Commercial MATE-N-LOK Connectors** (Continued)

**Housings**  
Free-Hanging, Positive Lock

**Material**

**Housing**—Nylon, natural color  
**Flammability Rating**—UL94V-2

**2, 3, and 4 Circuit, In-Line**  
.200 [5.08] Centerline spacing

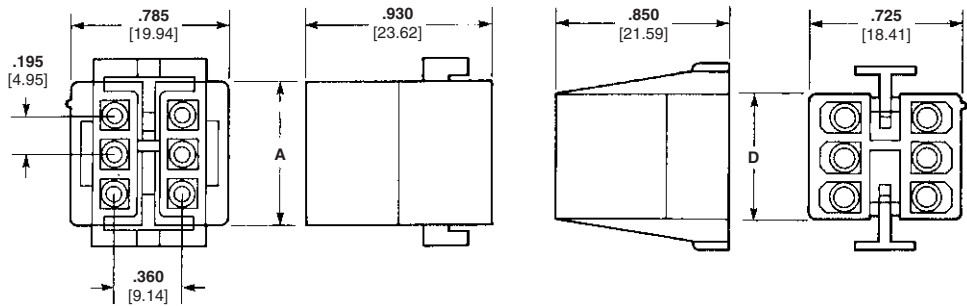


Socket Housing (Plug)

Number of Circuits	A Dim.	Part Numbers		
		Socket Housing (Plug)	Mates with Pin Headers	Mates with Cap Housing
2	.435 11.04	1-480720-0	350539, 350540	794012-1
3	.630 16.00	1-480721-0	350541	—
4	.830 21.09	1-480722-0 <sup>1</sup>	350543 <sup>1</sup> , 350544 <sup>1</sup>	—

<sup>1</sup>Used by the disk drive industry.

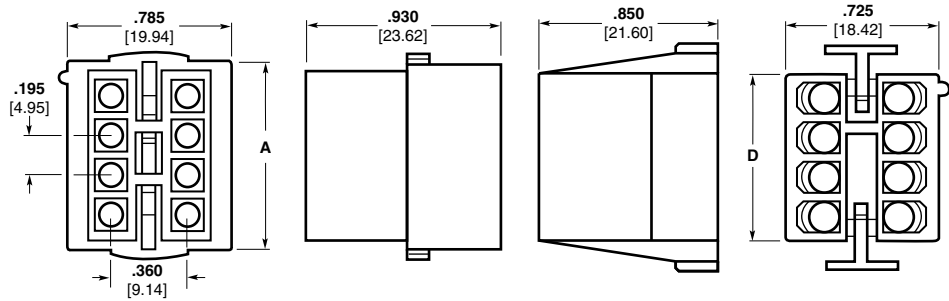
**6 Circuit, Dual Row**



Pin Housing (Cap)

Socket Housing (Plug)

**8 and 10 Circuit, Dual Row**



Pin Housing (Cap)

Socket Housing (Plug)

**Related Product Data**

**Product Specification**

108-1000 Commercial MATE-N-LOK Connectors

**Performance Characteristics**—pages 151-152

**Contacts**—pages 155-156

**Commoning Tabs**—page 155

**Keying Plug**—page 156

**Technical Documents**—pages 151 and 205-206

**Mating Headers**—pages 161-164

Number of Circuits	Dimensions		Part Numbers	
	A	D	Pin Housing (Cap)	Socket Housing (Plug)
6	.705 17.91	.610 15.49	1-480340-0	1-480270-01
8	.900 22.86	.805 20.44	1-480345-0	1-480283-0 <sup>1</sup>
10	1.095 27.81	1.000 25.40	1-480339-0	1-480285-0 <sup>1</sup>

<sup>1</sup>Housing accepts double wire applications where individual insulation diameters do not exceed .115 [2.92].

**Note:** All part numbers are RoHS Compliant.

Standard Density

Commercial MATE-N-LOK Connectors  
.200 [5.08] Centerline



**Commercial MATE-N-LOK Connectors** (Continued)

**Housings**

**Panel Mount, Positive Lock**

**Material**

Housing—Nylon, natural color

Flammability Rating—UL94V-2

**Related Product Data**

**Product Specification**

108-1000 Commercial MATE-N-LOK Connectors

Performance Characteristics—pages 151-152

Contacts—pages 155-156

Commoning Tabs—page 155

Keying Plug—page 156

Technical Documents—pages 151 and 205-206

Mating Socket Headers—page 162

Mating IDC—page 163

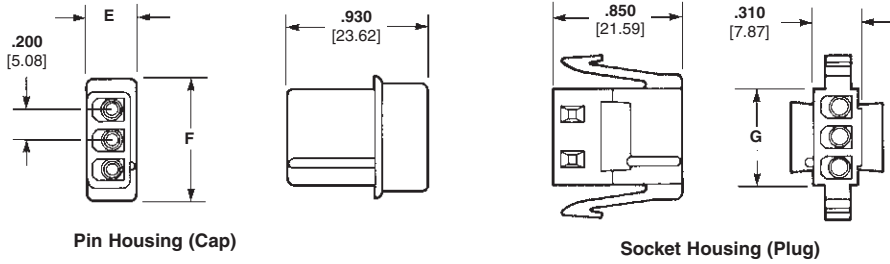
**Recommended Panel Cutout for Panel Mount Socket Housing**

View is from socket housing entry side

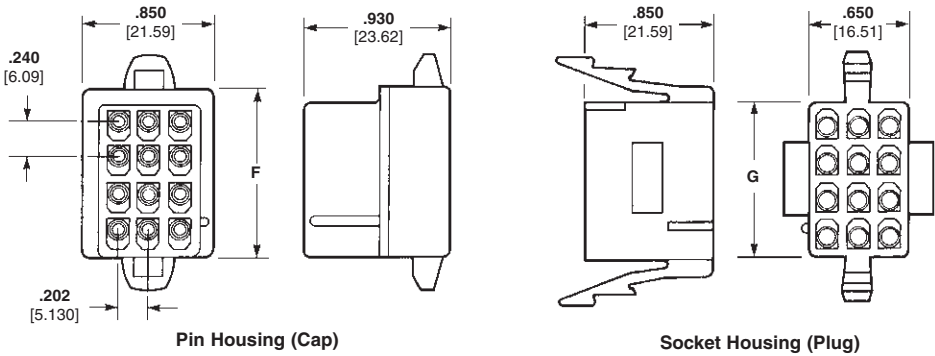
**Mounting Information**

1. Recommended panel thickness—.025-.065 [.635-1.65].
2. Both locking legs are to be squeezed together and the housing is to be inserted "straight-in", as opposed to a rocking manner.
3. The panel should be punched so that the housing enters the panel in the same direction as the punch.
4. The panel must not have any material (paint, porcelain, etc.) applied in the mounting hole area that would decrease the retention of the housing in the panel.
5. If the two items above are not complied with, the "A" dimension should be reduced .020 [5.08] for proper retention.

**3 and 4 Circuit, In-Line**



**6, 9, 12 and 15 Circuit, Matrix**

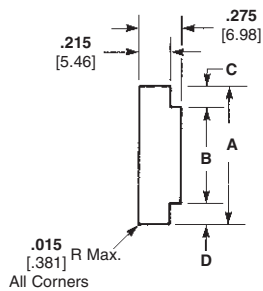


Number of Circuits	Dimensions			Part Numbers	
	E	F	G	Pin Housing (Cap)	Socket Housing (Plug)
3	.325 8.26	.810 20.57	.630 16.00	1-480305-0 <sup>2</sup>	1-480304-0
4	.330 8.38	1.010 25.65	.825 20.96	1-480426-0 <sup>2,4</sup> 3-480426-0 <sup>1,2,4</sup>	1-480425-0 <sup>4</sup> 3-480425-0 <sup>1,4</sup>
6	—	.665 16.89	.555 14.10	1-480276-0 <sup>3</sup>	1-480273-0
9	—	.905 22.99	.795 20.19	1-480277-0 <sup>3</sup>	1-480274-0
12	—	1.145 29.08	1.045 26.54	1-480278-0 <sup>3</sup>	1-480275-0
15	—	1.382 35.10	1.280 32.51	1-480324-0 <sup>3</sup>	1-480323-0

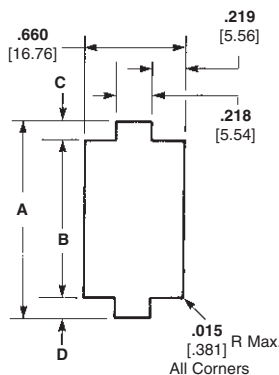
<sup>1</sup>Housing material has 125°C temperature rating  
<sup>2</sup>Detent lock  
<sup>3</sup>Positive lock  
<sup>4</sup>Used by disk drive industry

**Note: All part numbers are RoHS Compliant.**

**3 and 4 Circuit, In-Line**



**6, 9, 12 and 15 Circuit, Matrix**



Number Circuits	Dimensions	
	A	B
3	.890 22.61	.645-.635 16.38-16.13
4	1.100 27.94	.845-.835 21.46-21.21
6	.840 21.34	.575-.570 14.61-14.48
9	1.075 27.31	.815-.810 20.70-20.57
12	1.320 33.53	1.055-1.050 26.80-26.67
15	1.550 39.37	1.290-1.285 32.77-32.64

**Note:** Dimensions "C" and "D" are to be equal.

Dimensions are in inches and millimeters unless otherwise specified. Values in brackets are metric equivalents.

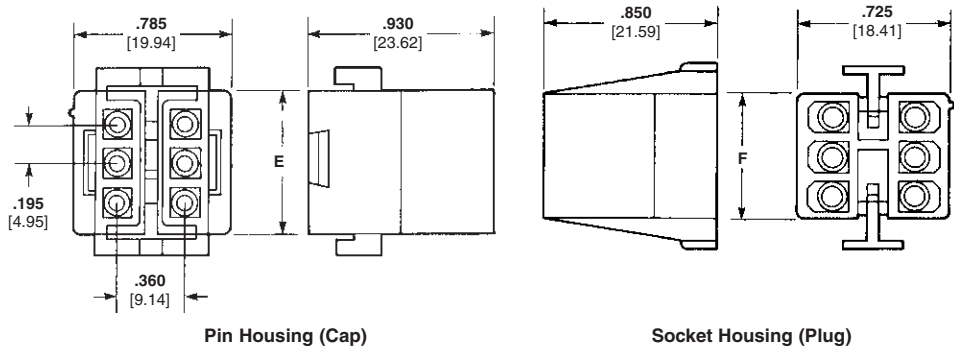
Dimensions are shown for reference purposes only. Specifications subject to change.

USA: 1-800-522-6752  
 Canada: 1-905-470-4425  
 Mexico: 01-800-733-8926  
 C. America: 52-55-1106-0803

South America: 55-11-2103-6000  
 Hong Kong: 852-2735-1628  
 Japan: 81-44-844-8013  
 UK: 44-8706-080-208

**Commercial MATE-N-LOK Connectors** (Continued)

**Motor Mount, Positive Lock 6, 8, 10, 12 and 16 Circuit, Dual Row**



Number of Circuits	Dimensions		Part Numbers	
	E	F	Pin Housing (Cap)	Socket Housing (Plug)
UL94V-2 Nylon, Natural Color				
6	.705 17.90	.610 15.49	1-480271-0	1-480270-0 <sup>1</sup>
8	.900 22.86	.805 20.45	1-480284-0	1-480283-0 <sup>1</sup>
10	1.095 27.81	1.000 25.4	1-480286-0	1-480285-0 <sup>1</sup>
12	1.290 32.77	1.195 30.35	1-480288-0	1-480287-0
16	1.680 42.67	1.585 40.26	1-480439-0	1-480438-0

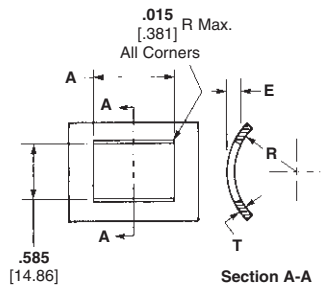
<sup>1</sup>Housing accepts double wire applications where individual insulation diameters do not exceed .115 [2.92].

**Note:** All part numbers are RoHS Compliant.

Standard Density

**Recommended Panel Cutout for Motor Mount Pin Housing**

View is from pin housing entry side.



**Note:** Motor mount housings may be used in flat panels

Number of Circuits	A Dim.
6	.715 18.16
8	.910 23.11
10	1.105 28.07
12	1.300 33.02
16	1.690 42.93

**Mounting Information**

1. Recommended panel thickness "E" is .040-.100 [1.02-2.54] and is dependent on "T" and "R".
2. The pin housing must be inserted in a rocking manner.
3. The panel must be punched so that the housing enters the panel in the same direction as the punch.

**Commercial MATE-N-LOK Connectors** (Continued)

**PC Board Vertical Pin Headers**

**Material**

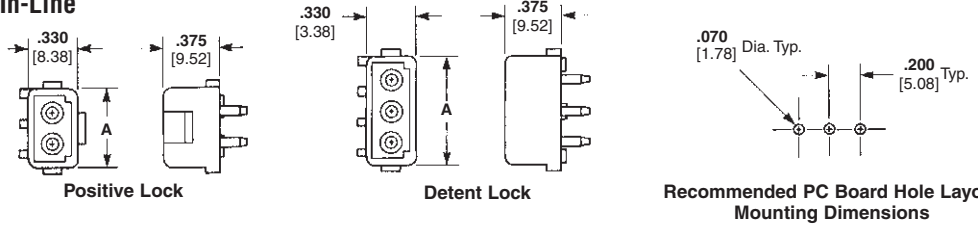
**Housing** — Nylon, natural color  
**Flammability Rating** — UL94V-2  
**Contacts** — Phosphor bronze  
 Solder tail diameter .062 [1.57]

**Related Product Data**

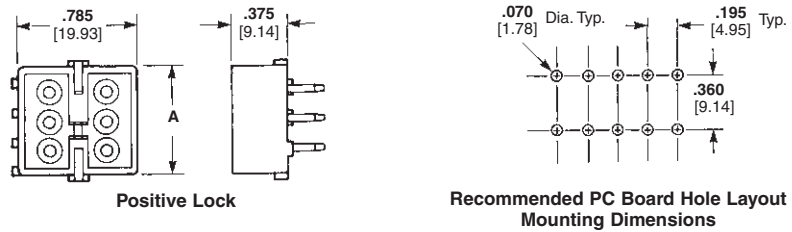
**Product Specifications**  
 108-1077 Commercial MATE-N-LOK  
 PC Board Headers

**Performance Characteristics** —  
 pages 151-152  
**Technical Documents** — pages 151  
 and 205-206  
**Mating Socket Housings** —  
 pages 157-160  
**Mating Socket Headers** — page 162  
**Mating IDC** — page 163

**2, 3, and 4 Circuit,  
In-Line**



**6, 8, 10, 12 and 16 Circuit,  
Dual Row**



Number of Circuits	A Dim.	Type Lock	Finish	Part Numbers		Mates with Socket Housing Part Number
				Standard <sup>2</sup> Tail	Long <sup>3</sup> Tail	
2	.515 13.09	Positive	Pre-tin	350539-1	350540-1	1-480720-0
			Duplex <sup>1</sup>	1586530-2	—	
		Detent	Pre-tin	350209-1	350422-1	1-480318-0
			Duplex <sup>1</sup>	1586512-2	—	
3	.715 18.17	Positive	Pre-tin	350541-1	350542-1	1-480721-0
			Duplex <sup>1</sup>	1586532-2	—	
		Detent	Pre-tin	350210-1	350423-1	1-480303-0
			Duplex <sup>1</sup>	1586514-2	—	
4	.915 23.24	Positive	Pre-tin	350543-1 <sup>5</sup>	350544-1 <sup>5</sup>	1-480722-0 <sup>5</sup>
			Duplex <sup>1</sup>	1586534-2 <sup>5</sup>	1586536-2 <sup>5</sup>	
		Detent	Pre-tin	350211-1 <sup>5</sup>	350424-1 <sup>5</sup>	1-480424-0 <sup>4,5</sup>
			794236-1 <sup>5,8</sup>	—		
			Post-tin	1586627-1 <sup>5,6</sup>	—	
			1-1586627-1 <sup>5,6,7</sup>	—		
Duplex <sup>1</sup>	1586515-2 <sup>5</sup>	1586525-2 <sup>5</sup>	—			
6	.705 17.91	Positive	Pre-tin	1-380999-0	350425-1	1-480270-0
			Duplex <sup>1</sup>	2-1586546-0	1586526-2	
8	.900 22.86	Positive	Pre-tin	350212-1	350426-1	1-480283-0
			Duplex <sup>1</sup>	1586518-2	1586528-2	
10	1.095 27.81	Positive	Pre-tin	1-380991-0	350219-1	1-480285-0
			Duplex <sup>1</sup>	2-1586544-0	—	
12	1.290 32.77	Positive	Pre-tin	350213-1	350220-1	1-480287-0
			Duplex <sup>1</sup>	1586520-2	1586524-2	
16	1.680 42.68	Positive	Pre-tin	350214-1	350427-1	1-480438-0
			Duplex <sup>1</sup>	1586522-2	1586529-2	

<sup>1</sup>Duplex Finish — Plated with .000030 [.000762] min. gold in mating area, matte tin on solder tail end over .000050 [.00127] min. nickel underplate on entire contact.

<sup>2</sup>Use standard tail for .062 [1.57] thick PC Board.

<sup>3</sup>Use long tail for .125 [3.18] thick PC Board.

<sup>4</sup>Other mating connectors include a vertical PC Board socket header and the insulation displacement connectors (IDC).

<sup>5</sup>Used by the disk drive industry.

<sup>6</sup>With drain holes.

<sup>7</sup>Tube loaded.

<sup>8</sup>Housing material UL94V-0 rated.

**Note: All part numbers are RoHS Compliant.**

**Commercial MATE-N-LOK Connectors** (Continued)

**PC Board Surface Mount  
Right-Angle Pin Header**

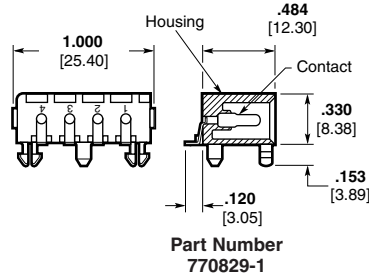
**Material and Finish**

**Housing**—Nylon, black color

**Flammability Rating**—UL94V-2

**Contact**—Phosphor bronze, pre-tin  
Solder tail width .052 [1.32]

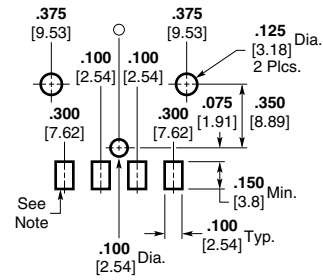
**4 Circuit, In-Line**



**Part Number**  
770829-1

**Notes:**

- Mating parts include socket housings, a vertical PC Board socket header below and the insulation displacement connectors (IDC).
- Used by the disk drive industry.



**Note:** .010 [.25] min. thick solder paste, 63/27 tin

**Recommended PC Board Layout**  
.062 [1.57] thick PC Board

**PC Board Vertical  
Socket Headers**

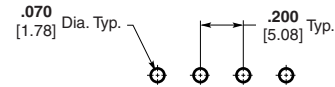
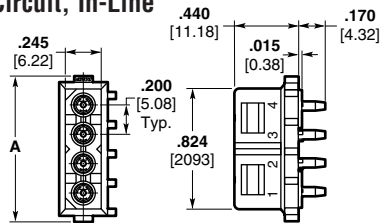
**Material**

**Housing**—Nylon, natural color

**Flammability Rating**—UL94V-2

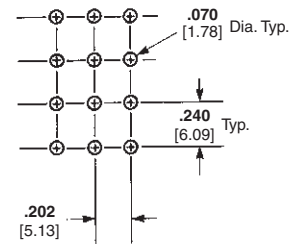
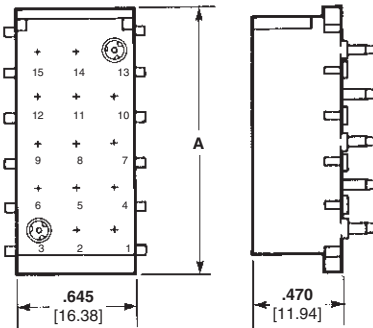
**Contacts**—Phosphor bronze  
Solder tail diameter .062 [1.57]

**4 Circuit, In-Line**



**Recommended PC Board Hole Layout**  
.062 [1.57] thick PC Board

**6, 9, 12 and 15 Circuit,  
Matrix**



**Recommended PC Board Hole Layout**  
.062 [1.57] thick PC Board

**Related Product Data**

**Product Specifications**

108-1077 Commercial MATE-N-LOK  
PC Board Headers

**Performance Characteristics**—  
pages 151-152

**Technical Documents**—pages 151  
and 205-206

**Mating Pin Housings**—pages 157-160

**Mating Pin Headers**—pages 161-164

**Mating Socket Housings**—  
pages 157-160

**Mating Socket Headers**—page 162

**Mating IDC**—page 163

Number of Circuits	A Dim.	Finish	Part Numbers		Mates with Pin Housing Part Number
			Standard Tail <sup>5</sup>	Long Tail <sup>6</sup>	
4	1.000 25.40	Pre-tin	770997-1 <sup>3</sup>	—	1-480426-02, <sup>3</sup>
			794285-1 <sup>3,7</sup>	—	
			794287-1 <sup>3,4,8</sup>	—	
6	.720 18.29	Pre-tin	350641-1	350576-1	1-480276-0
		Duplex <sup>1</sup>	1586539-2	—	
9	.960 24.39	Pre-tin	350642-1	350577-1	1-480277-0
12	1.200 30.49	Pre-tin	350643-1	350578-1	1-480278-0
15	1.440 36.58	Pre-tin	350644-1	350579-1	1-480324-0

<sup>1</sup>Duplex Finish—Plated with .000030 [.000762] min. gold in mating area, matte tin on solder tail end over .000050 [.00127] min. nickel underplate on entire contact.

<sup>2</sup>Other mating connectors include vertical, right-angle and surface mount PC Board pin headers.

<sup>3</sup>Used by the disk drive industry.

<sup>4</sup>Surface mount compatible.

<sup>5</sup>Use standard tail for .062 [1.57] thick PC Board.

<sup>6</sup>Use long tail for .125 [3.18] thick PC Board.

<sup>7</sup>Low Mating Force

<sup>8</sup>High Temperature

**Note:** All part numbers are RoHS Compliant.

Standard Density

Commercial MATE-N-LOK Connectors  
.200 [5.08] Centerline

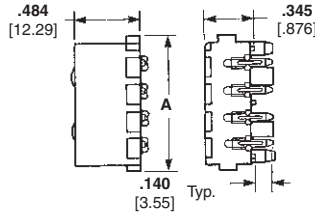
**Commercial MATE-N-LOK Connectors** (Continued)

**PC Board Right-Angle Pin Headers**

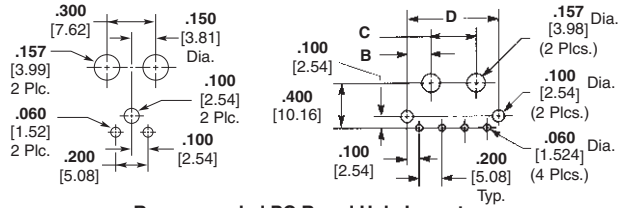
**Material and Finish**

**Contact**—Phosphor bronze, pre-tin  
Solder tail width .052 [1.32]

**2, 3, and 4 Circuit, In-Line**



**2, 3, and 4 Circuit**



**Recommended PC Board Hole Layout**  
.062 [1.57] thick PC Board

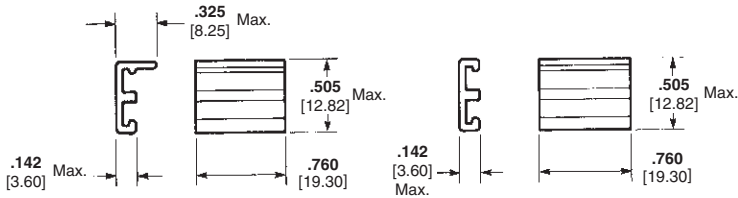
Number of Circuits	Dimensions				Housing Material	Part Numbers	Mates with Socket Housing Part Number
	A	B	C	D			
2	.600 15.24	—	.300 7.62	—	UL94V-2 Nylon Natural Color	794120-1	1-480318-0
3	.800 20.32	.150 3.81	.300 7.62	.600 15.24	UL94V-0 Nylon	643488-1	1-480303-0
4	1.000 25.40	.200 5.08	.400 10.16	.800 20.32	UL94V-2 Nylon, Natural Color	641737-1 <sup>3</sup> 770846-11, <sup>3</sup>	1-480424-02, <sup>3</sup>
					UL94V-0 Nylon	1-641737-1 <sup>3</sup>	770827-12, <sup>3</sup>

<sup>1</sup>Surface Mount Compatible. <sup>2</sup>Other mating connectors include a vertical PC Board socket header and the insulation displacement connectors (IDC). <sup>3</sup>Used by the disk drive industry.

**Dust Covers**

**Material**

**Housing**—Polyester, white color  
**Flammability Rating**—UL94V-2



**For Feed-To Wiring**  
Part Number 770232-1

**For Feed-Through Wiring**  
Part Number 770233-1

**Note:** These parts are used with the insulation displacement connectors below.

**Insulation Displacement Connectors (IDC)**

**Material**

**Housing**—Nylon  
**Contact**—Phosphor bronze

**Related Product Data**

Used by the disk drive industry.

**Product Specifications**

108-1077 Commercial MATE-N-LOK  
PC Board Headers

108-49000 IDC Connectors

**Application Specification**

114-49001 IDC Connectors

**Performance Characteristics**—  
pages 151-152

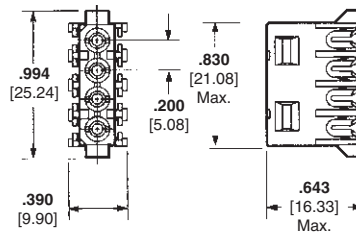
**Technical Documents**—  
pages 151 and 205-206

**Mating Socket Housings**—  
pages 157-160

**Mating Pin Housings**—pages 157-  
160

**Mating Pin Headers**—pages 161-164

**4 Circuit, In-Line**



**Socket Assembly (Plug)**

Wire Size Range AWG [mm <sup>2</sup> ]	Color Code	Finish	Part Number		Mates with Part Numbers
			UL94V-2	UL94V-0	
22 [.3]	Red	Pre-tin	770156-2	794036-3	1-480426-0** 350211-1 350211-2 350424-1 350424-2 641737-1
20 [.5]	Yellow	Pre-tin	770156-4	794036-2	1-641737-1 770827-1 770829-1 770846-1
18 [.8]	Orange	Pre-tin	770156-3	794036-1	
16 [1.2]	Blue	Pre-tin	770156-5*	794036-4	

\*Application Tooling: Arbor Tool 91085-2 uses head 231920-2. \*\*Pin Housing

**Notes:**

1. Insulation diameter .095 [2.41] max.

2. Application Tooling

Power Unit No. 91112-2 (IS 408-7763) uses Head No. 231920-2 (IS 408-9330) and Hand Tool Handle No. 58074-1 (IS 408-6790) uses Terminating Head No. 231894-1 (IS 408-3186)

**Note:** All part numbers are RoHS Compliant.

Dimensions are in inches and millimeters unless otherwise specified. Values in brackets are metric equivalents.

Dimensions are shown for reference purposes only. Specifications subject to change.

USA: 1-800-522-6752  
Canada: 1-905-470-4425  
Mexico: 01-800-733-8926  
C. America: 52-55-1106-0803

South America: 55-11-2103-6000  
Hong Kong: 852-2735-1628  
Japan: 81-44-844-8013  
UK: 44-8706-080-208

Standard Density

Commercial MATE-N-LOK Connectors  
200 [5.08] Centerline

**Commercial MATE-N-LOK Connectors** (Continued)

**PC Board Right-Angle  
Pin Header with Fix Belt**

**Material**

**Housing** — Thermoplastic  
**Flammability Rating** — UL94V-2  
**Contacts** — Copper Alloy

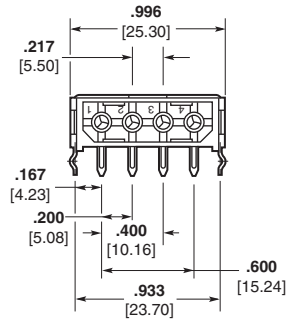
**Related Product Data**

Used by the disk drive industry

**Product Specification**

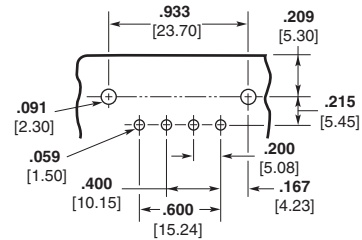
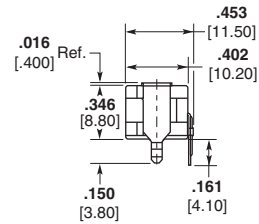
108-5155

**4 Circuit, In-Line**



**Part No. 174552-1**

**Notes:** Mates with socket housing Part No. 1-480424-0. Other mating connectors include a vertical PC Board socket header and the insulation displacement connectors (IDC).



**Recommended PC Board Hole Layout**  
.062 [1.57] thick PC Board

**PC Board Right-Angle  
Pin Headers with Fix Belt  
Reverse Polarization**

**Material and Finish**

**Housing** — Nylon  
**Flammability Rating** — UL94V-2  
**Contacts** — Tin plated, Copper alloy

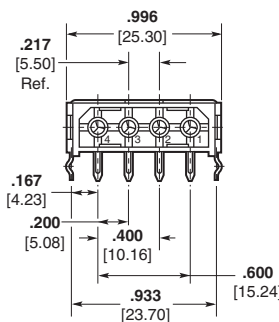
**Related Product Data**

Used by the disk drive industry

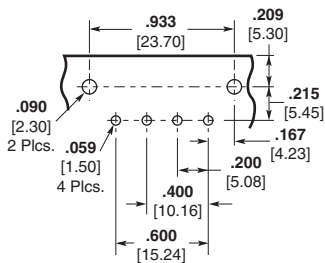
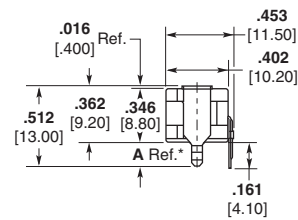
**Product Specification**

108-5155

**4 Circuit, In-Line**



**Part No. 174804\***



**Recommended PC Board Hole Layout**  
.062 [1.57] thick PC Board

**Notes:** Mates with socket housing Part No. 1-480424-0. Other mating connectors include a vertical PC Board socket header and the insulation displacement connectors (IDC).

**Note:** All part numbers are RoHS Compliant.

Part No.	A Dim.*	Description
174804-1	.150 3.80	Long Clamp with Kink

Standard Density

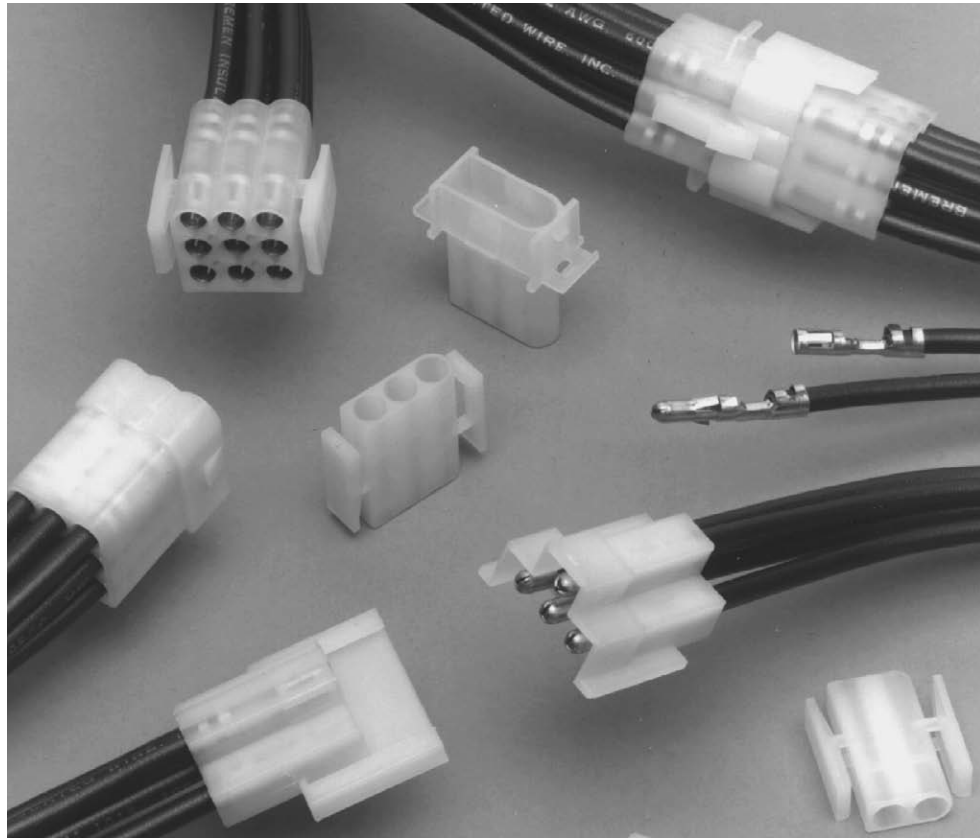
Commercial MATE-N-LOK Connectors  
.200 [5.08] Centerline



## .140 MATE-N-LOK Connectors (Large Insulation), .240 Centerline

### Product Facts

- Available in 2, 3 and 9 circuit configurations for panel mounting; 4 and 9 circuit configurations for free-hanging applications
- Standard natural nylon housings
- Housings fully polarized
- Contacts fully protected in housings
- Contacts accept wire size range 20-10 AWG [1.5-5.0 mm<sup>2</sup>] with insulation diameters from .100 [2.54] to .180 [4.57]
- Low insertion/extraction forces
- Dual locking lances provide optimum contact stability
- Extraction tool removes both pins and sockets
- Contacts are on .240 [6.09] centerline spacing
- Not for interrupting current
- Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476
- Certified by Canadian Standards Association, File No. LR 7189A



**Maximum Current**—Maximum current rating of .140 MATE-N-LOK Connectors is limited by the maximum operating temperature of the housings which is 105°C and the temperature rise of the contacts which is 30°C. There are several variables which have a direct effect on this maximum current-carrying capability for a given connector and must be considered for each application. These variables are:

**Wire Size**—Larger diameter wire will carry more current since it has less internal resistance to current flow and thus generates less heat. Longer wire lengths also enhance current-carrying capabilities since the wire conducts heat away from the connector.

**Connector Size**—In general, the more circuits in a connector, the less current can be carried.

**Ambient Temperature**—The higher the ambient temperature, the less current can be carried in any given connector.

### Technical Documents

**Product Specification**  
108-1032 .140 Diameter  
MATE-N-LOK Connectors

**Application Specification**  
114-1007 .140 Diameter  
MATE-N-LOK Contacts

### Performance Characteristics

The .140 MATE-N-LOK Connector performance characteristics found on this page are based on free-hanging and panel mount connectors, loaded with contacts crimped on stranded wire.

**Dielectric Withstand Voltage**—3.0 KVAC between adjacent circuits

**Insulation Resistance**—1000 megohms minimum initial between adjacent circuits

**Voltage Rating**—600 V AC or DC

**Connector Mating**—4.5 lb. max. per circuit

**Connector Unmating**—8 lb. min. per circuit

**Contact Retention**—30 lb. min.

**Durability**—25 cycles, mating and unmating

**Thermal Shock**—-55°C to +85°C

**Temperature-Humidity Cycling**—25°C to 65°C at 95 RH

Wire Size		Termination Resistance		Contact Crimp Tensile Force	
AWG	mm <sup>2</sup>	Test Current (Amps)	Resistance Milliohms (Max. Init.)	Force (Min.)	
				lbs.	N
20	.5	4.5	3.0	20	89
18	.8	6	2.5	30	133
16	1.2	8	2.5	45	200
14	2.0	10	2.0	50	222
12	3.0	12	1.5	60	267
10	5.0	14	1.5	65	289

**Note:** This is the total resistance between wire crimps of a mated pin and socket.

### Current Rating Verification for 30°C Maximum Temperature Rise 100% Energized

#### Wire-to-Wire

#### .140 MATE-N-LOK Connector Calculated Current Table

Number of Circuits	Wire AWG					
	10	12	14	16	18	20
2	28.00	23.00	18.50	15.00	13.50	10.50
3	25.00	21.00	17.00	13.50	12.00	9.50
9	18.50	15.00	12.00	10.00	9.00	7.00

Values are based on initial Temperature Rise versus Current Testing and are intended to be a guide in the selection of a connector family. All applications should be tested by the end user. The values listed are per circuit for fully loaded housings being 100% energized. **Note:** All combinations were not tested, and this chart contains interpolated and extrapolated values.

#### Minimum Wire Lengths for T-Rise vs. Current Testing

**Note:** If wire lengths used are less than those listed, the current carrying ability of the system will be reduced due to less heat being conducted away from the connector. The customer should fully test all applications.

Dimensions are in inches and millimeters unless otherwise specified. Values in brackets are metric equivalents.

Dimensions are shown for reference purposes only. Specifications subject to change.

USA: 1-800-522-6752  
Canada: 1-905-470-4425  
Mexico: 01-800-733-8926  
C. America: 52-55-1106-0803

South America: 55-11-2103-6000  
Hong Kong: 852-2735-1628  
Japan: 81-44-844-8013  
UK: 44-8706-080-208

**.140 MATE-N-LOK Connectors (Large Insulation), .240 Centerline** (Continued)

**Contacts**

Pin diameter .140 [3.57]  
Stock thickness .014 [.357]

**Related Product Data**

**Product Specification**  
108-1032 .140 Diameter  
MATE-N-LOK Connectors

**Application Specification**

114-1007 .140 Diameter  
MATE-N-LOK Contacts

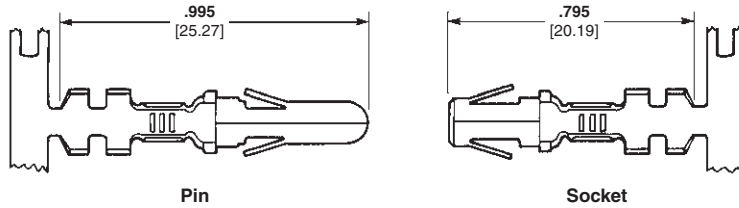
**Performance Characteristics**—  
page 159

**Keying Plug**—none

**Housings**—pages 166-167

**Technical Documents**—pages 165  
and 205-206

**Application Tooling**—pages 207-210



Wire Size Range AWG [mm <sup>2</sup> ]	Ins. Dia. Range	Material & Finish	Contact Part Numbers				HDM Applicator Part No.	Hand Tool Part No.
			Pin		Socket			
			Strip Form	Loose Piece	Strip Form	Loose Piece		
20-14 [.5-2.0]	.100-.180 2.54-4.5	Brass, pre-tin	61627-1	350389-1	61626-1	350388-1	567306-1 567306-2 567306-3	90247-1
		Phos. Brz., pre-tin	61627-2	—	61626-2	—		
14-10 [2.0-5.0]	.100-.180 2.54-4.5	Brass, pre-tin	350201-1	350391-1	350200-1	350390-1	567309-1 567309-2 567309-3	69710-1 <sup>2</sup>
		Phos. Brz., pre-tin	350201-2	350391-2	350200-2	350390-2		

<sup>1</sup>HDM Applicator part number ending in -1 is used on AMPOMATOR CLS Machine with T or G Terminators, -2 is used on AMP-O-LECTRIC Model K Machine, -3 is used on AMP-O-LECTRIC Model G Machine. See pages 207-210 for further information.

<sup>2</sup>Hand Tool No. **69710-1** uses die set No. **58374-1** for 14-12 AWG and No. **58373-1** for 10 AWG.



**Contact Extraction Tool**  
Part No. 318845-1  
IS 408-4378

**Housings**

**Free-Hanging**

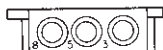
.240 [6.09] Centerline spacing

**Material**

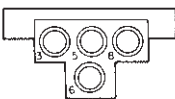
Nylon, natural color

**Flammability Rating**—UL94V-2

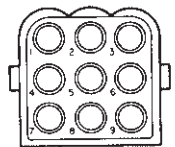
**Cavity Identification**  
(Rear View)



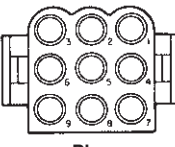
Cap



Plug

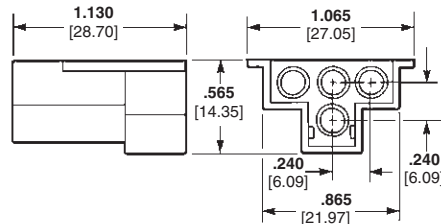


Cap

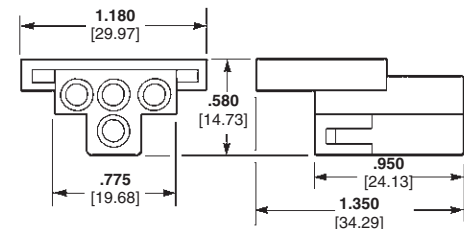


Plug

**4 Circuit**

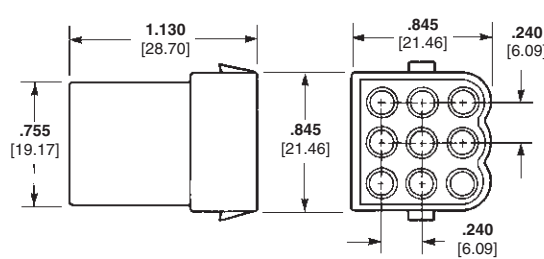


**Pin Housing (Cap)**  
Part No. 1-480512-0  
Part No. 794700-1 (Black Color High Temp.)

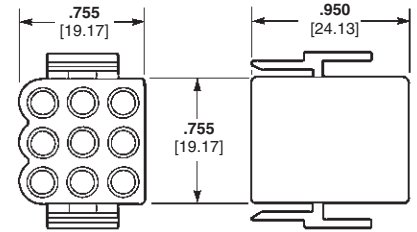


**Socket Housing (Plug)**  
Part No. 1-480510-0

**9 Circuit, Matrix**



**Pin Housing (Cap)**  
Part No. 1-480586-0



**Socket Housing (Plug)**  
Part No. 1-480585-0

**Note:** All part numbers are RoHS Compliant.

Dimensions are in inches and millimeters unless otherwise specified. Values in brackets are metric equivalents.

Dimensions are shown for reference purposes only. Specifications subject to change.

USA: 1-800-522-6752  
Canada: 1-905-470-4425  
Mexico: 01-800-733-8926  
C. America: 52-55-1106-0803

South America: 55-11-2103-6000  
Hong Kong: 852-2735-1628  
Japan: 81-44-844-8013  
UK: 44-8706-080-208



**.140 MATE-N-LOK Connectors (Large Insulation), .240 Centerline** (Continued)

**Housings**

**Panel Mount**

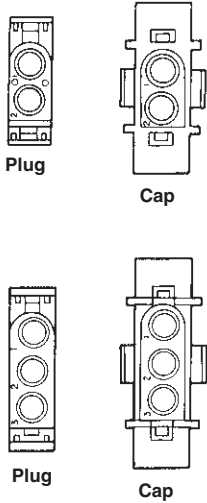
.240 [6.09] Centerline spacing

**Material**

**Housing**—Nylon, natural color

**Flammability Rating**—UL94V-2

**Cavity Identification**  
(Rear View)



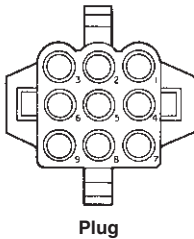
Plug

Cap

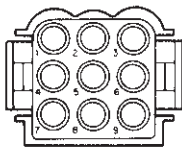


Plug

Cap



Plug



Cap

**Related Product Data**

**Product Specification**

108-1032 .140 Diameter  
MATE-N-LOK Connectors

**Application Specification**

114-1007 .140 Diameter  
MATE-N-LOK Contacts

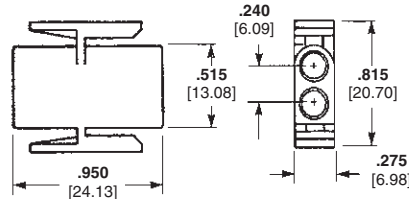
**Performance Characteristics**—  
page 165

**Keying Plug**—none

**Contacts**—page 166

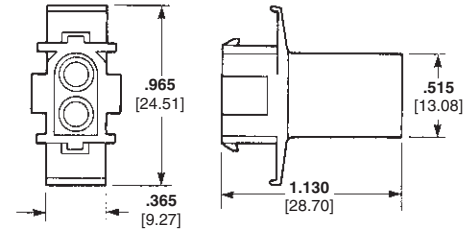
**Technical Documents**—pages 165  
and 205-206

**2 and 3 Circuit, In-Line**



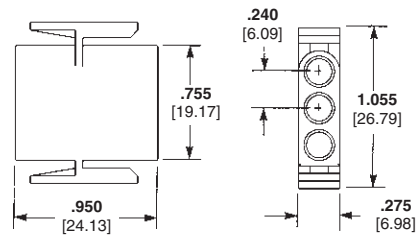
**Socket Housing (Plug)**  
Part No. 1-350344-0

Part No. 794699-1 (Black Color High Temp.)

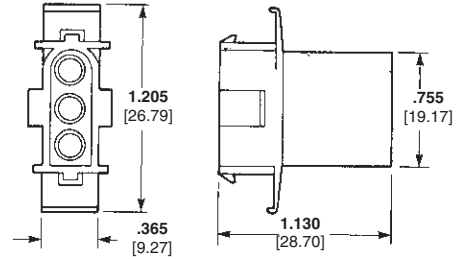


**Pin Housing (Cap)**  
Part No. 1-350345-0

Part No. 1586305-1 (Black Color High Temp.)



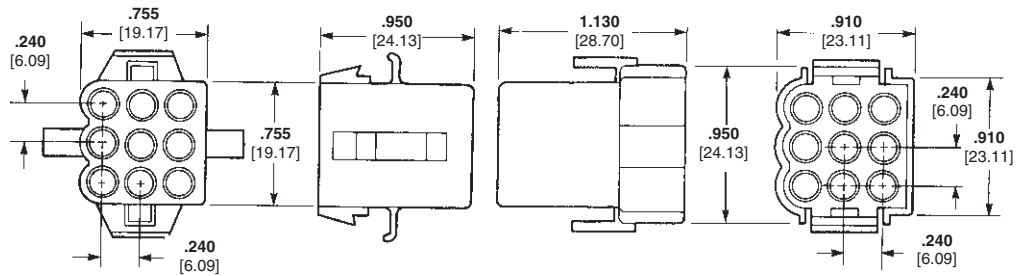
**Socket Housing (Plug)**  
Part No. 1-350346-0



**Pin Housing (Cap)**  
Part No. 1-350347-0

Part No. 794061-1 (Black Color High Temp.)

**9 Circuit, Matrix**



**Socket Housing (Plug)**  
Part No. 1-480672-0

Part No. 1586305-1 (Black Color High Temp.)

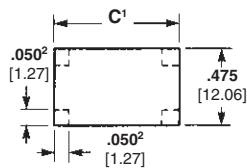
**Pin Housing (Cap)**  
Part No. 1-480673-0

Part No. 794683-1 (Black Color High Temp.)

**Recommended Panel Cutouts**

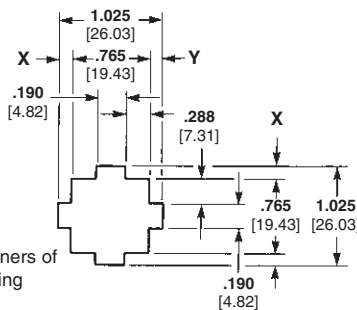
View is from housing entry side

**2 and 3 Circuit**



12 Circuit-.725 [18.42]  
3 Circuit-.965 [24.51]  
.2,050 x .050 [1.27-1.27] tabs in corners of  
outlet are optional to reduce housing  
float in panel.

**9 Circuit**



**Notes:**

1. Panel thickness .040-.070 [1.02-1.78].
2. "X" and "Y" dimensions must be within .005 [0.127] of each other.
3. Panel should be punched so that the housing enters the panel in the same direction as the punch for ease of assembly.

**Note:** All part numbers are RoHS Compliant.

Dimensions are in inches and millimeters unless otherwise specified. Values in brackets are metric equivalents.

Dimensions are shown for reference purposes only. Specifications subject to change.

USA: 1-800-522-6752  
Canada: 1-905-470-4425  
Mexico: 01-800-733-8926  
C. America: 52-55-1106-0803

South America: 55-11-2103-6000  
Hong Kong: 852-2735-1628  
Japan: 81-44-844-8013  
UK: 44-8706-080-208

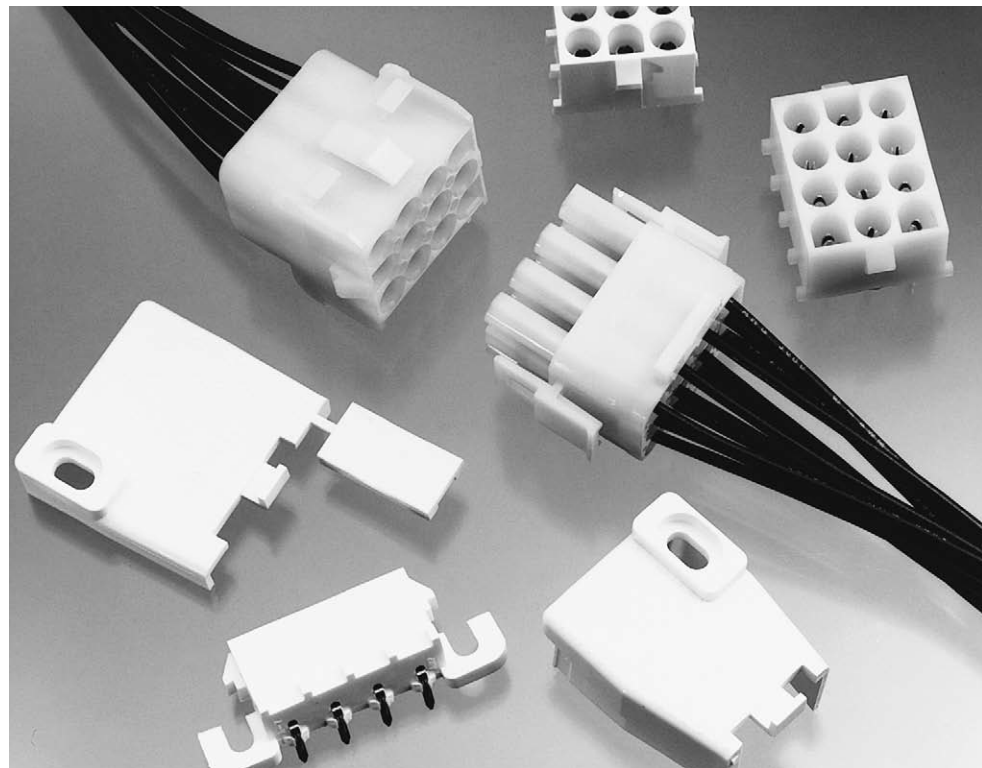
Standard Density

.140 MATE-N-LOK Connectors (Large Insulation)  
.240 [6.10] Centerline

## Universal MATE-N-LOK Connectors

### Product Facts

- Pins and sockets can be intermixed in the same housing
- Positive polarization
- Rear cavity identification
- Contacts completely enclosed in housings
- Positive locking housings
- Insulation capability to .200 [5.08] diameter
- Removable, crimp snap-in contacts
- Low contact mating force
- Contacts accept 30-10 AWG [.05-5.0 mm<sup>2</sup>] wire sizes
- Contacts available with pre-tin or gold plating
- Dual locking lances provide optimum contact stability
- Panel mount or free-hanging
- Mate with Universal MATE-N-LOK II Housings
- Available in UL 94V-0 flame retardant material. Meets the material requirements of table 25.1 of U.L. Standard 1410 (television receivers and video products)
- Not for interrupting current
- Harness to PC Board capability using pin or socket headers
- Pin and socket headers are available in both vertical and right-angle style
- Solderability—headers meet MIL-STD 202 Method 208
- Contacts are on .250 [6.35] centerline spacing
- Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476
- Certified by Canadian Standards Association, File No. LR 7189
- Passed test by VDE under their Registration Number 3980/Continuous Surveillance



### Performance Characteristics

The Universal MATE-N-LOK Connector performance characteristics found on pages 169-170 are based on free-hanging and panel mount connectors, loaded with contacts crimped on stranded wire.

**Dielectric Withstanding Voltage**—5.0 KVAC or 5.0 KVDC between adjacent circuits

**Insulation Resistance**—1000 megohms minimum initial between adjacent circuits

**Voltage Rating**—600 V AC or DC

**Contact Insertion Force**—5.0 lb. max. per contact

**Contact Retention**—15 lb. min. per contact

**Durability**—50 cycles, mating and unmating

### Technical Documents

#### Product Specifications

108-1031 Universal MATE-N-LOK Connectors

108-1053 Universal MATE-N-LOK PC Board Headers

#### Application Specification

114-1010 Universal MATE-N-LOK Contacts

#### Instruction Sheet

408-7714 Plug, Cap, Headers, Pin, Socket and Accessories

**Universal MATE-N-LOK Connectors** (Continued)

**Performance Characteristics** (Continued)

**Maximum Current**—Maximum current rating of Universal MATE-N-LOK connectors is limited by the maximum operating temperature of the housings which is 125°C for 94V-2 housings and 120°C for 94V-0 housings including the temperature rise of the contacts which is a maximum of 30°C. There are several variables which have a direct effect on this maximum current-carrying capability for a given connector and must be considered for each application. These variables are:

**Wire Size**—Larger diameter wire will carry more current since it has less internal resistance to current flow and thus generates less heat. Longer wire lengths also enhance current carrying capabilities since the wire conducts heat away from the connector.

**Connector Size**—In general, the more circuits in a connector, the less current can be carried.

**Ambient Temperature**—The higher the ambient temperature, the less current can be carried in any given connector.

**Printed Wiring Board Conductor Size**—The finished trace conductor width and thickness should be maximized to allow for the greatest current carrying capacity and heat dissipation.

Universal MATE-N-LOK connectors also will withstand the following tests:

**Vibration**—10-55-10 cycles per minute at .06 inch total excursion

**Physical Shock**—18 drops, 50 G sawtooth at 10 milliseconds

**Housing Panel Retention**—75 lb. min.

**Housing Lock Strength**—30 lb. min.

**Thermal Shock**—-55°C to +85°C

**Temperature-Humidity Cycling**—25°C to 65°C at 95 RH

**Corrosion**—48 hr. at 5% salt concentration

**Related Product Data**

**Product Specifications**

108-1031 Universal MATE-N-LOK Connectors

108-1053 Universal MATE-N-LOK Headers

**Current Rating Verification for 30°C Maximum Temperature Rise 100% Energized**

**Wire-to-Wire**

**Calculated Current Table**

Number of Circuits	Wire Gauge									
	10	12	14	16	18	20	22	24	26	30
2	19.00	18.00	17.00	14.50	13.00	10.00	8.00	6.50	5.50	3.50
3	17.50	16.50	15.50	13.00	12.00	9.00	7.50	6.00	5.00	3.00
4	16.50	15.50	15.00	12.50	11.00	8.50	7.00	5.50	4.50	3.00
5	16.00	15.00	14.00	12.00	10.50	8.00	6.50	5.50	4.50	3.00
6 In-Line	15.50	14.50	13.50	11.50	10.00	8.00	6.50	5.00	4.00	2.50
6 Matrix	15.00	14.00	13.00	11.00	9.50	7.50	6.00	5.00	4.00	2.50
8	14.50	14.00	13.00	10.50	9.50	7.50	6.00	5.00	4.00	2.50
9	13.50	12.50	11.50	9.50	8.50	6.50	5.50	4.50	3.50	2.00
10	14.00	13.00	12.50	10.00	9.00	7.00	5.50	4.50	3.50	2.50
12	12.50	12.00	11.00	9.00	8.00	6.00	5.00	4.00	3.00	2.00
15	12.00	11.50	10.00	8.50	7.50	6.00	4.50	4.00	3.00	2.00

Values are based on initial Temperature Rise versus Current Testing and are intended to be a guide in the selection of a connector family. All applications should be tested by the end user. The values listed are per circuit for fully loaded housings being 100% energized. **Note:** All combinations were not tested, and this chart contains interpolated and extrapolated values.

**Minimum Wire Lengths for T-Rise vs. Current Testing**

AWG	Min. Length (in.)	AWG	Min. Length (in.)
30	2.6	18	9.4
28	3.2	16	11.3
26	4.1	14	13.7
24	5.1	12	16.4
20	7.8	10	19.3

**Note:** If wire lengths used are less than those listed above, the current carrying ability of the system will be reduced due to less heat being conducted away from the connector. The customer should fully test all applications.

**Wire-to-Board**

Due to the vast differences in trace geometry and printed circuit board configurations, we are unable to provide a separate current carrying chart for our printed circuit board header products. However, the above Wire-to-Wire charts may be used as a guideline for headers if the trace width and thickness is equal to the listed wire gauge. For vertical headers, only 95% of the Wire-to-Wire value should be used. For right-angle headers, only 75% of the Wire-to-Wire value should be used. The chart values are only a tool for connector selection and will require the customer to fully test their application.

**Termination Resistance/Contact Crimp Tensile Force**

Wire Size		Termination Resistance		Contact Crimp Tensile Force	
AWG	mm <sup>2</sup>	Test Current (Amps)	Resistance Milliohms (Max. Init.)	Force (Min.) lbs.	N
30	.05	—	—	2	9
28	.08	—	—	3	13
26	.12	—	—	6	27
24	.2	1.5	3.50	8	36
22	.3	3	3.50	14	62
20	.5	4.5	3.00	14	62
18	.8	6	3.00	30	133
16	1.2	8	2.75	45	200
14	2.0	10	2.75	50	222
12	3.0	—	—	60	267
10	5.0	—	—	70	311

**Note:** This is the total resistance between wire crimps of a mated pin and socket.

**Universal MATE-N-LOK Connectors** (Continued)

**Universal MATE-N-LOK Connector Mating Combinations**

Connector Part Number <sup>7</sup>					Mating Connector Part Number								
Number of Circuits	Flammability Rating	Style	Plug Part Number <sup>2</sup>	Cap Part Number <sup>2</sup>	Plating	Vertical Pin <sup>2</sup>			Vertical Socket <sup>2</sup>			Right-Angle <sup>2</sup>	
						Standard Tail	Standard Tail Polarized	Long Tail	Standard Tail	Standard Tail Polarized	Long Tail	Pin	Socket
1	UL94V-2	—	1-350867-0	770421-1	—	—	—	—	—	—	—	—	—
	UL94V-0	—	350865-1	350866-1	—	—	—	—	—	—	—	—	—
2	UL94V-2	In-Line	1-480698-0 794814-1 <sup>3</sup>	1-480699-0 794815-1 <sup>3</sup>	Pre-tin	350428-1	641963-1	350582-1	350759-4	643411-1	350986-4	—	—
					Duplex <sup>1</sup>	350428-4	641963-3	350582-4	350759-5	—	—	—	—
	UL94V-0	In-Line	350777-1	350778-1	Pre-tin	350786-1	641964-1 1-641964-1 <sup>5</sup>	350787-1	350824-1	643412-1	350831-1	1-350942-0	643226-1
					Duplex <sup>1</sup>	350786-3	641964-3	350787-3	350824-4	643412-3	—	3-350942-0	—
3	UL94V-2	In-Line <sup>6</sup>	1-480700-0 794901-1 <sup>3</sup>	1-480701-0 794900-1 <sup>3</sup>	Pre-tin	350429-1	641965-1	350583-1	350760-4	643413-1	350987-4	—	—
					Duplex <sup>1</sup>	350429-4	—	350583-4	350760-5	—	—	—	—
4	UL94V-0	In-Line	350766-1	350767-1	Pre-tin	350789-1	641966-1 1-641966-1 <sup>4</sup>	350790-1	350825-1	643414-1	350832-1	1-350943-0	643228-1
					Duplex <sup>1</sup>	350789-3	—	350790-3	350825-4	643414-3	350832-4	3-350943-0	3-643228-0
	UL94V-2	In-Line	1-480702-0 794899-1 <sup>3</sup>	1-480703-0 794707-1 <sup>3</sup>	Pre-tin	350430-1	641967-1	350584-1	350761-4	643415-1	350988-4	1-350948-0	—
					Duplex <sup>1</sup>	350430-4	—	350584-4	350761-5	—	350988-5	—	—
5	UL94V-0	In-Line	350779-1	350780-1	Pre-tin	350792-1	641968-1	350793-1	350826-1	643416-1	350833-1	1-350944-0	643230-1
					Duplex <sup>1</sup>	350792-3	—	350793-3	350826-4	—	350833-4	3-350944-0	3-643230-0
6	UL94V-2	In-Line	1-480763-0	1-480764-0 <sup>3</sup> 794863-1 <sup>3</sup>	Pre-tin	640466-1	643405-1	—	640467-1	—	—	1-350949-0	—
					Duplex <sup>1</sup>	640466-3	—	—	640467-3	—	—	—	—
7	UL94V-0	In-Line	350809-1	350810-1	Pre-tin	640900-1	643406-1	—	640901-1	—	—	1-350945-0	643232-1
					Duplex <sup>1</sup>	640900-3	—	—	640901-3	—	3-350945-0	3-643232-0	
	UL94V-2	In-Line	640585-1	926307-1	Pre-tin	641832-1	643407-1	—	—	—	—	640587-1	—
					Duplex <sup>1</sup>	641832-3	—	—	—	—	—	—	—
8	UL94V-0	In-Line	640581-1	926307-3	Pre-tin	641831-1	643408-1	—	770262-1	—	—	640583-1	643234-1
					Duplex <sup>1</sup>	641831-3	—	—	770262-3	—	—	640583-3	3-643234-0
9	UL94V-2	Matrix <sup>6</sup>	1-480704-0 794535-1 <sup>3</sup> 794096-1 <sup>5</sup>	1-480705-0 794536-1 <sup>3</sup>	Pre-tin	350431-1	641969-1	350585-1	350762-4	643423-1	350989-4	—	—
					Duplex <sup>1</sup>	350431-4	—	350585-4	350762-5	—	350989-5	—	—
	UL94V-0	Matrix	350715-1	350781-1	Pre-tin	350711-1	641970-1	350732-1	350827-1	643424-1	350834-1	—	—
					Duplex <sup>1</sup>	350711-4	641970-3	350732-4	350827-4	643424-3	350834-4	—	—
10	UL94V-2	In-Line	640586-1	926308-1	Pre-tin	641825-1	—	770143-1	—	—	—	—	—
					Duplex <sup>1</sup>	—	—	—	—	—	—	—	—
11	UL94V-0	In-Line	640582-1	926308-3	Pre-tin	641828-1	643410-1	—	—	—	—	640584-1	643236-1
					Duplex <sup>1</sup>	—	643410-3	—	—	—	—	640584-3	3-643236-0
	UL94V-2	Matrix	1-480706-0 794537-1 <sup>3</sup>	1-480707-0 794538-1 <sup>3</sup>	Pre-tin	350432-1	641971-1	350586-1	350763-4	643425-1	350990-4	—	—
					Duplex <sup>1</sup>	350432-4	641971-3	350586-4	350763-5	—	350990-5	—	—
12	UL94V-0	Matrix	350720-1	350782-1	Pre-tin	350712-1	641972-1 1-641972-1 <sup>4</sup>	350742-1	350828-1	643426-1	350835-1	—	—
					Duplex <sup>1</sup>	350712-4	641972-3	350742-4	350828-4	643426-3	350835-4	—	—
13	UL94V-2	In-Line	926302-1	926309-1	Pre-tin	—	—	—	—	—	—	—	—
					Duplex <sup>1</sup>	—	—	—	—	—	—	—	—
14	UL94V-0	In-Line	926302-3	926309-3	Pre-tin	—	—	—	—	—	—	—	—
					Duplex <sup>1</sup>	—	—	—	—	—	—	—	—
15	UL94V-2	Matrix	1-480708-0 794851-1 <sup>3</sup>	1-480709-0 794727-1 <sup>3</sup>	Pre-tin	350433-1	641973-1	350587-1	350764-4	—	350991-4	—	—
					Duplex <sup>1</sup>	350433-4	—	350587-4	350764-5	—	350991-5	—	—
	UL94V-0	Matrix	350735-1	350783-1	Pre-tin	350713-1	641974-1 1-641974-1 <sup>4</sup>	350737-1	350829-1	643428-1	350836-1	—	—
					Duplex <sup>1</sup>	350713-4	641974-3	350737-4	350829-4	—	350836-4	—	—
16	UL94V-2 <sup>6</sup>	Matrix	1-480710-0 794546-1 <sup>3</sup>	1-480711-0 794545-1 <sup>3</sup>	Pre-tin	350434-1	641975-1	350588-1	350765-4	643429-1	350992-4	—	—
					Duplex <sup>1</sup>	350434-4	—	350588-4	350765-5	—	—	—	—
17	UL94V-0	Matrix	350736-1	350784-1	Pre-tin	350714-1	641976-1	350738-1	350830-1	643430-1	350837-1	—	—
					Duplex <sup>1</sup>	350714-4	641976-4	350738-4	350830-4	—	350837-4	—	—

<sup>1</sup>Duplex Finish — Plated with .000030 [.000762] min. gold in mating area, matte tin on solder tail end over .000050 [.00127] min. nickel underplate on entire contact.

<sup>2</sup>Universal MATE-N-LOK Plug and Cap housings accept pin or socket contacts. Use the appropriate contacts in the Plug housing as required by the mating component.

<sup>3</sup>Housing material has 125°C temperature rating.

<sup>4</sup>Black in color.

<sup>5</sup>Tool Removable

<sup>6</sup>UV Resistant housing material available.

<sup>7</sup>European glow wire housing material available.

**Note:** All part numbers are RoHS Compliant.

Dimensions are in inches and millimeters unless otherwise specified. Values in brackets are metric equivalents.

Dimensions are shown for reference purposes only. Specifications subject to change.

USA: 1-800-522-6752  
Canada: 1-905-470-4425  
Mexico: 01-800-733-8926  
C. America: 52-55-1106-0803

South America: 55-11-2103-6000  
Hong Kong: 852-2735-1628  
Japan: 81-44-844-8013  
UK: 44-8706-080-208

**Universal MATE-N-LOK Connectors** (Continued)

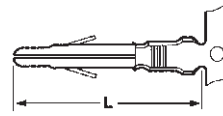
**Contacts**

Solid pin diameter .084 [2.13]  
Stock thickness .012 [.305] unless otherwise noted.  
These contacts can be used in either Universal MATE-N-LOK Plug or Cap housings **only**.

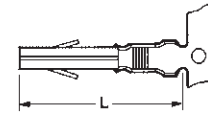
**Related Product Data**

**Product Specification**  
108-1031 Universal MATE-N-LOK Connectors  
**Application Specification**  
114-1010 Universal MATE-N-LOK Contacts

**Performance Characteristics**— pages 169-170  
**Technical Documents**— pages 169 and 205-206  
**Application Tooling**— pages 207-210  
**Housings**— page 174



Solid Pin



Socket

Wire Size Range AWG [mm <sup>2</sup> ]	Ins. Dia. Range	L Dim.		Material & Finish	Contact Part Numbers				HDM Applicator Part No.	Hand Tool Part No.
		Pin	Socket		Pin		Socket			
					Strip Form	Loose Piece	Strip Form	Loose Piece		
30-26 [.05-.12]	.032-.057 .813-1.45	.790 20.06	.760 19.30	Brass, Pre-tin	350924-1	770672-1	350925-1	770673-1	466616-2 <sup>6</sup> 466616-3 <sup>6</sup>	58439-1
				Phos. Brz., Gold <sup>2</sup>	350924-6	770672-6	350925-6	—		
24-18 [.2-.8]	.040-.100 1.02-2.54	.790 20.06	.760 19.30	Brass, Pre-tin	350561-1	350690-1	350851-1 350570-1 <sup>1</sup>	350689-1 <sup>1</sup>	466320-1 <sup>6</sup> 466320-2 <sup>6</sup> 466320-4 <sup>6</sup>	91510-1
				Brass, Gold <sup>2</sup>	350561-2	350690-2	350851-2	640347-2		
				Brass, Select Gold <sup>3</sup>	350561-7	350690-7	350570-2 <sup>1</sup>	350689-2 <sup>1</sup>		
				Phos. Brz., Pre-tin	350561-3	350690-3	350851-7	350689-7 <sup>1</sup>		
				Phos. Brz., Select Gold <sup>3</sup>	350561-3	350690-3	350570-7 <sup>1</sup>	350689-3 <sup>1</sup>		
				Phos. Brz., Select Gold <sup>3</sup>	—	—	350570-6 <sup>1</sup>	—		
20-14 [.5-2.0]	.060-.130 1.52-3.30	.790 20.06	.760 19.30	Brass, Pre-tin	350218-1	350547-1	350536-1	350550-1	687763-1 <sup>6</sup> 687763-2 <sup>6</sup> 687763-6 <sup>6</sup>	91500-1
				Brass, Gold <sup>2</sup>	350218-2	350547-2	350536-2	350550-2		
				Brass, Select Gold <sup>3</sup>	350218-7	350547-7	350536-7	350550-7		
				Phos. Brz., Pre-tin	350218-3	350547-3	350536-3	350550-3		
				Phos. Brz., Select Gold <sup>3</sup>	350218-6	350547-6	350536-6	350550-6		
20-14 [.5-2.0] or 2@18 [.8]	.130-.200 3.30-5.08	.810 20.57	.780 19.81	Brass, Pre-tin	350538-1	350552-1	350537-1	350551-1	687926-1 <sup>6</sup> 687926-2 <sup>6</sup> 687926-6 <sup>6</sup>	91508-17 91506-17
				Brass, Gold <sup>2</sup>	350538-2	350552-2	350537-2	350551-2		
				Brass, Select Gold <sup>3</sup>	350538-7	350552-7	350537-7	350551-7		
				Phos. Brz., Pre-tin	350538-3	350552-3	350537-3	350551-3		
18-14 <sup>4</sup> [.8-2.0]	.130-.200 3.30-5.08	.810 20.57	.780 19.81	Brass, Pre-tin	350873-1	—	350874-1	—	466588-1 <sup>6</sup> 466588-2 <sup>6</sup> 466588-3 <sup>6</sup>	91508-17 91506-17
				Phos. Brz., Pre-tin	350873-3	350918-3	350874-3	350919-3		
12-10 [3.0-5.0]	.200 max. <sup>5</sup> 5.08	.810 20.57	.780 19.81	Phos. Brz., Pre-tin	350922-3	640309-3	350923-3	640310-3	466597-1 <sup>6</sup> 466597-2 <sup>6</sup>	69710-17
				Phos. Brz., Select Gold <sup>3</sup>	350922-6	640309-6	350923-6	640310-6		

<sup>1</sup>Socket Contact — .010 [.254] stock thickness  
<sup>2</sup>Gold Finish — Plated with .000030 [.000762] min. gold in mating area and inside wire barrel over .000050 [.00127] min. nickel underplate on entire contact.  
<sup>3</sup>Select Gold Finish — Plated with .000030 [.000762] min. gold in mating area over .000050 [.00127] min. nickel underplate on entire contact.  
<sup>4</sup>Recommended for predominant use of 14 AWG wire.  
<sup>5</sup>There is no insulation barrel on this contact. Insulation maximum diameter is limited by the housing.  
<sup>6</sup>HDM Applicator part number ending in -1 is used on AMPOMATOR CLS Machine with T or G Terminators, -2 is used on AMP-O-LECTRIC Model K Machine, -3, -4 & -6 are used on AMP-O-LECTRIC Model G Machine. See pages 207-210 for further information.  
<sup>7</sup>Hand Tool No. **91508-1** is for wire size 20-18 AWG. Hand Tool No. **91506-1** is for wire size 16-14 AWG. Hand Tool No. **69710-1** use die set No. **58380-1** for 12 AWG and No. **58380-2** for 10 AWG.  
**Note:** Phosphor bronze material contacts should be used in high temperature/humidity cycling applications.  
**Note:** All part numbers are RoHS Compliant.



**Contact Retention Test Tool**  
Part No. 1586701-1  
IS 408-10003



**Contact Extraction Tool**  
Part No. 318851-1  
IS 408-4371



**Contact Insertion Tool**  
(For inserting contacts applied to small diameter wire)  
Part No. 91002-1  
IS 408-7347

Universal MATE-N-LOK Connectors  
.250 [6.35] Centerline  
Standard Density



## Universal MATE-N-LOK Connectors (Continued)

### Contacts

Split pin diameter .086 [2.18]  
Stock thickness .012 [.305]  
These contacts can be used in either Universal MATE-N-LOK Plug or Cap housings **only**.

### Related Product Data

#### Product Specification

108-1031 Universal MATE-N-LOK Connectors

#### Application Specification

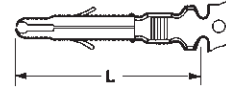
114-1010 Universal MATE-N-LOK Contacts

**Performance Characteristics**—  
pages 169-170

**Technical Documents**—pages 169  
and 205-206

**Application Tooling**—pages 207-210  
**Housings**—page 174

### Split Pins



Wire Size Range AWG [mm <sup>2</sup> ]	Ins. Dia. Range	L Dim.	Material & Finish	Contact Part Number		HDM Applicator Part No.	Hand Tool Part No.
				Strip Form	Loose Piece		
24-18 [.2-.8]	.040-.100 1.02-2.54	.790 20.06	Brass, Pre-tin	350699-1	350706-1	466320-1 <sup>3</sup> 466320-2 <sup>3</sup> 466320-4 <sup>3</sup>	91510-1
			Brass, Gold <sup>1</sup>	350699-2	350706-2		
			Brass, Select Gold <sup>2</sup>	350699-7	350706-7		
20-14 [.5-2.0]	.060-.130 1.52-3.30	.790 20.06	Brass, Pre-tin	350687-1	350705-1	687763-1 <sup>3</sup> 687763-2 <sup>3</sup> 687763-6 <sup>3</sup>	91500-1
			Brass, Gold <sup>1</sup>	350687-2	350705-2		
			Brass, Select Gold <sup>2</sup>	350687-7	350705-7		
20-14 [.5-2.0] or 2@18 [.8]	.130-.200 3.30-5.08	.810 20.57	Brass, Pre-tin	350700-1	350707-1	687926-1 <sup>3</sup> 687926-2 <sup>3</sup> 687926-6 <sup>3</sup>	91508-1 <sup>4</sup> 91506-1 <sup>4</sup>
			Brass, Gold <sup>1</sup>	350700-2	350707-2		
			Brass, Select Gold <sup>2</sup>	350700-7	350707-7		

<sup>1</sup>Gold Finish—Plated with .000030 [.000762] min. gold in mating area and inside wire barrel over .000050 [.00127] min. nickel underplate on entire contact.

<sup>2</sup>Select Gold Finish—Plated with .000030 [.000762] min. gold in mating area over .000050 [.00127] min. nickel underplate on entire contact.

<sup>3</sup>HDM Applicator part number ending in -1, is used on AMPOMATOR CLS Machine with T or G Terminators, -2 is used on AMP-O-LECTRIC Model K Machine, -4 & -6 are used on AMP-O-LECTRIC Model G Machine. See pages 207-210 for further information.

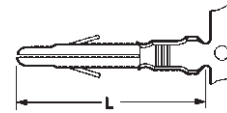
<sup>4</sup>Hand Tool No. **91508-1** for wire size 20-18 AWG. Hand Tool No. **91506-1** for wire size 16-14 AWG.

#### Notes:

- Split pins recommended for use in housings having 6, 9, 12 and 15 circuits to reduce mating force.
- Phosphor bronze material contacts are available for use in high temperature/humidity cycling applications, consult Tyco Electronics.

### Grounding Pins

(.100 [2.54] longer than standard pin)  
(Mate first, break last, not for interrupting current)



Wire Size Range AWG [mm <sup>2</sup> ]	Ins. Dia. Range	L Dim.	Material & Finish	Contact Part Number		HDM Applicator Part No.	Hand Tool Part No.
				Strip Form	Loose Piece		
24-18 [.2-.8]	.060-.130 1.52-3.30	.890 22.60	Brass, Pre-tin	770210-1	—	567216-2 <sup>2</sup> 567216-3 <sup>2</sup>	—
				350654-1	350669-1		
20-14 [.5-2.0]	.060-.130 1.52-3.30	.890 22.60	Brass, Pre-tin	350654-1	350669-1	687763-1 <sup>2</sup> 687763-2 <sup>2</sup> 687763-6 <sup>2</sup>	91500-1
				770234-3	—		
12-10 [3.0-5.0]	.200 max. <sup>1</sup> 5.08	.910 23.11	Phos. Brz., Pre-tin	770234-3	—	466597-1 <sup>2</sup> 466597-2 <sup>2</sup> 466597-3 <sup>2</sup>	—

<sup>1</sup>There is no insulation barrel on this contact. Insulation maximum diameter is limited by the housing.

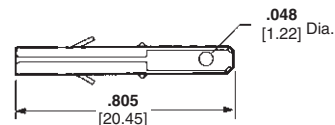
<sup>2</sup>HDM Applicator part number ending in -1 is used on AMPOMATOR CLS Machine with T or G Terminators, -2 is used on AMP-O-LECTRIC Model K Machine, -3 & -6 are used on AMP-O-LECTRIC Model G Machine. See pages 207-210 for further information.

### Programmable Connector Contact

(Socket with 110 Series Special FASTON Tab)

#### Material and Finish

Brass, pre-tin



**Part Number**  
**350877-1**

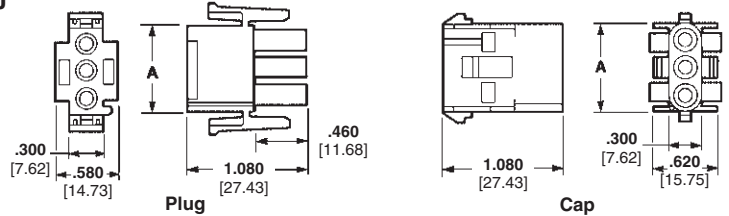
**Note:** This contact will accept a 110 Series FASTON Receptacle—Part No. **350871-1** (strip form) allowing simple field wiring or wiring changes.

**Note:** All part numbers are RoHS Compliant.

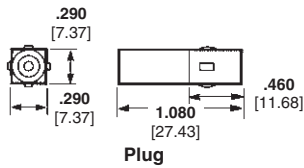
**Universal MATE-N-LOK Connectors** (Continued)

**Housings**  
**Free-Hanging or Panel Mount**  
.250 [6.35] Centerline spacing

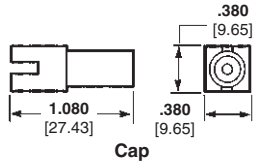
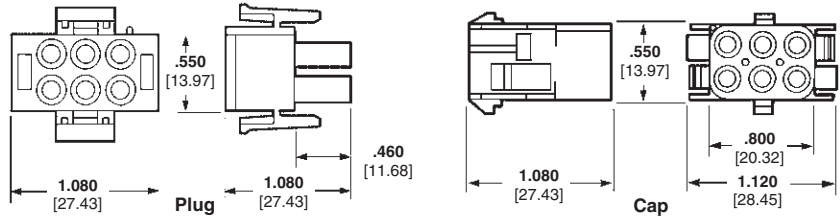
**2, 3, 4, 5, 6, 8 and 10  
Circuit, In-Line**



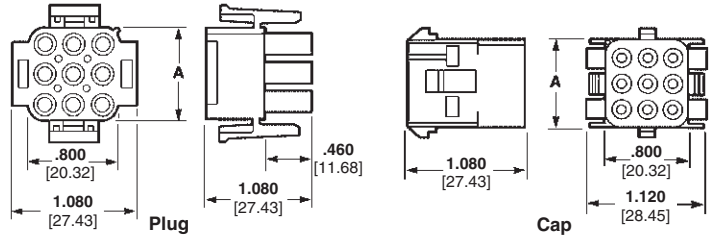
**1 Circuit, Free-Hanging**



**6 Circuit, Matrix**



**9, 12 and 15 Circuit,  
Matrix**



**Related Product Data**

- Product Specification**  
108-1031 Universal MATE-N-LOK Connectors
- Performance Characteristics**—  
pages 169-170
- Contacts**—pages 172-173
- Panel Cutout**
- Recommendations**—page 175
- Keying Plug**—page 175
- Strain Reliefs**—pages 175-176
- Technical Documents**—pages 169 and 205-206
- Mating Headers**—pages 182-183 and 185
- Other Mating Connectors**  
Universal MATE-N-LOK II Housings—  
pages 193-194

**Note:** See charts on page 182 to order Plug and Cap Housings in colors.

Number of Circuits	A Dim.	Housing Part Numbers			
		UL94V-2 Nylon, Natural Color <sup>2</sup>		UL94V-0 Nylon <sup>3</sup>	
		Plug	Cap	Plug	Cap
1	—	1-350867-0	770421-1	350865-1	350866-1
2	.550 13.97	1-480698-0 <sup>1</sup>	1-480699-0 <sup>1</sup>	350777-1 <sup>1</sup>	350778-1 <sup>1</sup>
3	.800 20.32	1-480700-0 <sup>1</sup>	1-480701-0 <sup>1</sup>	350766-1 <sup>1</sup>	350767-1 <sup>1</sup>
4	1.050 26.67	1-480702-0 <sup>1</sup>	1-480703-0 <sup>1</sup>	350779-1 <sup>1</sup>	350780-1 <sup>1</sup>
5	1.300 33.02	1-480763-0 <sup>1</sup>	1-480764-0 <sup>1</sup>	350809-1 <sup>1</sup>	350810-1 <sup>1</sup>
6	1.550 39.37	640585-1 <sup>1</sup>	926307-1 <sup>1</sup>	640581-1 <sup>1</sup>	926307-3 <sup>1</sup>
		1-480704-0 794096-1 <sup>4</sup>	1-480705-0	350715-1	350781-1
8	2.050 52.07	640586-1 <sup>1</sup>	926308-1 <sup>1</sup>	640582-1 <sup>1</sup>	926308-3 <sup>1</sup>
9	.800 20.32	1-480706-0	1-480707-0	350720-1	350782-1
10	2.550 64.77	926302-1 <sup>1</sup>	926309-1 <sup>1</sup>	926302-3 <sup>1</sup>	926309-3 <sup>1</sup>
12	1.050 26.67	1-480708-0	1-480709-0	350735-1	350783-1
15	1.300 33.02	1-480710-0	1-480711-0	350736-1	350784-1

<sup>1</sup>In-Line style.  
<sup>2</sup>Housing material has 125°C temperature rating.  
<sup>3</sup>Housing material has 120°C temperature rating.  
<sup>4</sup>Tool Removable.

**Note:** All part numbers are RoHS Compliant.

Standard Density

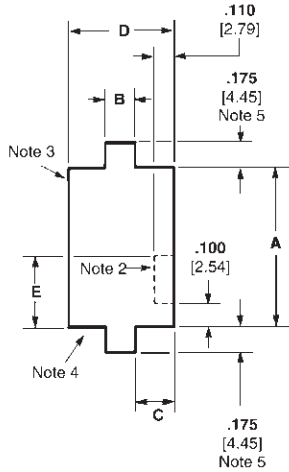
Universal MATE-N-LOK Connectors  
.250 [6.35] Centerline

**Universal MATE-N-LOK Connectors** (Continued)

**Recommended  
Cap Housing  
Panel Cutouts**

View is from cap entry side

Refer to Application Specification  
114-1010



Style	Number of Circuits	Dimensions					
		A	B	C	D	E	
In-Line	2	.565 14.35	.340 8.64	.095 2.41	.530 13.46	.250 6.35	
	3	.815 20.70	.340 8.64	.095 2.41	.530 13.46	.250 6.35	
	4	1.065 27.05	.340 8.64	.095 2.41	.530 13.46	.250 6.35	
	5	1.315 33.40	.340 8.64	.095 2.41	.530 13.46	.250 6.35	
	6	1.567 39.80	.154 3.91	.189 4.80	.531 13.49	.394 10.0	
	8	2.067 52.50	.154 3.91	.189 4.80	.531 13.49	.394 10.0	
	10	2.567 65.20	.154 3.91	.189 4.80	.530 13.46	.394 10.0	
	Matrix	6	.565 14.35	.480 12.19	.275 6.99	1.030 26.16	.250 6.35
		9	.815 20.70	.480 12.19	.275 6.99	1.030 26.16	.250 6.35
		12	1.065 27.05	.480 12.19	.275 6.99	1.030 26.16	.350 8.89
15		1.315 33.40	.480 12.19	.275 6.99	1.030 26.16	.350 8.89	

**Notes:**

1. Recommended panel thickness — .030-.090 [.762-2.286]. Panel must be punched so that housing enters panel in same direction as the punch.
2. Optional — Do not remove this material when keying cap housing to panel.
3. Circuit #1 location when using panel keying with 6, 9, 12 and 15 circuit Matrix housings.
4. Circuit #1 location when using panel keying with 2, 3, 4, 5, 6, 8 and 10 circuit In-Line housings.
5. .175 [4.45] dimension is .125 [3.18] for 6, 8 and 10 circuit In-Line housings.

**Keying Plugs**

IS 408-3320



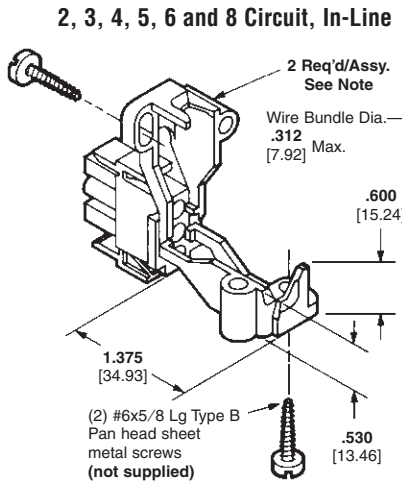
**Part Numbers**

UL94V-2 Nylon material, natural color — 1-640415-1  
UL94V-0 Nylon material — 1-640415-0

**Note:** Keying plug snaps into plug or cap housing

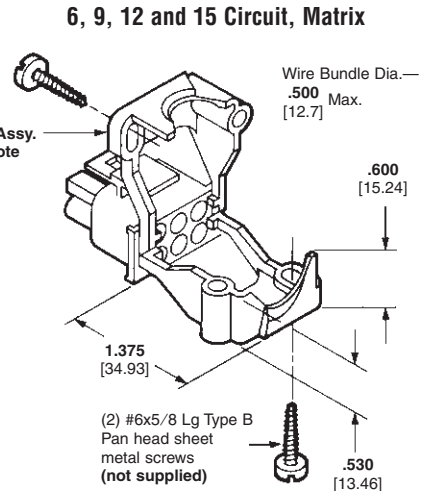
**Plug Housing  
Strain Reliefs**

IS 408-3320



**Part Numbers**

UL94V-2 Nylon material, natural color — 1-350589-0  
UL94V-0 Nylon material — 350811-1



**Part Numbers**

UL94V-2 Nylon material, natural color — 1-350590-0  
UL94V-0 Nylon material — 350812-1

**Note:** Strain relief part number represents one half of a strain relief. Two strain reliefs required per housing.

**Note:** All part numbers are RoHS Compliant.

**Related Product Data**

Plug Housings—page 174  
Technical Documents—pages 169  
and 205-206



**Universal MATE-N-LOK Connectors** (Continued)

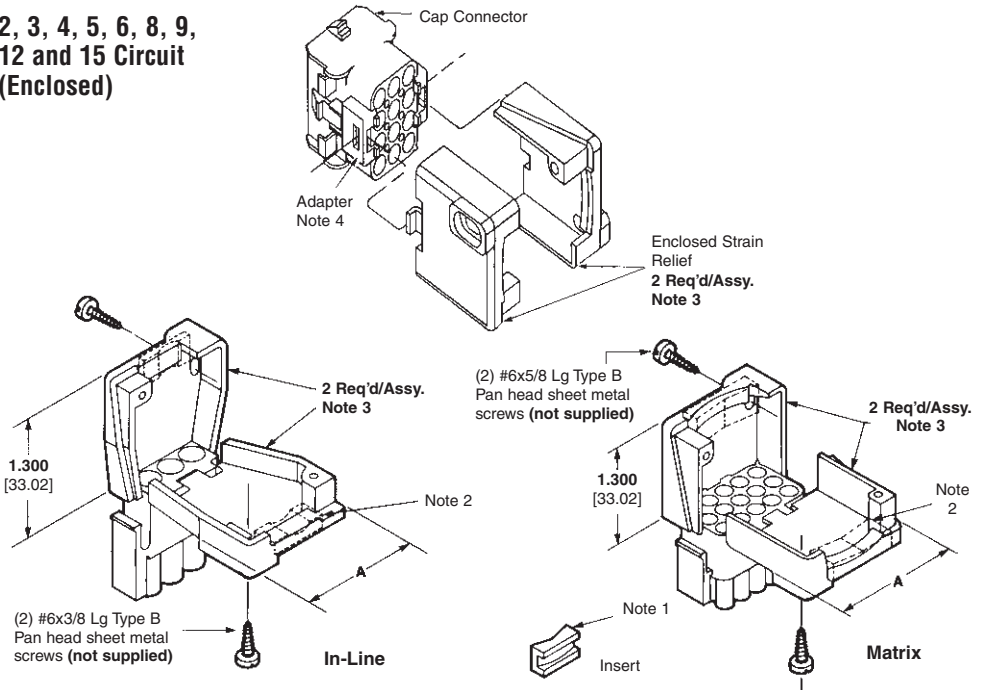
**Plug or Cap Housing Strain Reliefs**

IS 408-3320

**Related Product Data**

Housings—page 174  
Technical Documents—pages 169 and 205-206

**2, 3, 4, 5, 6, 8, 9, 12 and 15 Circuit (Enclosed)**

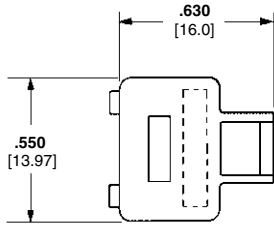


**Cap Housing Adapters**

These adapters are designed to anchor the cap housing strain reliefs to the housings and prevent the strain relief halves from "drawing in" when the screws are being torqued down to clamp the cable.

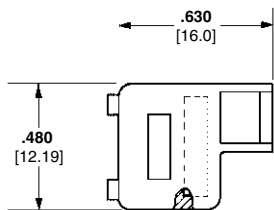
IS 408-3320

**For All Positions Except 2, 6 and 8 Circuit Cap Housings**



UL94V-2 Nylon material, natural color—641777-1  
UL94V-0 Nylon material—641778-1

**For 2 In-Line and 6 Matrix Circuit Cap Housings Only**



UL94V-2 Nylon material, natural color—643182-1  
UL94V-0 Nylon material—643182-2

Style	Number of Circuits	A Dim.	Insert Supplied	Single Wire Dia. Range	Wire Bundle Dia. Range	Part Numbers	
						UL94V-2 Nylon, Natural Color	UL94V-0 Nylon
In-Line	2	.960 24.38	Yes	.040-.190 1.02-4.83	—	1-640719-0	640713-1
			No	—	.200-.350 5.08-8.89	1-640719-1	640713-2
	3	1.140 28.96	Yes	.040-.190 1.02-4.83	—	1-640720-0	640714-1
			No	—	.200-.350 5.08-8.89	641763-1	641945-1
	4	1.325 33.65	Yes	.040-.190 1.02-4.83	—	641775-1	641776-1
			No	—	.200-.350 5.08-8.89	641775-2	641776-2
	5	1.530 38.86	Yes	.040-.190 1.02-4.83	—	643030-3	643030-1
			No	—	.200-.350 5.08-8.89	643030-2	643030-4
	6 Note 5	1.780 45.21	Yes	.040-.190 1.02-4.83	—	643585-1	643313-1
			No	—	.200-.350 5.08-8.89	643585-2	643313-2
	8 Note 5	2.280 56.08	Yes	.040-.190 1.02-4.83	—	—	643314-1
			No	—	.200-.350 5.08-8.89	—	643314-2
Matrix	6	1.030 26.16	Yes	—	.120-.650 3.05-16.51	1-640721-0	640715-1
	9	1.030 26.16	Yes	—	.120-.650 3.05-16.51	1-640722-0	640716-1
	12	1.280 32.51	Yes	—	.150-.750 3.81-19.05	1-640723-0	640717-1
	15	1.530 38.86	Yes	—	.200-.850 5.08-21.59	1-640724-0	640718-1
			No	—	—	—	—

**Notes:**

1. Cable clamping insert comes attached to strain relief. It can be used to provide additional adjustment for small wire bundles or discarded.
2. Insert to be positioned as shown by dotted lines.
3. Strain relief part number represents one-half of a strain relief. Two strain reliefs required per housing.
4. Must use cap housing adapters when attaching strain reliefs to a cap housing. Two adapters required per housing.
5. Strain reliefs for 6 and 8 circuit In-Line fits plug housings only.

**Note:** All part numbers are RoHS Compliant.

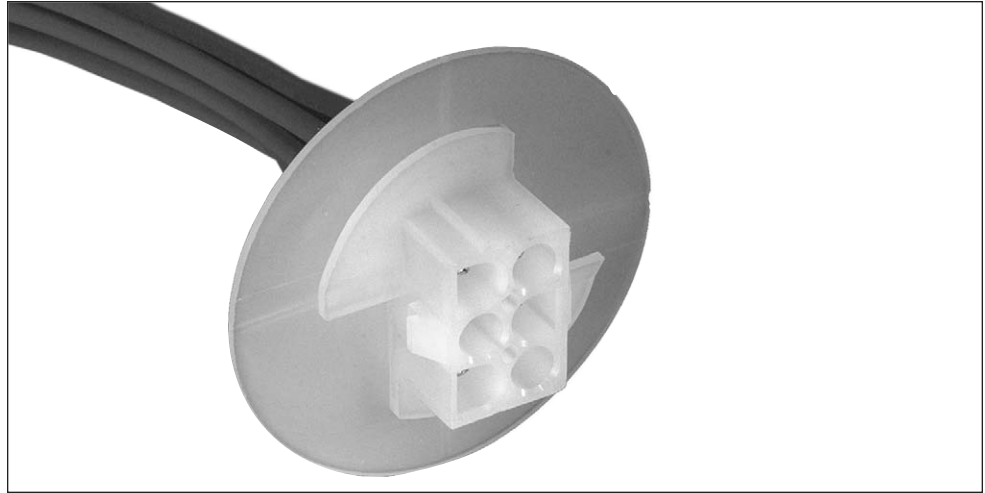
Standard Density

Universal MATE-N-LOK Connectors  
.250 [6.35] Centerline

## Universal MATE-N-LOK Flanged Cap Housings with Twist and Lock Feature

### Product Facts

- Available in a 6, 9, and 12 circuit design
- Designed for household appliances where a bulkhead connector system is needed in conjunction with foam-in insulation
- Mates with standard Universal MATE-N-LOK plug housings (page 174)
- Accepts Universal MATE-N-LOK pin and socket contacts (page 167)
- Designed to utilize the Splash Proof/Sealed Universal MATE-N-LOK seals for additional sealing protection (pages 174-175)



### Material and Finish

**Housing**—Nylon, UL 94V-0 or UL 94V-2 rated

**Contacts**—Phosphor Bronze or Brass

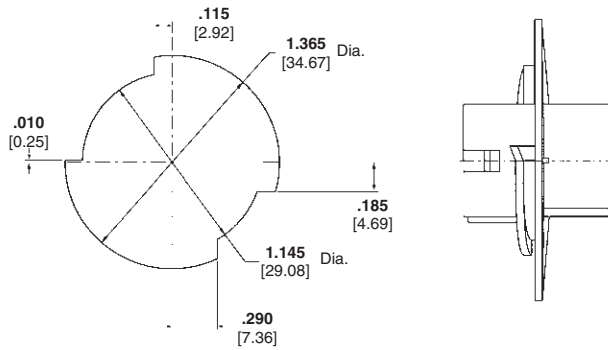
**Plating**—Pre-tin or Gold

### Related Product Data

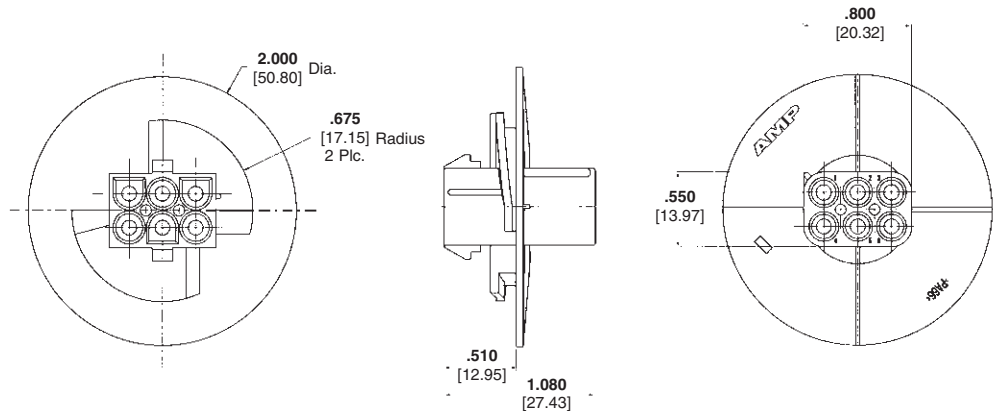
**Contacts**—pages 172-173

**Plug Housings**—page 174

**Seals**—page 180



Recommended Panel Cutout  
(for 6 and 9 Pos. Housings)



### Notes:

1. Recommended Panel Thickness: 0.76-2.29 [.030-.090]
2. Panel must be punched so that the housing enters the panel in the same direction as the punch.
3. Asymmetrical panel cutout provides polarization for Pin 1 location.

Number of Circuits	Cap Housing Part Numbers	
	UL 94V-0	UL 94V-2
6	794760-1	794714-1
9	794761-1	794715-1
12	794762-1	794716-1

**Note:** All part numbers are RoHS Compliant.

Dimensions are in inches and millimeters unless otherwise specified. Values in brackets are metric equivalents.

Dimensions are shown for reference purposes only. Specifications subject to change.

USA: 1-800-522-6752  
Canada: 1-905-470-4425  
Mexico: 01-800-733-8926  
C. America: 52-55-1106-0803

South America: 55-11-2103-6000  
Hong Kong: 852-2735-1628  
Japan: 81-44-844-8013  
UK: 44-8706-080-208

## Universal MATE-N-LOK Sealed Bulkhead Connectors

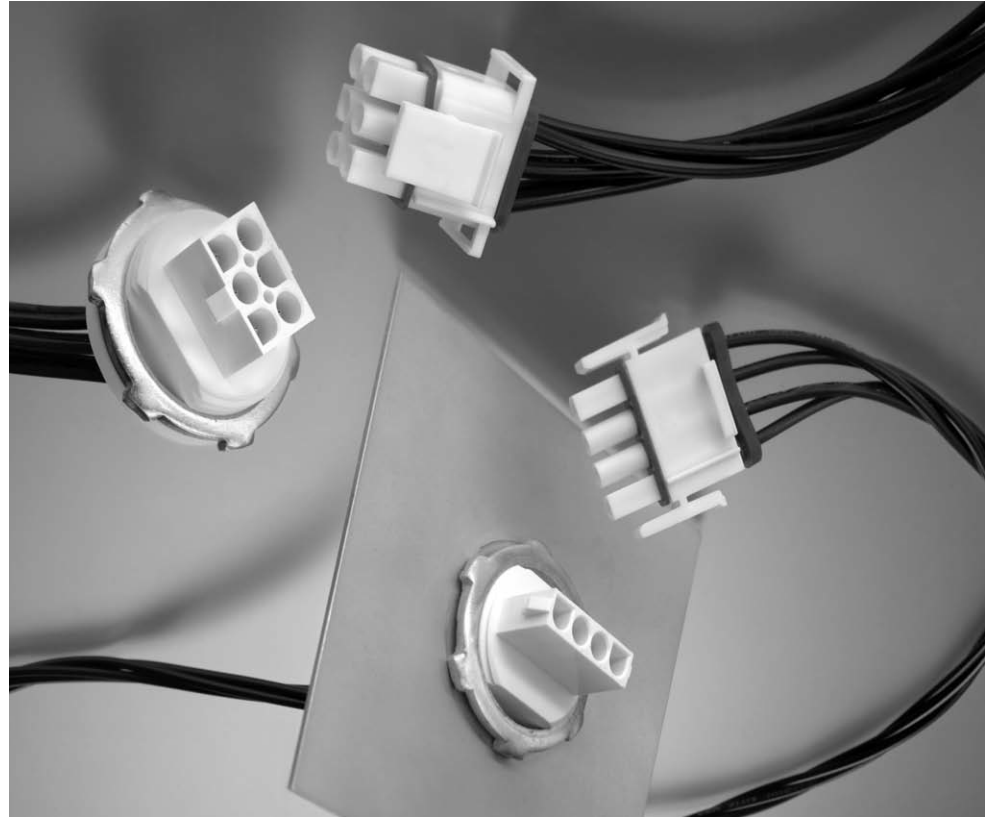
### Product Facts

- Bulkhead mount Universal MATE-N-LOK connector that facilitates sealed panel mounting and works with existing Universal MATE-N-LOK seals to provide a fully-sealed interconnection system
- Available in 4, 6, 9 and 12 positions
- Sealed, flange mount design
- Mates to standard Universal MATE-N-LOK plug housings
- Accepts standard Universal MATE-N-LOK contacts
- Works with standard Universal MATE-N-LOK connector interface and wire seals
- Anti-rotation feature aids installation
- Rear mount flange design enables use in wire harnesses
- Pins and sockets can be intermixed in the same housing
- UL Recognized, File No. E28476
- CSA Certified, File No. 1030930



### Applications

- Vending Machines
- Industrial Machinery
- Lighting
- HVAC Equipment



### Performance Characteristics

**Dielectric Withstanding Voltage**—5.0 KVAC or 5.0 KVDC between adjacent circuits

**Insulation Resistance**—1000 megohms minimum initial between adjacent circuits

**Voltage Rating**—600 V AC or DC

**Durability**—50 cycles, mating and unmating

### Technical Documents

**Product Specification**  
108-1031 Universal MATE-N-LOK Connectors

**Application Specification**  
114-1010 Universal MATE-N-LOK Contacts

**Instruction Sheet**  
408-10017 Universal MATE-N-LOK Bulkhead Connectors

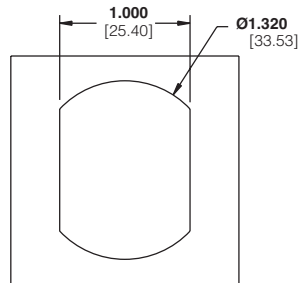
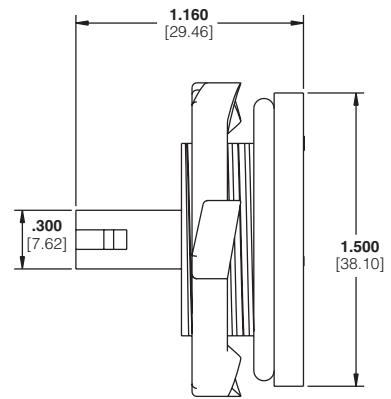
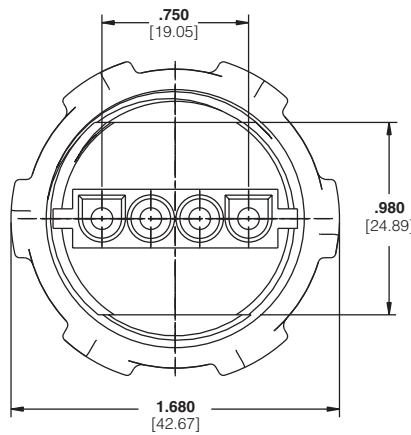
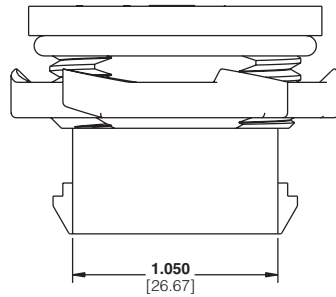
**Universal MATE-N-LOK Sealed Bulkhead Connectors** (Continued)

**Connector Housings**

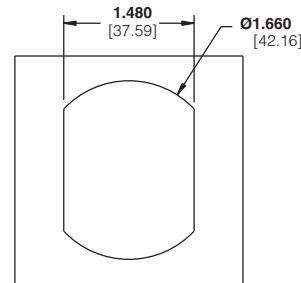
**Material and Finish**

- Housing**—Nylon, UL 94V-0 rated
- Contacts**—Brass with pre-tin or gold plating
- O-ring Seal**—Neoprene
- Locking Nut**—Steel, zinc plated

**4 Position Connector Housing (shown)**



Recommended  
Panel Cut-Out for 4, 6 & 9 Position Product Only



Recommended  
Panel Cut-Out for 12 Position Product Only

No. of Pos.	Style	Housing Part Number
4	In Line	1604256-1
6	Matrix	1604210-1
9	Matrix	1604254-1
12	Matrix	1604941-1

**Note:** All part numbers are RoHS Compliant.

Standard Density

Universal MATE-N-LOK Sealed Bulkhead Connectors  
.250 [6.35] Centerline

## Universal MATE-N-LOK Sealed Connectors

### Splash Proof Seals

#### Product Facts

- Economical splash proof/immersion sealed connector system
- No design changes to existing Universal MATE-N-LOK product
- Existing applications utilizing Universal MATE-N-LOK connectors can be upgraded to a splash proof system
- Utilizes two wire seals and one interface seal
- Wire range is 20-14 AWG [.5-2.0] with insulation diameter range .060-.130 [1.52-3.30]
- .110-.130 [2.79-3.30] insulation diameter passed European IP sealing level 5/6 + 7 (swirling dust/immersion to 1 meter for 30 minutes)
- .060-.110 [1.52-2.79] insulation diameter passed European IP sealing level 5/5 + 7 (swirling dust/heavy seas)
- Universal MATE-N-LOK II keying plug can be used to seal unused circuits
- Primary application is for wire-to-wire; wire-to-board application must use a closed bottom header

#### Material

Silicone rubber, blue color

#### Technical Documents

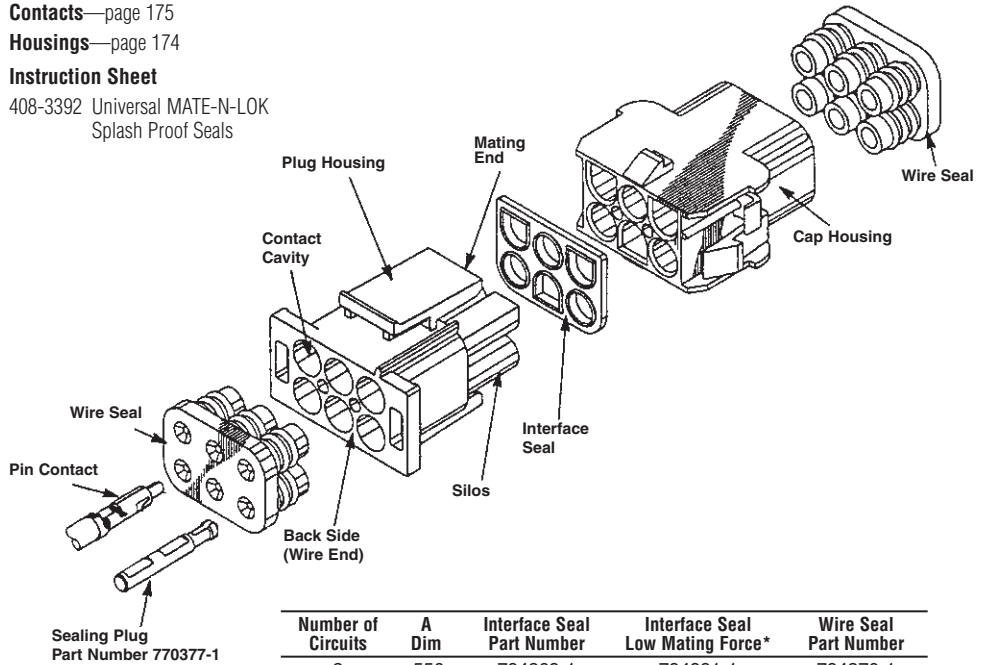
**Product Specification**  
108-1031-1 Splash Proof Seal, Universal MATE-N-LOK Connectors

**Contacts**—page 175

**Housings**—page 174

**Instruction Sheet**  
408-3392 Universal MATE-N-LOK Splash Proof Seals

**Note:** For proper use of this product, customer should make sure that Instruction Sheet 408-3392 is available for review.



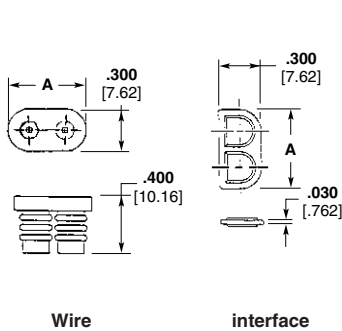
Number of Circuits	A Dim	Interface Seal Part Number	Interface Seal Low Mating Force*	Wire Seal Part Number
2	.550	794269-1	794991-1	794270-1
3	.800	794271-1	794992-1	794272-1
4	1.050	794273-1	—	794274-1
6	—	794275-1	794993-1	794276-1
9	.800	794277-1	794994-1	794278-1
12	1.050	794279-1	—	794280-1
15	1.300	794281-1	—	794282-1

**Note:** One interface seal and two wire seals required per mated assembly.  
\*Low mating force interface seals do not meet IP 5/6 IP 5/7 requirements.

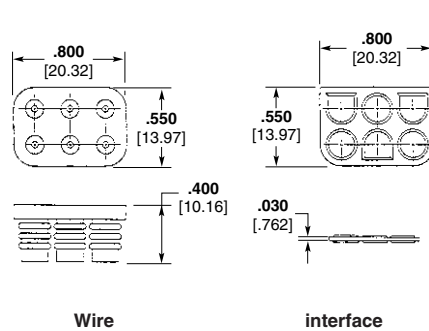
**Note:** All part numbers are RoHS Compliant.

Standard Density

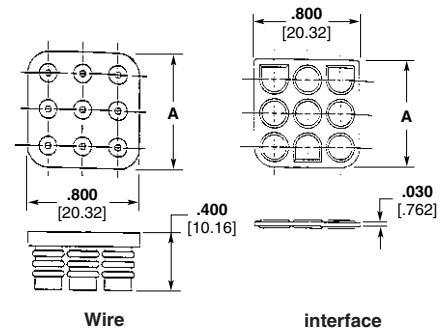
2, 3, 4 Circuit, In-Line



6 Circuit, Matrix



9, 12, and 15 Circuit, Matrix

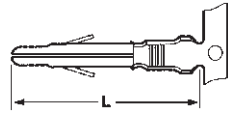


Universal MATE-N-LOK Sealed Connectors  
.250 [6.35] Centerline

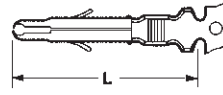
**Universal MATE-N-LOK Sealed Connectors** (Continued)

**Contacts (used with Splash Proof Seals)**

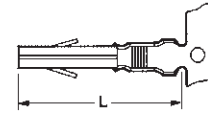
Solid pin diameter .084 [2.13]  
Split pin diameter .086 [2.18]  
Stock thickness .012 [.305] unless otherwise noted.  
These contacts can be used in either Universal MATE-N-LOK Plug or Cap housings **only**.



**Solid Pin**



**Split Pin**



**Socket**

**Related Product Data**

**Product Specification**

108-1031 Universal MATE-N-LOK Connectors

**Application Specification**

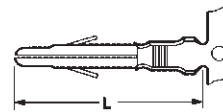
114-1010 Universal MATE-N-LOK Contacts

**Performance Characteristics**— pages 169-170

**Technical Documents**— pages 169 and 205-206

**Application Tooling**— pages 207-210

**Housings**— page 174



**Grounding Pin**

(100 [2.54] longer than standard pin)  
(Mate first, break last, not for interrupting current)

Wire Size Range AWG [mm <sup>2</sup> ]	Ins. Dia. Range	L Dim.		Material & Finish	Style	Contact Part Numbers				HDM Applicator Part No.	Hand Tool Part No.	
		Pin	Socket			Pin		Socket				
						Strip Form	Loose Piece	Strip Form	Loose Piece			
20-14 [.5-2.0]	.060-.130 [1.52-3.30]	.790 20.06	.760 19.30	Brass, Pre-tin	Solid	350218-1	350547-1	350536-1	350550-1	687763-1 <sup>3</sup> 687763-2 <sup>3</sup> 687763-6 <sup>3</sup>	91500-1	
				Brass, Gold <sup>1</sup>		350218-2	350547-2	350536-2	350550-2			
				Brass, Select Gold <sup>2</sup>		350218-7	350547-7	350536-7	350550-7			
				Phos. Brz., Pre-tin		350218-3	350547-3	350536-3	350550-3			
				Phos. Brz., Select Gold <sup>2</sup>		350218-6	350547-6	350536-6	350550-6			
		.890 22.60	—	Brass, Pre-Tin	Grounding	Brass, Pre-tin	350687-1	350705-1	—			—
						Brass, Gold <sup>1</sup>	350687-2	350705-2	—			—
						Brass, Select Gold <sup>2</sup>	350687-7	350705-7	—			—
						—	350654-1	350669-1	—			—
						—	350654-1	350669-1	—			—

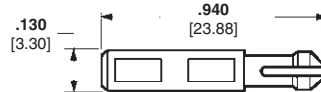
<sup>1</sup>Gold Finish—Plated with .000030 [.000762] min. gold in mating area and inside wire barrel over .000050 [.00127] min. nickel underplate on entire contact.  
<sup>2</sup>Select Gold Finish—Plated with .000030 [.000762] min. gold in mating area over .000050 [.00127] min. nickel underplate on entire contact.  
<sup>3</sup>HDM Applicator part number ending in -1, is used on AMPOMATOR CLS Machine with T or G Terminators, -2 is used on AMP-O-LECTRIC Model K Machine, -4 & -6 are used on AMP-O-LECTRIC Model G Machine. See pages 207-210 for further information.

**Notes:**

1. Split pins recommended for use in housings having 6, 9, 12 and 15 circuits to reduce mating force.
2. Phosphor bronze material contacts are available for use in high temperature/humidity cycling applications, consult Tyco Electronics.
3. 18-24 AWG contacts (page 166) can be used with splash proof seals if insulation diameter range is .060-.100 [1.52-2.54].

**Universal MATE-N-LOK II Keying Plug/Splash Proof Sealing Plug**

IS 408-3392



**Part Number**  
UL94V-0 Nylon material— 770377-1

**Related Product Data**

**Housings**— page 174  
**Technical Documents**— pages 169 and 205-206



**Seal Latch Tool**  
Part No. 794381-1  
IS 408-3392



**Contact Extraction Tool**  
Part No. 318851-1  
IS 408-4371



**Contact Insertion Tool (For inserting contacts applied to small diameter wire)**  
Part No. 91002-1  
IS 408-7347

**Note:** All part numbers are RoHS Compliant.

Dimensions are in inches and millimeters unless otherwise specified. Values in brackets are metric equivalents.

Dimensions are shown for reference purposes only. Specifications subject to change.

USA: 1-800-522-6752  
Canada: 1-905-470-4425  
Mexico: 01-800-733-8926  
C. America: 52-55-1106-0803

South America: 55-11-2103-6000  
Hong Kong: 852-2735-1628  
Japan: 81-44-844-8013  
UK: 44-8706-080-208



## Universal MATE-N-LOK Connectors

### PC Board Vertical Pin Headers

.250 [6.35] Centerline spacing

#### Material

##### Housing—

UL94V-2 Nylon, natural color  
UL94V-0 Nylon

##### Contacts—Phosphor bronze

Solder tail diameter .062 [1.57]

### Related Product Data

#### Product Specification

108-1053 Universal MATE-N-LOK  
PC Board Headers

#### Performance Characteristics—

pages 169-170

#### Recommended PC Board Hole Layout—page 184

Technical Documents—pages 169  
and 205-206

### Mating Connectors

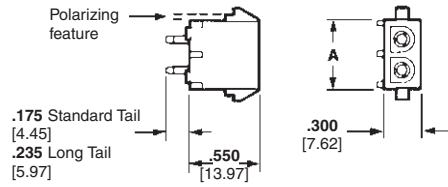
#### Universal MATE-N-LOK

Plug Housings—page 174

#### Universal MATE-N-LOK II

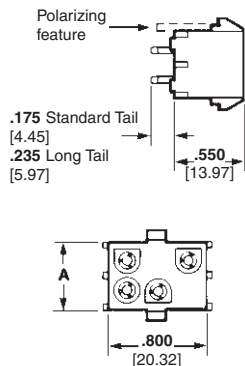
Plug Housings—pages 193-194

### 2, 3, 4, 5, 6 and 8 Circuit, In-Line



Number of Circuits	A Dim.	Flammability Rating	Pin Finish	Pin Header Part Numbers			Mates with Plug Housing Part Number (Using Socket Contacts)	
				Standard Tail <sup>2</sup>	Standard Tail Polarized <sup>2</sup>	Long Tail <sup>3</sup>	Universal MATE-N-LOK	Universal MATE-N-LOK II
2	.550 13.97	UL94V-2	Pre-tin	350428-1	641963-1	350582-1	1-480698-0	—
			Duplex <sup>1</sup>	350428-4	641963-3	350582-4		
		UL94V-0	Pre-tin	350786-1	641964-1	350787-1	350777-1	770017-1
			Duplex <sup>1</sup>	350786-3	641964-3	350787-3		
3	.800 20.32	UL94V-2	Pre-tin	350429-1	641965-1	350583-1	1-480700-0	—
			Duplex <sup>1</sup>	350429-4	—	350583-4		
		UL94V-0	Pre-tin	350789-1	641966-1	350790-1	350766-1	770018-1
			Duplex <sup>1</sup>	350789-3	—	350790-3		
4	1.050 26.67	UL94V-2	Pre-tin	350430-1	641967-1	350584-1	1-480702-0	—
			Duplex <sup>1</sup>	350430-4	—	350584-4		
		UL94V-0	Pre-tin	350792-1	641968-1	350793-1	350779-1	770019-1
			Duplex <sup>1</sup>	350792-3	—	350793-3		
5	1.300 33.02	UL94V-2	Pre-tin	640466-1	643405-1	—	1-480763-0	—
			Duplex <sup>1</sup>	640466-3	—	—		
		UL94V-0	Pre-tin	640900-1	643406-1	—	350809-1	770016-1
			Duplex <sup>1</sup>	640900-3	—	—		
6	1.550 39.37	UL94V-2	Pre-tin	641832-1	643407-1	—	640585-1	—
		UL94V-0	Pre-tin	641831-1	643408-1	—	640581-1	—
8	2.050 52.07	UL94V-2	Pre-tin	641825-1	—	770143-1	640586-1	—
			UL94V-0	Pre-tin	641828-1	643410-1	770272-1	640582-1
		UL94V-0	Duplex <sup>1</sup>	—	643410-3	770272-3	—	—

### 6, 9, 12 and 15 Circuit, Matrix



Number of Circuits	A Dim.	Flammability Rating	Pin Finish	Pin Header Part Numbers			Mates with Plug Housing Part Number (Using Socket Contacts)	
				Standard Tail <sup>2</sup>	Standard Tail Polarized <sup>2</sup>	Long Tail <sup>3</sup>	Universal MATE-N-LOK	Universal MATE-N-LOK II
6	.550 13.97	UL94V-2	Pre-tin	350431-1	641969-1	350585-1	1-480704-0	—
			Duplex <sup>1</sup>	350431-4	—	350585-4		
		UL94V-0	Pre-tin	350711-1	641970-1	350732-1	350715-1	770020-1
			Duplex <sup>1</sup>	350711-4	641970-3	350732-4		
9	.800 20.32	UL94V-2	Pre-tin	350432-1	641971-1	350586-1	1-480706-0	—
			Duplex <sup>1</sup>	350432-4	641971-3	350586-4		
		UL94V-0	Pre-tin	350712-1	641972-1	350742-1	350720-1	770021-1
			Duplex <sup>1</sup>	350712-4	641972-3	350742-4		
12	1.050 26.67	UL94V-2	Pre-tin	350433-1	641973-1	350587-1	1-480708-0	—
			Duplex <sup>1</sup>	350433-4	—	350587-4		
		UL94V-0	Pre-tin	350713-1	641974-1	350737-1	350735-1	770022-1
			Duplex <sup>1</sup>	350713-4	641974-3	350737-4		
15	1.300 33.02	UL94V-2	Pre-tin	350434-1	641975-1	350588-1	1-480710-0	—
			Duplex <sup>1</sup>	350434-4	—	350588-4		
		UL94V-0	Pre-tin	350714-1	641976-1	350738-1	350736-1	770023-1
			Duplex <sup>1</sup>	350714-4	641976-4	350738-4		

**Note:** Header Housings on pages 182-185 are available in **colors** listed on page 188. Call Technical Support for exact Part Numbers.

<sup>1</sup>Duplex Finish—Plated with .000030 [.000762] min. gold in mating area, matte tin on solder tail end over .000050 [.00127] min. nickel underplate on entire contact.

<sup>2</sup>Use Standard Tail for .062 [1.57] thick PC Board. <sup>3</sup>Use Long Tail for .125 [3.18] thick PC Board.

<sup>4</sup>Black in color. <sup>5</sup>No drain holes, used w/ seals, page 180. **Note: All part numbers are RoHS Compliant.**

Standard Density

Universal MATE-N-LOK Connectors  
.250 [6.35] Centerline

**Universal MATE-N-LOK Connectors** (Continued)

**PC Board Vertical  
Socket Headers**

.250 [6.35] Centerline spacing

**Material**

**Housing**—

UL94V-2 Nylon, natural color  
UL94V-0 Nylon

**Contacts**—Phosphor bronze

Solder tail diameter .062 [1.57]

**Related Product Data**

**Product Specification**

108-1053 Universal MATE-N-LOK  
PC Board Headers

**Performance Characteristics**—  
pages 169-170

**Recommended PC Board Hole  
Layout**—page 184

**Technical Documents**—pages 169  
and 205-206

**Mating Connectors**

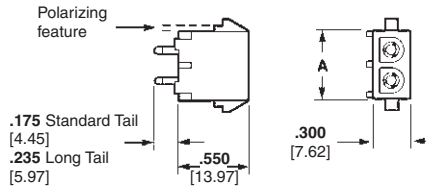
**Universal MATE-N-LOK**

Plug Housings—page 174

**Universal MATE-N-LOK II**

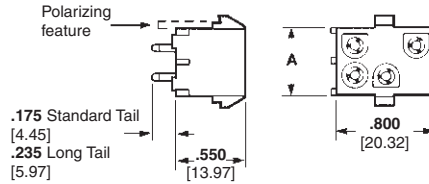
Plug Housings—pages 193-194

**2, 3, 4, 5, and 6  
Circuit, In-Line**



Number of Circuits	A Dim.	Flammability Rating	Socket Finish	Socket Header Part Numbers			Mates with Plug Housing Part Number (Using Pin Contacts)	
				Standard Tail <sup>2</sup>	Standard Tail Polarized <sup>2</sup>	Long Tail <sup>3</sup>	Universal MATE-N-LOK	Universal MATE-N-LOK II
				2	.550 13.97	UL94V-2	Pre-tin	350759-4
			Duplex <sup>1</sup>	350759-5	—	—	—	—
		UL94V-0	Pre-tin	350824-1	643412-1	350831-1	350777-1	770017-1
			Duplex <sup>1</sup>	350824-4	643412-3	—	—	—
3	.800 20.32	UL94V-2	Pre-tin	350760-4	643413-1	350987-4	1-480700-0	—
			Duplex <sup>1</sup>	350760-5	—	—	—	—
		UL94V-0	Pre-tin	350825-1	643414-1	350832-1	350766-1	770018-1
			Duplex <sup>1</sup>	350825-4	643414-3	350832-4	—	—
4	1.050 26.67	UL94V-2	Pre-tin	350761-4	643415-1	350988-4	1-480702-0	—
			Duplex <sup>1</sup>	350761-5	—	350988-5	—	—
		UL94V-0	Pre-tin	350826-1	643416-1	350833-1	350779-1	770019-1
			Duplex <sup>1</sup>	350826-4	—	350833-4	—	—
5	1.300 33.02	UL94V-2	Pre-tin	640467-1	—	—	1-480763-0	—
			Pre-tin	640467-3	—	—	—	—
		UL94V-0	Pre-tin	640901-1	—	—	350809-1	770016-1
			Duplex <sup>1</sup>	640901-3	—	—	—	—
6	1.550 39.37	UL94V-0	Duplex <sup>1</sup>	770262-3	—	—	640581-1	—

**6, 9, 12 and 15  
Circuit, Matrix**



Number of Circuits	A Dim.	Flammability Rating	Socket Finish	Socket Header Part Numbers			Mates with Plug Housing Part Number (Using Pin Contacts)	
				Standard Tail <sup>2</sup>	Standard Tail Polarized <sup>2</sup>	Long Tail <sup>3</sup>	Universal MATE-N-LOK	Universal MATE-N-LOK II
				6	.550 13.97	UL94V-2	Pre-tin	350762-4
			Duplex <sup>1</sup>	350762-5	—	350989-5	—	—
		UL94V-0	Pre-tin	350827-1	643424-1	350834-1	350715-1	770020-1
			Duplex <sup>1</sup>	350827-4	643424-3	350834-4	—	—
9	.800 20.32	UL94V-2	Pre-tin	350763-4	643425-1	350990-4	1-480706-0	—
			Duplex <sup>1</sup>	350763-5	—	350990-5	—	—
		UL94V-0	Pre-tin	350828-1	643426-1	350835-1	350720-1	770021-1
			Duplex <sup>1</sup>	350828-4	643426-3	350835-4	—	—
12	1.050 26.67	UL94V-2	Pre-tin	350764-4	—	350991-4	1-480708-0	—
			Duplex <sup>1</sup>	350764-5	—	350991-5	—	—
		UL94V-0	Pre-tin	350829-1	643428-1	350836-1	350735-1	770022-1
			Duplex <sup>1</sup>	350829-4	—	350836-4	—	—
15	1.300 33.02	UL94V-2	Pre-tin	350765-4	643429-1	350992-4	1-480710-0	—
			Duplex <sup>1</sup>	350765-5	—	—	—	—
		UL94V-0	Pre-tin	350830-1	643430-1	350837-1	350736-1	770023-1
			Duplex <sup>1</sup>	350830-4	—	350837-4	—	—

**Note:** Header Housings on pages 182-185 are available in colors listed on page 188. Call Technical Support for exact Part Numbers.

<sup>1</sup>Duplex Finish—Plated with .000030 [.000762] min. gold in mating area, matte tin on solder tail end over .000050

[.00127] min. nickel underplate on entire contact.

<sup>2</sup>Use Standard Tail for .062 [1.57] thick PC Board.

<sup>3</sup>Use Long Tail for .125 [3.18] thick PC Board.

**Note:** All part numbers are RoHS Compliant.

Dimensions are in inches and millimeters unless otherwise specified. Values in brackets are metric equivalents.

Dimensions are shown for reference purposes only. Specifications subject to change.

USA: 1-800-522-6752  
Canada: 1-905-470-4425  
Mexico: 01-800-733-8926  
C. America: 52-55-1106-0803

South America: 55-11-2103-6000  
Hong Kong: 852-2735-1628  
Japan: 81-44-844-8013  
UK: 44-8706-080-208

Standard Density

Universal MATE-N-LOK Connectors  
.250 [6.35] Centerline



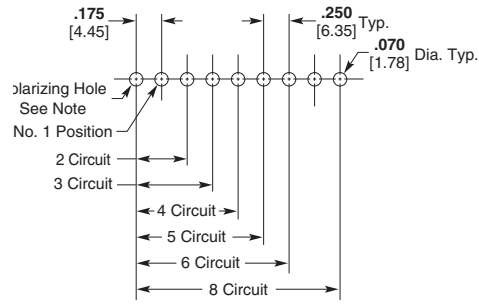
**Universal MATE-N-LOK Connectors** (Continued)

**Recommended  
PC Board  
Hole Layouts  
for Pin and Socket  
Vertical Headers**

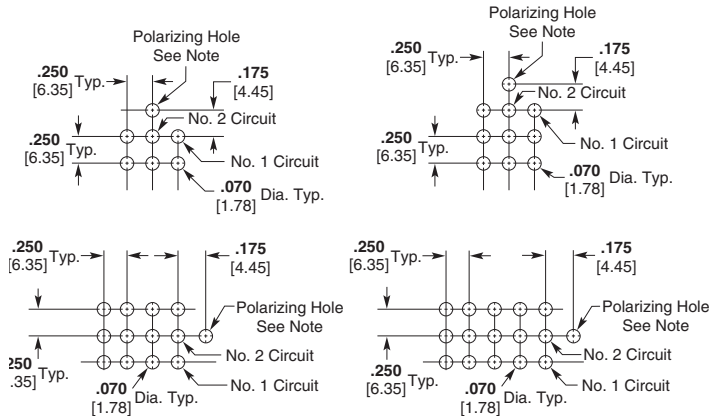
**Related Product Data**

Vertical Headers—pages 182-183

**2, 3, 4, 5, 6 and 8  
Circuit, In-Line**



**6, 9, 12 and 15  
Circuit, Matrix**



**Note:** Polarizing hole .070 [1.78] Dia. required for polarized headers only.

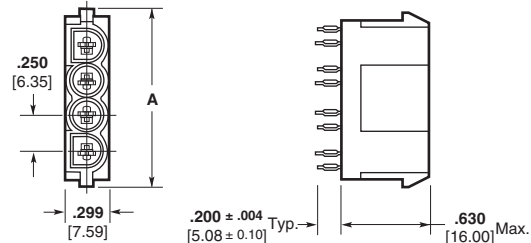
**PC Board Vertical  
Pin Headers with  
ACTION PIN Contacts**

**Material and Finish**

Housing—PBT, black

Flammability Rating—UL94V-0

Contacts—Copper alloy, plated with tin over nickel on entire contact



**Related Product Data**

Performance Characteristics—pages 169-170

Technical Documents—pages 169 and 205-206

**Product Specification**

108-5222 ACTION PIN Universal MATE-N-LOK Header Assembly

Number of Circuits	A Dim.	Part Number	Mates with Plug Housing Part Number (Using Socket Contacts)	
			Universal MATE-N-LOK	Universal MATE-N-LOK II
2	.750 19.05	173924-1	1-480698-0 350777-1	770017-1
3	1.000 25.40	173925-1	1-480700-0 350766-1	770018-1
4	1.250 31.75	173926-1	1-480702-0 350779-1	770019-1

**Note:** Install in PC Board with arbor tool.

**Note:** All part numbers are RoHS Compliant.

**Mating Connectors**

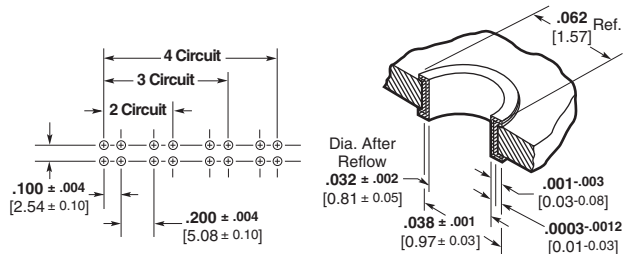
**Universal MATE-N-LOK**

Plug Housings—page 174

**Universal MATE-N-LOK II**

Plug Housings—pages 193-194

**Note:** Header Housings on pages 182-185 are available in colors listed on page 188. Call Technical Support for exact Part Numbers.



Recommended PC Board Hole Layout

PC Board Hole Dimensions

Dimensions are in inches and millimeters unless otherwise specified. Values in brackets are metric equivalents.

Dimensions are shown for reference purposes only. Specifications subject to change.

USA: 1-800-522-6752  
Canada: 1-905-470-4425  
Mexico: 01-800-733-8926  
C. America: 52-55-1106-0803

South America: 55-11-2103-6000  
Hong Kong: 852-2735-1628  
Japan: 81-44-844-8013  
UK: 44-8706-080-208

**Universal MATE-N-LOK Connectors** (Continued)

**PC Board Right-Angle Pin and Socket Headers**

.250 [6.35] Centerline spacing

**Material**

**Housing** — Nylon

**Contacts** — Phosphor bronze  
Solder tail width .052 [1.32]

**Related Product Data**

**Product Specification**

108-1053 Universal MATE-N-LOK  
PC Board Headers

**Performance Characteristics** —

pages 169-170

**Technical Documents** — pages 169  
and 205-206

**Mating Connectors**

**Universal MATE-N-LOK**

Plug Housings — page 174

**Universal MATE-N-LOK II**

Plug Housings — pages 193-194

**Note:** Header Housings on pages 182-185 are available in **colors** listed on page 188. Call Technical Support for exact Part Numbers.

**Test Connectors (with spring loaded contacts)**

**Material**

**Housing** — Nylon

**Flammability Rating** — UL94V-0

**Related Product Data**

**Mating Connectors** — Housings and headers having the same number of circuits. The housings can have pin or socket contacts, or a combination of both.

**Mating Housings** — page 174

**Mating Headers** — pages 182-185

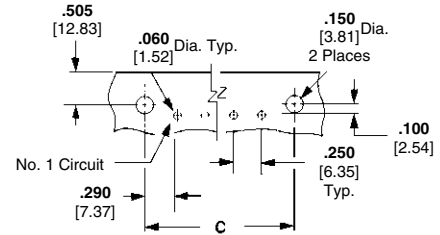
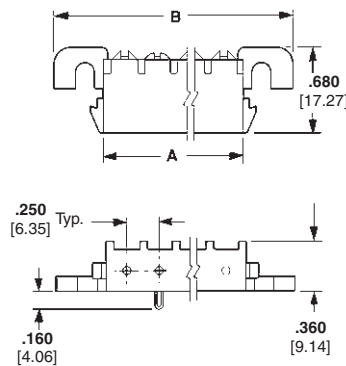
**Other Mating Connectors**

Universal MATE-N-LOK II Housings — pages 193-194

**Notes:**

1. Test probes have 5 amp maximum current rating, 1,000,000 cycles.
2. Test Connector housings are of the same configuration as standard housings. Refer to page 23 for dimensional specifications.

**2, 3, 4, 5, 6 and 8 Circuit, In-Line**



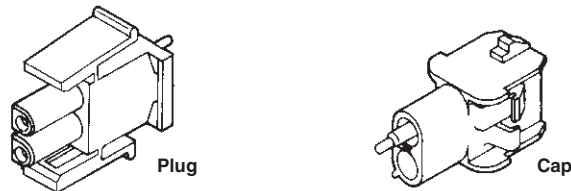
Use 6-32 UNC Pan Head Screw  
3/8 [9.53] long for mounting  
(Not Supplied)

**Recommended PC Board Hole Layout**  
.062 [1.57] Board Thickness

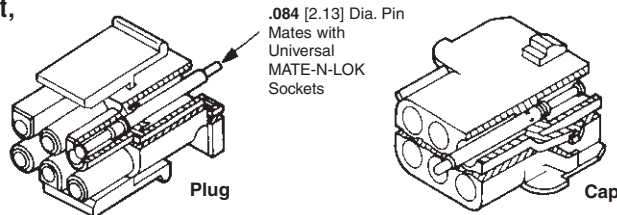
No. of Circuits	Dimensions			Contact Finish	Right-Angle Header Part Numbers						
	A	B	C		UL94V-2			UL94V-0			
					Pin	Socket	Mates with	Pin	Socket	Mates with	
2	.550 13.97	1.245 31.62	.830 21.08	Pre-tin	—	—	—	1-350942-0	643226-1	350777-1	770017-1
				Duplex <sup>1</sup>	—	—	—	3-350942-0	—		
3	.800 20.32	1.495 37.97	1.080 27.43	Pre-tin	—	—	—	1-350943-0	643228-1	350766-1	770018-1
				Duplex <sup>1</sup>	—	—	—	3-350943-0	3-643228-0		
4	1.050 26.67	1.745 44.32	1.330 33.78	Pre-tin	1-350948-0	—	—	1-350944-0	643230-1	350779-1	770019-1
				Duplex <sup>1</sup>	—	—	1-480702-0	3-350944-0	3-643230-0		
5	1.300 33.02	1.995 50.67	1.580 40.13	Pre-tin	1-350949-0	—	—	1-350945-0	643232-1	350809-1	770016-1
				Duplex <sup>1</sup>	—	—	1-480763-0	3-350945-0	3-643232-0		
6	1.550 39.37	2.245 57.02	1.830 46.48	Pre-tin	640587-1	—	—	640583-1	643234-1	640581-1	—
				Duplex <sup>1</sup>	—	643235-1	640585-1	640583-3	3-643234-0		
8	2.050 52.07	2.745 69.72	2.330 59.18	Pre-tin	—	—	—	640584-1	643236-1	640582-1	—
				Duplex <sup>1</sup>	—	643237-1	640586-1	640584-3	3-643236-0		

<sup>1</sup>Duplex Finish — Plated with .000030 [.000762] min. gold in mating area, matte tin on solder tail end over .000050 [.00127] min. nickel underplate on entire contact. <sup>2</sup>Black in color.

**2, 3, 4 and 5 Circuit, In-Line**



**6, 9, 12 and 15 Circuit, Matrix**



Number of Circuits	Part Numbers	
	Plug	Cap
2	350848-2	350849-2
3	350848-3	350849-3
4	350848-4	350849-4
5	350848-5	350849-5
6	350848-6	350849-6
9	350848-9	350849-9
12	1-350848-2	1-350849-2
15	1-350848-5	1-350849-5

**Note:** All part numbers are RoHS Compliant.

Dimensions are in inches and millimeters unless otherwise specified. Values in brackets are metric equivalents.

Dimensions are shown for reference purposes only. Specifications subject to change.

USA: 1-800-522-6752  
Canada: 1-905-470-4425  
Mexico: 01-800-733-8926  
C. America: 52-55-1106-0803

South America: 55-11-2103-6000  
Hong Kong: 852-2735-1628  
Japan: 81-44-844-8013  
UK: 44-8706-080-208

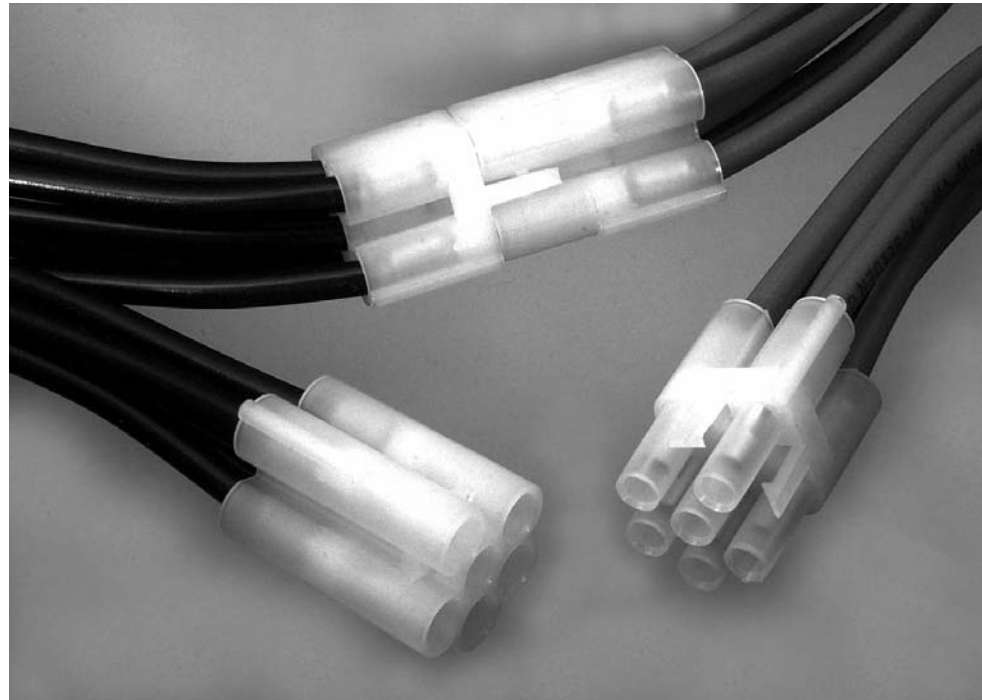
Standard Density

Universal MATE-N-LOK Connectors  
.250 [6.35] Centerline

## Universal MATE-N-LOK Circular Connectors

### Product Facts

- Unique product designed to accommodate the specific needs of the lighting industry
- Circular design allows the connector to pass through 7/8 inch knock-out holes in electrical fixtures and boxes
- 6-position accommodates most major electrical industry requirements
- Universal MATE-N-LOK connector centerline spacing maintains UL and CSA approvals
- Uses standard Universal MATE-N-LOK contacts and application tooling
- Positive polarized housing helps prevent incorrect mating
- UL Recognized, File No. E28476
- CSA Certified, File No. LR7189



### Applications

- Primary applications are in the Lighting, Vending, and Appliance industries
- Applications where use of a completed harness that will pass through a 7/8 inch knock-out is required
- Provides the capability to quickly disconnect individual fixtures from sensitive environmental areas and perform maintenance at other sites
- Not for interrupting current

### Performance Characteristics

**Voltage**—600 V AC or DC

**Current**—20 amps maximum per UL-1977 (6 position, fully energized)

**Dielectric Withstanding Voltage**—5 KVAC or KVDC

**Insulation Resistance**—1000 M $\Omega$  max. between adjacent circuits

**Durability**—50 cycles mating and unmating

**Contact Retention**—15 lb. minimum per contact

### Technical Documents

#### Product Specification

108-2069 Universal MATE-N-LOK Circular Connector

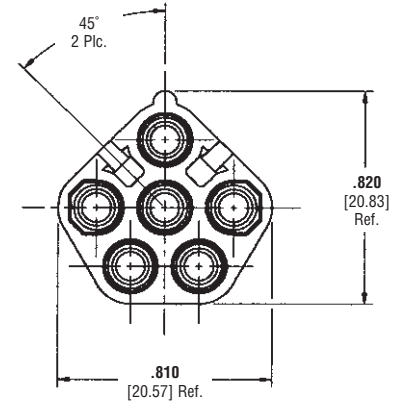
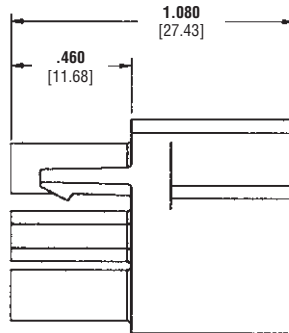
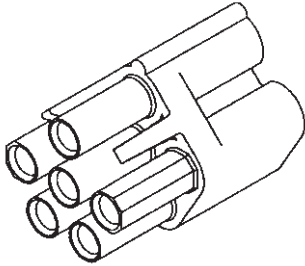
#### Application Specification

114-1010 Universal MATE-N-LOK Connectors

**Universal MATE-N-LOK Circular Connectors** (Continued)

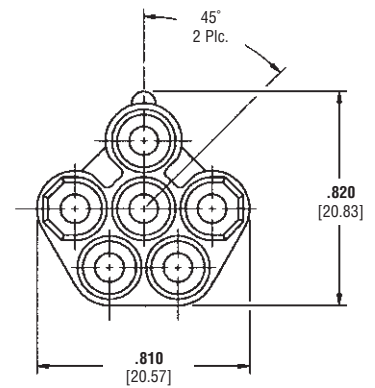
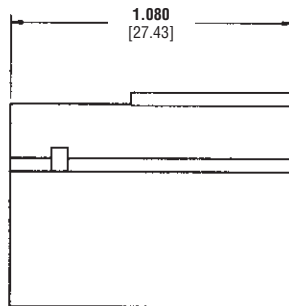
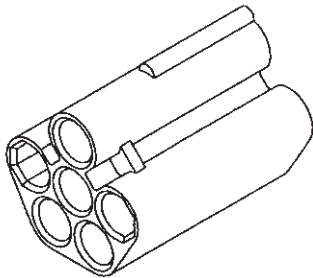
**Plug**

Part No. 794911-1



**Cap**

Part No. 794912-1



**Material and Finish**

**Housings**—Nylon, UL 94V-2 rated

**Related Product Data**

**Contacts**—pages 172-173

**Note:** All part numbers are RoHS Compliant.

Dimensions are in inches and millimeters unless otherwise specified. Values in brackets are metric equivalents.

Dimensions are shown for reference purposes only. Specifications subject to change.

USA: 1-800-522-6752  
Canada: 1-905-470-4425  
Mexico: 01-800-733-8926  
C. America: 52-55-1106-0803

South America: 55-11-2103-6000  
Hong Kong: 852-2735-1628  
Japan: 81-44-844-8013  
UK: 44-8706-080-208

## Universal MATE-N-LOK Connectors — Available in Colors

**Note:** See corresponding Universal MATE-N-LOK Plug and Cap Housing Base Part Numbers on page 175.

Header Housings on pages 182-185 are also available in **colors**. Call Technical Support for exact Part Numbers.

Base Part Number	No. of Circuits	Housing	Material
480698	2	Plug	V-2
480699	2	Cap	V-2
480700	3	Plug	V-2
480701	3	Cap	V-2
480702	4	Plug	V-2
480703	4	Cap	V-2
480763*	5	Plug*	V-2
480764*	5	Cap*	V-2
480704	6	Plug	V-2
480705	6	Cap	V-2
480706	9	Plug	V-2
480707	9	Cap	V-2
480708	12	Plug	V-2
480709	12	Cap	V-2
480710	15	Plug	V-2
480711	15	Cap	V-2
350777	2	Plug	V-0
350778	2	Cap	V-0
350766	3	Plug	V-0
350767	3	Cap	V-0
350799	4	Plug	V-0
350780	4	Cap	V-0
350809	5	Plug	V-0
350810	5	Cap	V-0
350715	6	Plug	V-0
350781	6	Cap	V-0
350720	9	Plug	V-0
350782	9	Cap	V-0
350735	12	Plug	V-0
350783	12	Cap	V-0
350736	15	Plug	V-0
350784	15	Cap	V-0

Dash Number	Color
1-xxxxxx-0	Natural
1-xxxxxx-1	Brown
1-xxxxxx-2	Red
1-xxxxxx-3	Orange
1-xxxxxx-4	Yellow
1-xxxxxx-5	Green
1-xxxxxx-6	Blue
1-xxxxxx-8	Gray
1-xxxxxx-9	Black

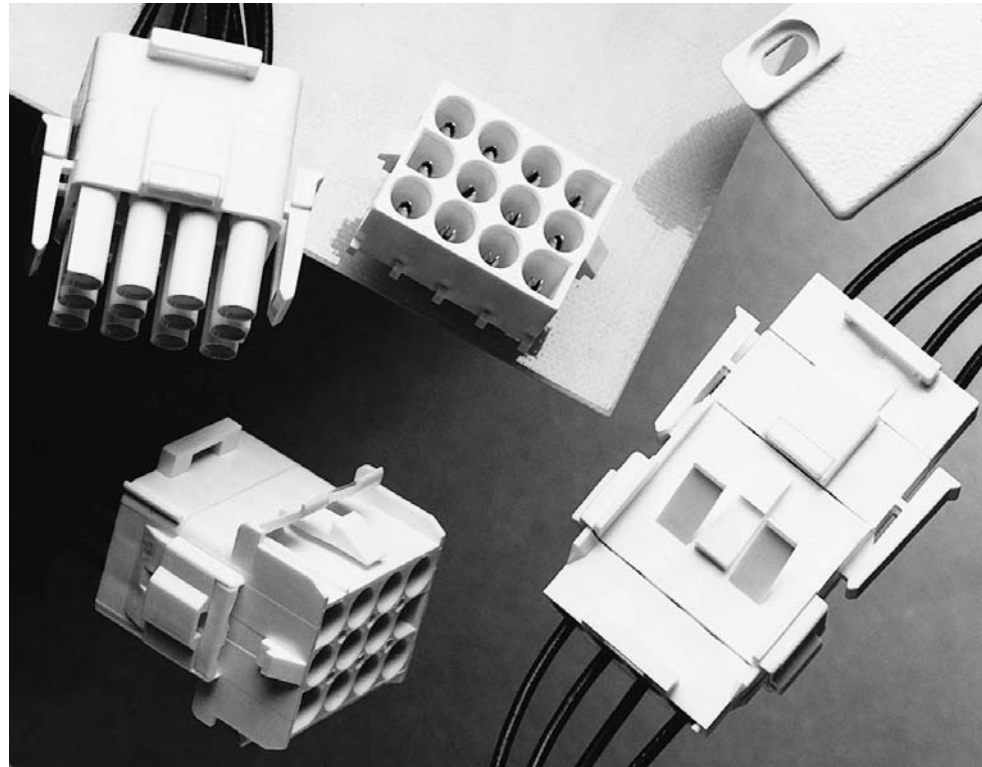
**\* Special for Base Part Numbers 480763 and 480764**

Dash Number	Color
xxxxxx-1	Natural
1-xxxxxx-1	Brown
1-xxxxxx-2	Red
1-xxxxxx-3	Orange
1-xxxxxx-4	Yellow
1-xxxxxx-5	Green
1-xxxxxx-6	Blue
1-xxxxxx-8	Gray
1-xxxxxx-9	Black

## Universal MATE-N-LOK II Connectors

### Product Facts

- High reliability
- For use where repair or replacement would be difficult
- Pins and sockets can be intermixed in the same housing
- Available in 2 through 15 circuit sizes for free-hanging or panel mount wire-to-wire connection
- Mate with standard Universal MATE-N-LOK Housings and PC Board Headers
- Uses standard Universal MATE-N-LOK panel cutouts and strain reliefs
- Polarized housings available in UL94V-0 flammability rated material
- Enclosed contacts for shock protection
- F-Crimp terminals accept 30-10 AWG [.05-5.0 mm<sup>2</sup>] wire sizes
- Contacts available in strip and loose form
- Lanceless contacts for tangle-free handling
- Insulation capability to .200 [5.08] diameter
- Connector design provides for complete contact insertion
- Three-point stabilization precisely controls contact alignment, minimizing stubbing
- Tin or duplex gold plated contacts
- Contacts are on .250 [6.35] centerline spacing
- Not for interrupting current
- Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476
- Certified by Canadian Standards Association, File No. LR 7189
- Passed test by VDE under their Registration Number 3980/Continuous Surveillance



### Performance Characteristics

The Universal MATE-N-LOK II Connector performance characteristics found on pages 189-190 are based on free-hanging and panel mount connectors, loaded with contacts crimped on stranded wire.

**Dielectric Withstanding Voltage**—5.0 KV AC or DC between adjacent circuits initially

**Insulation Resistance**—1000 megohms minimum between adjacent circuits

**Voltage Rating**—600 V AC or DC

**Connector Mating**—Split Pin—1.5 lb. max. per circuit

**Connector Unmating**—Split Pin—.5 lb. min. per circuit

**Contact Insertion Force**—3.0 lb. max. per contact unassembled

**Contact Retention**—35 lb. min. per contact

**Durability**—50 cycles, mating and unmating

### Technical Documents

#### Product Specification

108-1090 Universal MATE-N-LOK II Connectors

#### Application Specification

114-1043 Universal MATE-N-LOK II Connectors

#### Instruction Sheet

408-3200 Housing, Contacts and Accessories



**Universal MATE-N-LOK II Connectors** (Continued)

**Performance Characteristics** (Continued)

**Maximum Current**—Maximum current rating of Universal MATE-N-LOK II connectors is limited by the maximum operating temperature of the housings which is 120°C including the temperature rise of the contacts which is a maximum of 30°C. There are several variables which have a direct effect on this maximum current-carrying capability for a given connector and must be considered for each application. These variables are:

**Wire Size**—Larger diameter wire will carry more current since it has less internal resistance to current flow and thus generates less heat. Longer wire lengths also enhance current carrying capabilities since the wire conducts heat away from the connector.

**Connector Size**—In general, the more circuits in a connector, the less current can be carried.

**Ambient Temperature**—The higher the ambient temperature, the less current can be carried in any given connector.

Universal MATE-N-LOK II connectors also will withstand the following tests:

**Vibration**—10-55-10 cycles per minute at .06 inch total excursion

**Physical Shock**—18 drops, 50 g sawtooth at 10 milliseconds

**Housing Panel Retention**—75 lb. min.

**Housing Lock Strength**—35 lb. min.

**Thermal Shock**—-55°C to +85°C

**Temperature-Humidity Cycling**—25°C to 65°C at 95 RH

**Corrosion**—48 hr. at 5% salt concentration

**Current Rating Verification for 30°C Maximum Temperature Rise 100% Energized**

**Wire-to-Wire**

**Calculated Current Table**

Number of Circuits	Wire Gauge									
	10	12	14	16	18	20	22	24	26	30
2	19.00	18.00	17.00	14.50	13.00	10.00	8.00	6.50	5.50	3.50
3	17.50	16.50	15.50	13.00	12.00	9.00	7.50	6.00	5.00	3.00
4	16.50	15.50	15.00	12.50	11.00	8.50	7.00	5.50	4.50	3.00
5	16.00	15.00	14.00	12.00	10.50	8.00	6.50	5.50	4.50	3.00
6 Matrix	15.00	14.00	13.00	11.00	9.50	7.50	6.00	5.00	4.00	2.50
8	14.50	14.00	13.00	10.50	9.50	7.50	6.00	5.00	4.00	2.50
9	13.50	12.50	11.50	9.50	8.50	6.50	5.50	4.50	3.50	2.00
10	14.00	13.00	12.50	10.00	9.00	7.00	5.50	4.50	3.50	2.50
12	12.50	12.00	11.00	9.00	8.00	6.00	5.00	4.00	3.00	2.00
15	12.00	11.50	10.00	8.50	7.50	6.00	4.50	4.00	3.00	2.00

Values are based on initial Temperature Rise versus Current Testing and are intended to be a guide in the selection of a connector family. All applications should be tested by the end user. The values listed are per circuit for fully loaded housings being 100% energized. **Note:** All combinations were not tested, and this chart contains interpolated and extrapolated values.

**Minimum Wire Lengths for T-Rise vs. Current Testing**

AWG	Min. Length (in.)	AWG	Min. Length (in.)
30	2.6	18	9.4
28	3.2	16	11.3
26	4.1	14	13.7
24	5.1	12	16.4
20	7.8	10	19.3

**Note:** If wire lengths used are less than those listed above, the current carrying ability of the system will be reduced due to less heat being conducted away from the connector. The customer should fully test all applications.

**Wire-to-Board**

Due to the vast differences in trace geometry and printed circuit board configurations, we are unable to provide a separate current carrying chart for our printed circuit board header products. However, the above Wire-to-Wire charts may be used as a guideline for headers if the trace width and thickness is equal to the listed wire gauge. For vertical headers, only 95% of the Wire-to-Wire value should be used. For right-angle headers, only 75% of the Wire-to-Wire value should be used. The chart values are only a tool for connector selection and will require the customer to fully test their application.

**Termination Resistance/Contact Crimp Tensile Force**

Wire Size		Termination Resistance		Contact Crimp Tensile Force	
AWG	mm <sup>2</sup>	Test Current (Amps)	Resistance Milliohms (Max. Init.)	Force (Min.)	
				lbs.	N
30	.05	—	—	1.5	7
28	.08	—	—	3	13
26	.12	—	—	5	22
24	.2	1.5	3.50	7	31
22	.3	3	3.50	12	53
20	.5	4.5	3.00	17	66
18	.8	6	3.00	30	133
16	1.2	8	2.75	45	200
14	2.0	10	2.75	50	222
12	3.0	—	—	60	267
10	5.0	—	—	70	311

**Note:** This is the total resistance between wire crimps of a mated pin and socket.

**Related Product Data**

**Product Specification**

108-1090 Universal MATE-N-LOK II Connectors

Standard Density

Universal MATE-N-LOK II Connectors  
.250 [6.35] Centerline

**Universal MATE-N-LOK II Connectors** (Continued)

**Universal MATE-N-LOK II Connector Mating Combinations**

Connector Part Number				Mating Connector Part Number									
Number of Circuits	Flammability Rating	Style	Plug Kit Part Number <sup>2</sup>	Cap Kit Part Number <sup>2</sup>	Plating	Vertical Pin <sup>2</sup>			Vertical Socket <sup>2</sup>			Right-Angle <sup>2</sup>	
						Standard Tail	Standard Tail Polarized	Long Tail	Standard Tail	Standard Tail Polarized	Long Tail	Pin	Socket
2	UL94V-0	In-Line	770017-1	770024-1	Pre-tin	350786-1	641964-1	350787-1	350824-1	643412-1	350831-1	1-350942-0	643226-1
					Duplex <sup>1</sup>	350786-3	641964-3	350787-3	350824-4	643412-3	—	3-350942-0	—
3	UL94V-0	In-Line	770018-1	770025-1	Pre-tin	350789-1	641966-1	350790-1	350825-1	643414-1	350832-1	1-350943-0	643228-1
					Duplex <sup>1</sup>	350789-3	—	350790-3	350825-4	643414-3	350832-4	3-350943-0	3-643228-0
4	UL94V-0	In-Line	770019-1	770026-1	Pre-tin	350792-1	641968-1	350793-1	350826-1	643416-1	350833-1	1-350944-0	643230-1
					Duplex <sup>1</sup>	350792-3	—	350793-3	350826-4	—	350833-4	3-350944-0	3-643230-0
5	UL94V-0	In-Line	770016-1	—	Pre-tin	640900-1	643406-1	—	640901-1	—	—	1-350945-0	643232-1
					Duplex <sup>1</sup>	640900-3	—	—	640901-3	—	—	3-350945-0	3-643232-0
6	UL94V-0	Matrix	770020-1	770027-1	Pre-tin	350711-1	641970-1	350732-1	350827-1	643424-1	350834-1	—	—
					Duplex <sup>1</sup>	350711-4	641970-3	350732-4	350827-4	643424-3	350834-4	—	—
9	UL94V-0	Matrix	770021-1	770028-1	Pre-tin	350712-1	641972-1	350742-1	350828-1	643426-1	350835-1	—	—
					Duplex <sup>1</sup>	350712-4	641972-3	350742-4	350828-4	643426-3	350835-4	—	—
12	UL94V-0	Matrix	770022-1	770029-1	Pre-tin	350713-1	641974-1	350737-1	350829-1	643428-1	350836-1	—	—
					Duplex <sup>1</sup>	350713-4	641974-3	350737-4	350829-4	—	350836-4	—	—
15	UL94V-0	Matrix	770023-1	770030-1	Pre-tin	350714-1	641976-1	350738-1	350830-1	643430-1	350837-1	—	—
					Duplex <sup>1</sup>	350714-4	641976-4	350738-4	350830-4	—	350837-4	—	—

<sup>1</sup>Duplex Finish — Plated with .000030 [.000762] min. gold in mating area, matte tin on solder tail end over .000050 [.00127] min. nickel underplate on entire contact.

<sup>2</sup>Universal MATE-N-LOK II Plug and Cap housings accept pin or socket contacts. Use the appropriate contacts in the Plug housing as required by the mating component.

**Note:** All part numbers are RoHS Compliant.



**Universal MATE-N-LOK II Connectors** (Continued)

**Contacts**

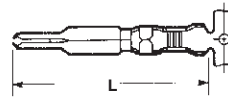
Split pin diameter .086 [2.18]  
Stock thickness .012 [.305]  
These contacts can be used in either Universal MATE-N-LOK II Plug or Cap housings.

**Related Product Data**

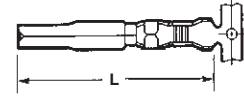
**Product Specification**  
108-1090 Universal MATE-N-LOK II Connectors

**Application Specification**  
114-1043 Universal MATE-N-LOK II Contacts

**Performance Characteristics**—pages 189-190  
**Housings**—pages 193-194  
**Technical Documents**—pages 189 and 205-206  
**Application Tooling**—pages 207-210



Pin



Socket

Wire Size Range AWG [mm <sup>2</sup> ]	Ins. Dia. Range	L Dim.		Material & Finish	Contact Part Numbers				HDM Applicator Part No.	Hand Tool Part No.	
		Pin	Socket		Pin		Socket				
					Strip Form	Loose Piece	Strip Form	Loose Piece			
30-26 [.05-.12]	.032-.057 .813-1.45	1.005 25.53	.980 24.90	Phos. Brz. Gold <sup>1</sup>	770011-6	770512-6	770012-6	770416-6	567252-1 <sup>6</sup> 567252-4 <sup>6</sup>	58439-1	
				Brass. Pre-tin	770009-1	770252-1	—	—	—	—	
24-18 [.2-.8]	.040-.100 1.02-2.54	1.005 25.53	.980 24.90	Brass. Duplex <sup>2</sup>	1-770009-0	1-770252-0	—	—	567214-1 <sup>6</sup> 567214-2 <sup>6</sup> 567214-4 <sup>6</sup>	91510-1	
				Phos. Brz. Pre-tin	—	—	770010-3	770253-3	—		—
				Phos. Brz. Duplex <sup>2</sup>	—	—	1-770010-0	1-770253-0	—		—
				Brass. Pre-tin	770007-1	770250-1	—	—	—		—
20-14 [.5-2.0]	.060-.130 1.52-3.30	1.005 25.53	.980 24.90	Brass. Duplex <sup>2</sup>	1-770007-0	1-770250-0	—	—	567213-1 <sup>6</sup> 567213-2 <sup>6</sup> 567213-4 <sup>6</sup>	91500-1	
				Phos. Brz. Pre-tin	—	—	770008-3	770251-3	—		—
				Phos. Brz. Duplex <sup>2</sup>	—	—	1-770008-0	1-770251-0	—		—
	.130-.200 3.30-5.08	.995 25.27	.970 24.63	Brass. Pre-tin	770005-1	770248-1	—	—	—	91508-1 <sup>4</sup> 91506-1 <sup>4</sup>	
				Brass. Duplex <sup>2</sup>	1-770005-0	1-770248-0	—	—	567212-1 <sup>6</sup> 567212-2 <sup>6</sup> 567212-4 <sup>6</sup>		
				Phos. Brz. Pre-tin	770005-3	—	770006-3	770249-3	—		—
12-10 [3.0-5.0]	.200 max. <sup>3</sup> 5.08	1.005 25.53	.980 24.90	Phos. Brz. Pre-tin	770003-3	770246-3	770004-3	770247-3	567211-1 <sup>6</sup> 567211-2 <sup>6</sup> 567211-4 <sup>6</sup>	69710-1 <sup>5</sup>	
				Phos. Brz. Duplex <sup>2</sup>	1-770003-0	1-770246-0	1-770004-0	1-770247-0	—		—

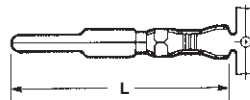
<sup>1</sup>Gold Finish—Plated with .000030 [.000762] min. gold in mating area and inside wire barrel over .000050 [.00127] min. nickel underplate on entire contact.  
<sup>2</sup>Duplex Finish—Plated with .000030 [.000762] min. gold in mating area and .000050 [.00127] min. tin in crimp area over .000050 [.00127] min. nickel underplate on entire contact.  
<sup>3</sup>There is no insulation barrel on this contact. Insulation maximum diameter is limited by the housing. Use of strain relief is recommended with these contacts.  
<sup>4</sup>Use Hand Tool No. 91508-1 for 20–18 AWG and No. 91506-1 for 16–14 AWG.  
<sup>5</sup>Hand Tool No. 69710-1 uses die set No. 58380-1 for 12 AWG and No. 58380-2 for 10 AWG.  
<sup>6</sup>HDM Applicator part number ending in -1 is used on AMPOMATOR CLS Machine with T or G Terminators, -2 is used on AMP-O-LECTRIC Model K Machine, -4 is used on AMP-O-LECTRIC Model G Machine. See pages 207-210 for further information.

**Grounding Pin**

(Mate first, break last, not for interrupting current)

Solid pin diameter .084 [2.13]  
.100 [2.54] longer than standard pin  
Stock thickness .012 [.304]

These contacts can be used in either Universal MATE-N-LOK II Plug or Cap housings only.



Wire Size Range AWG [mm <sup>2</sup> ]	Ins. Dia. Range	L Dim.	Material & Finish	Contact Part Numbers		HDM Applicator Part No.	Hand Tool Part No.
				Strip Form	Loose Piece		
20-14 [.5-2.0]	.060-.130 1.52-3.30	1.105 25.53	Brass. Pre-tin	770193-1	770254-1	567213-1 <sup>3</sup> 567213-2 <sup>3</sup> 567213-4 <sup>3</sup>	91500-1
			Brass. Duplex <sup>1</sup>	1-770193-0	1-770254-0		
	.130-.200 3.30-5.08	1.085 27.56	Brass. Pre-tin	770194-1	770255-1	567212-1 <sup>3</sup> 567212-2 <sup>3</sup> 567212-4 <sup>3</sup>	91508-1 <sup>2</sup> 91506-1 <sup>2</sup>
			Brass. Duplex <sup>1</sup>	1-770194-0	1-770255-0		

<sup>1</sup>Duplex Finish—Plated with .000030 [.000762] min. gold in mating area and .000050 [.00127] min. tin in crimp area over .000050 [.00127] min. nickel underplate on entire contact.  
<sup>2</sup>Use Hand Tool No. 91508-1 for 20–18 AWG and No. 91506-1 for 16–14 AWG.  
<sup>3</sup>HDM Applicator part number ending in -1 is used on AMPOMATOR CLS Machine with T or G Terminators, -2 is used on AMP-O-LECTRIC Model K Machine, -4 is used on AMP-O-LECTRIC Model G Machine. See pages 207-210 for further information.



**Latch Disengaging Tool**  
Part No. 58382-1  
IS 408-9436



**Contact Extraction Tool**  
(For extracting contacts crimped on 24 AWG or smaller wire)  
Part No. 318851-1  
IS 408-4371



**Contact Insertion Tool**  
(For inserting contacts applied to small diameter wire)  
Part No. 91002-1  
IS 408-7347

**Note:** All part numbers are RoHS Compliant.

Dimensions are in inches and millimeters unless otherwise specified. Values in brackets are metric equivalents.

Dimensions are shown for reference purposes only. Specifications subject to change.

USA: 1-800-522-6752  
Canada: 1-905-470-4425  
Mexico: 01-800-733-8926  
C. America: 52-55-1106-0803

South America: 55-11-2103-6000  
Hong Kong: 852-2735-1628  
Japan: 81-44-844-8013  
UK: 44-8706-080-208

**Universal MATE-N-LOK II Connectors** (Continued)

**Housing Kits**  
**Free-Hanging or Panel Mount**

.250 [6.35] Centerline spacing

**Material**—Nylon

**Flammability Rating**—UL 94V-0

**Related Product Data**

**Product Specification**

108-1090 Universal MATE-N-LOK II Connectors

**Performance Characteristics**—pages 189-190

**Contacts**—page 192

**Panel Cutout Recommendations**—page 195

**Keying Plug**—page 196

**Strain Reliefs**—page 196

**Kit Components**—page 195

**Technical Documents**—pages 189 and 205-206

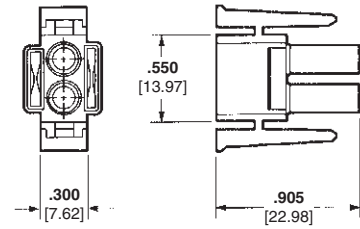
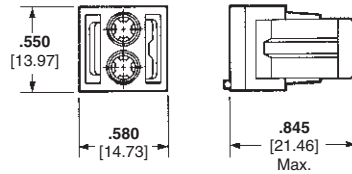
**Other Mating Connectors**

Universal MATE-N-LOK Housings—page 175

Universal MATE-N-LOK Headers—pages 182-183 and 185

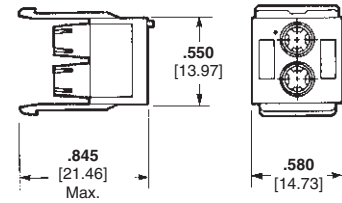
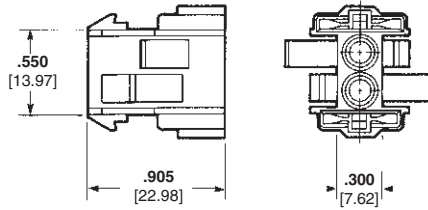
Universal MATE-N-LOK Test Connectors—page 185

**2 Circuit, In-line**



Plug Rear

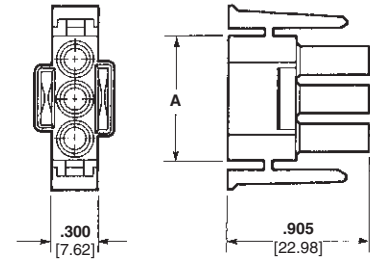
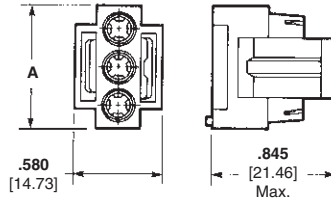
Plug Front



Cap Front

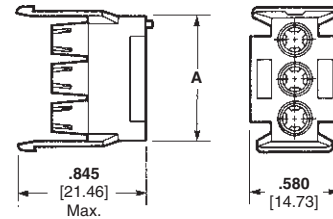
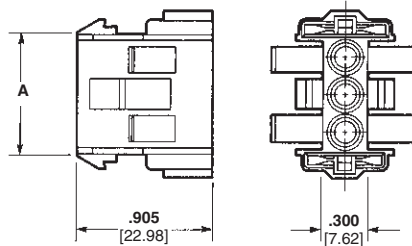
Cap Rear

**3, 4 and 5 Circuit, In-Line**



Plug Rear

Plug Front



Cap Front

Cap Rear

Number of Circuits	A Dim.	Kit Part Numbers (Includes Front and Rear)	
		Plug	Cap
2	—	770017-1	770024-1
3	.800 20.32	770018-1	770025-1
4	1.050 26.67	770019-1	770026-1
5	1.300 33.02	770016-14	—

**Notes:**

1. Kits consist of a front and rear component.
2. Kit components can be purchased separately. Page 195.
3. Packaging: Bulk—250 each component per poly bag/box.
4. Mates with standard Universal MATE-N-LOK cap housing P/N 350810-1 and 640900-X or 640901-X Vertical headers.

**Note:** All part numbers are RoHS Compliant.

Dimensions are in inches and millimeters unless otherwise specified. Values in brackets are metric equivalents.

Dimensions are shown for reference purposes only. Specifications subject to change.

USA: 1-800-522-6752  
Canada: 1-905-470-4425  
Mexico: 01-800-733-8926  
C. America: 52-55-1106-0803

South America: 55-11-2103-6000  
Hong Kong: 852-2735-1628  
Japan: 81-44-844-8013  
UK: 44-8706-080-208

Standard Density

Universal MATE-N-LOK II Connectors  
.250 [6.35] Centerline

**Universal MATE-N-LOK II Connectors** (Continued)

**Housing Kits**  
**Free-Hanging or Panel Mount**

.250 [6.35] Centerline spacing

**Material** — Nylon  
**Flammability Rating** — UL 94V-0

**Related Product Data**

**Product Specification**

108-1090 Universal MATE-N-LOK II Connectors

**Performance Characteristics** — pages 189-190

**Contacts** — page 192

**Panel Cutout Recommendations** — page 195

**Keying Plug** — page 196

**Strain Reliefs** — page 196

**Kit Components** — page 195

**Technical Documents** — pages 189 and 205-206

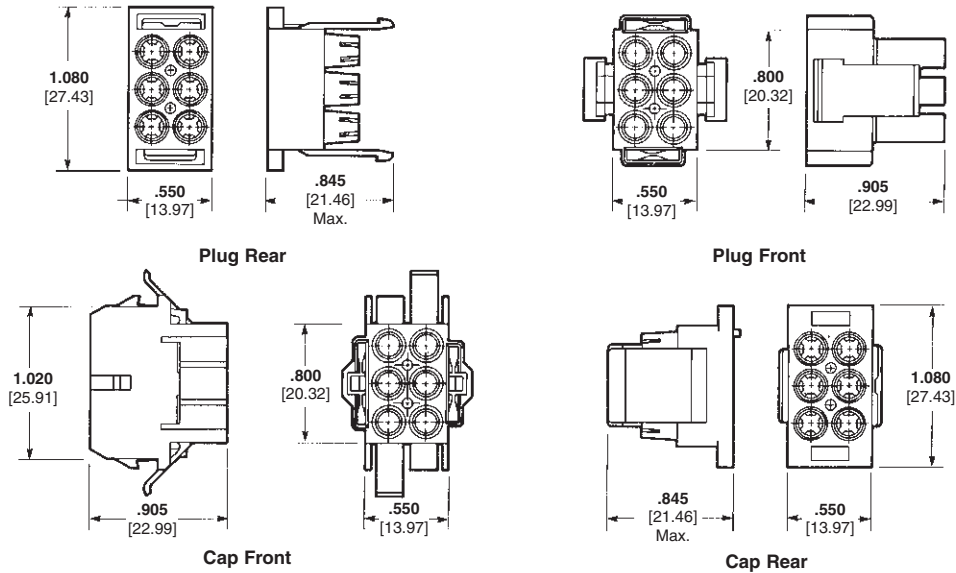
**Other Mating Connectors**

Universal MATE-N-LOK Housings — page 176

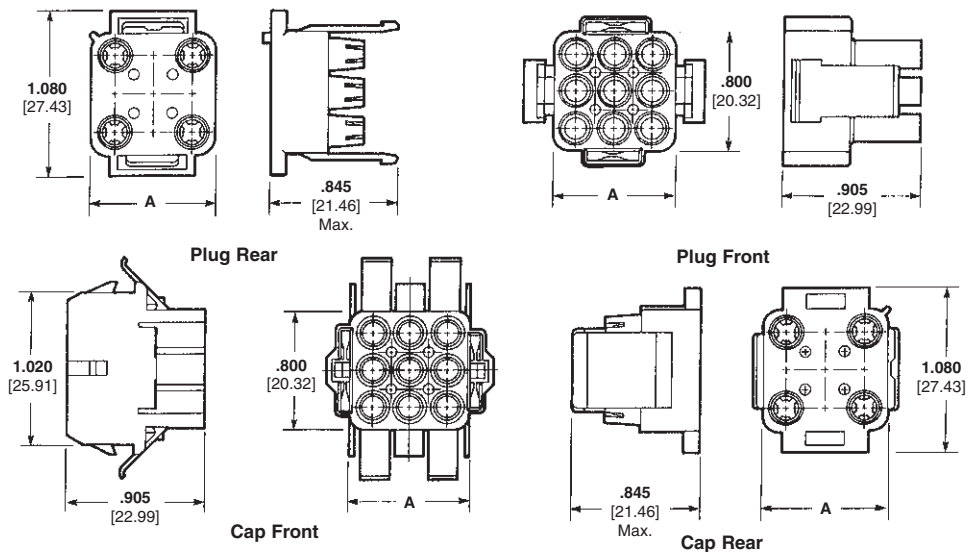
Universal MATE-N-LOK Headers — pages 182-183 and 185

Universal MATE-N-LOK Test Connectors — page 185

**6 Circuit, Matrix**



**9, 12 and 15 Circuit, Matrix**



Number of Circuits	A Dim.	Kit Part Numbers (Includes Front and Rear)	
		Plug	Cap
6	—	770020-1	770027-1
9	.800 20.32	770021-1	770028-1
12	1.050 26.67	770022-1	770029-1
15	1.300 33.02	770023-1	770030-1

**Notes:**

1. Kits consist of a front and rear component.
2. Kit components can be purchased separately. Page 195.
3. Packaging: Bulk — 250 each component per poly bag/box.

**Note:** All part numbers are RoHS Compliant.

Dimensions are in inches and millimeters unless otherwise specified. Values in brackets are metric equivalents.

Dimensions are shown for reference purposes only. Specifications subject to change.

USA: 1-800-522-6752  
Canada: 1-905-470-4425  
Mexico: 01-800-733-8926  
C. America: 52-55-1106-0803

South America: 55-11-2103-6000  
Hong Kong: 852-2735-1628  
Japan: 81-44-844-8013  
UK: 44-8706-080-208

**Universal MATE-N-LOK II Connectors** (Continued)

**Housing Components**  
**Free-Hanging or Panel Mount**

.250 [6.35] Centerline spacing

**Material** — Nylon  
**Flammability Rating** — UL 94V-0

**Related Product Data**

**Product Specification**  
108-1090 Universal MATE-N-LOK II Connectors

**Performance Characteristics** — pages 189-190

**Contacts** — page 192

**Illustrations and Dimensions** — pages 193-194

**Panel Cutout Recommendations** — page 195

**Keying Plug** — page 196

**Strain Reliefs** — page 196

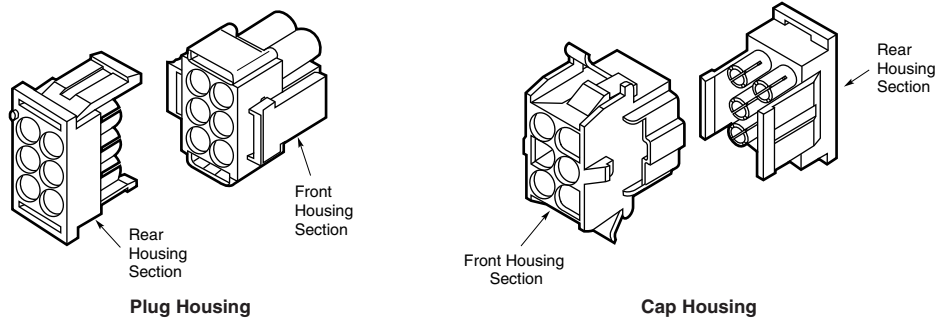
**Technical Documents** — pages 189 and 205-206

**Other Mating Connectors**

Universal MATE-N-LOK Connectors — page 176

Universal MATE-N-LOK Headers — pages 182-183 and 185

Universal MATE-N-LOK Test Connectors — page 185



Number of Circuits	Kit Component Part Numbers					
	Plug			Cap		
	Kit	Front	Rear	Kit	Front	Rear
2	770017-1	770031-1	770032-1	770024-1	770045-1	770046-1
3	770018-1	770033-1	770034-1	770025-1	770047-1	770048-1
4	770019-1	770035-1	770036-1	770026-1	770049-1	770050-1
5	770016-1	770319-1	770320-1	—	—	—
6	770020-1	770037-1	770038-1	770027-1	770051-1	770052-1
9	770021-1	770039-1	770040-1	770028-1	770053-1	770054-1
12	770022-1	770041-1	770042-1	770029-1	770055-1	770056-1
15	770023-1	770043-1	770044-1	770030-1	770057-1	770058-1

**Notes:**

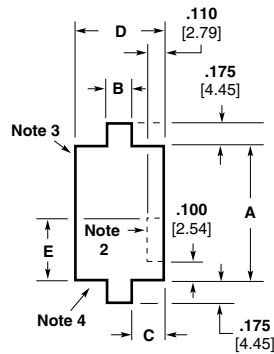
1. Kits consist of a front and rear component.
2. Kit components can be purchased separately.

**Note:** All part numbers are RoHS Compliant.

**Recommended Cap Housing Panel Cutouts**

View is from cap entry side

Refer to Application Specification 114-1043



Number of Circuits	Dimensions				
	A	B	C	D	E
2	.565 14.35	.340 8.63	.095 2.41	.530 13.46	.250 6.35
3	.815 20.70	.340 8.63	.095 2.41	.530 13.46	.250 6.35
4	1.065 27.05	.340 8.63	.095 2.41	.530 13.46	.250 6.35
6	.565 14.35	.480 12.19	.275 6.99	1.030 26.16	.250 6.35
9	.815 20.70	.480 12.19	.275 6.99	1.030 26.16	.250 6.35
12	1.065 27.05	.480 12.19	.275 6.99	1.030 26.16	.350 8.89
15	1.315 33.40	.480 12.19	.275 6.99	1.030 26.16	.350 8.89

**Notes:**

1. Recommended panel thickness — .030-.090 [ .762-2.286]. Panel must be punched so that housing enters panel in same direction as the punch.
2. Optional — Do not remove this material when keying cap housing to panel.
3. Circuit #1 location when using panel keying with 6, 9, 12 and 15 circuit housings.
4. Circuit #1 location when using panel keying with 2, 3, and 4 circuit housings.

Standard Density

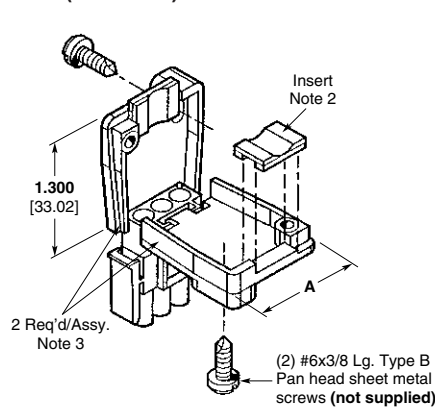
Universal MATE-N-LOK II Connectors  
.250 [6.35] Centerline

**Universal MATE-N-LOK II Connectors** (Continued)

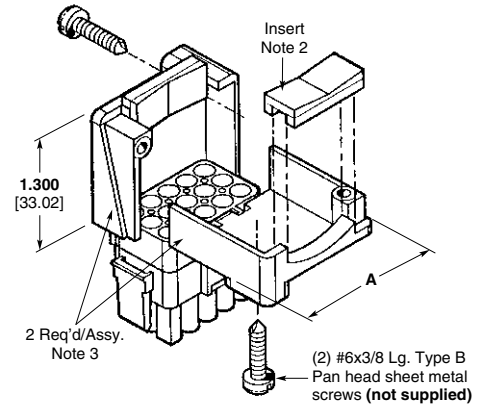
**Plug or  
Cap Housing  
Strain Reliefs**  
IS 408-3320

**Material** — Nylon  
**Flammability Rating** — UL 94V-0

**2, 3, 4, 5, 6, 9, 12 and 15  
Circuit (Enclosed)**



**In-Line**



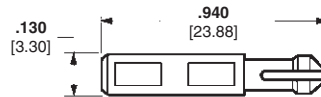
**Matrix**

Style	Number of Circuits	A Dim.	Insert Supplied	Single Wire Dia. Range	Wire Bundle Dia. Range	Strain Relief Part Numbers
In-Line	2	.960 24.38	Yes	.040 – .190 1.02 – 4.83	—	640713-1
			No	—	.200 – .350 5.08 – 8.89	640713-2
	3	1.140 28.96	Yes	.040 – .190 1.02 – 4.83	—	640714-1
			No	—	.200 – .350 5.08 – 8.89	641945-1
	4	1.340 34.04	Yes	.040 – .190 1.02 – 4.83	—	641776-1
			No	—	.200 – .350 5.08 – 8.89	641776-2
Matrix	5	1.530 38.86	Yes	.040 – .190 1.02 – 4.83	—	643030-1
			No	—	.200 – .350 5.08 – 8.89	643030-4
	6	1.030 26.16	Yes	—	.120 – .650 3.05 – 16.51	640715-1
	9	1.030 26.16	Yes	—	.120 – .650 3.05 – 16.51	640716-1
	12	1.280 32.51	Yes	—	.150 – .750 3.81 – 19.05	640717-1
	15	1.530 38.86	Yes	—	.200 – .850 5.08 – 21.59	640718-1

**Notes:**

1. Insert comes attached to strain relief. It can be used to provide additional adjustment for small wire bundles or discarded.
2. Insert to be positioned as shown by dotted lines.
3. Strain relief part number represents one-half of a strain relief. Two of a part number are required for one connector.

**Keying Plug**  
IS 408-3200



**Related Product Data**

**Housings** — pages 193-194  
**Technical Documents** — pages 189 and 205-206

**Part Number**  
UL94V-0 Nylon material — **770377-1**

**Note:** All part numbers are RoHS Compliant.

Dimensions are in inches and millimeters unless otherwise specified. Values in brackets are metric equivalents.

Dimensions are shown for reference purposes only. Specifications subject to change.

USA: 1-800-522-6752  
Canada: 1-905-470-4425  
Mexico: 01-800-733-8926  
C. America: 52-55-1106-0803

South America: 55-11-2103-6000  
Hong Kong: 852-2735-1628  
Japan: 81-44-844-8013  
UK: 44-8706-080-208

## Universal MATE-N-LOK Headers for UMNL II Connectors

### PC Board Vertical Pin Headers

.250 [6.35] Centerline spacing

#### Material

Housing — Nylon

Flammability Rating — UL94V-0

Contacts — Phosphor bronze

Solder tail diameter .062 [1.57]

#### Related Product Data

##### Product Specification

108-1053 Universal MATE-N-LOK  
PC Board Headers

Performance Characteristics —  
pages 189-190

Recommended PC Board Hole  
Layout — page 199

Technical Documents — pages 189  
and 205-206

#### Mating Connectors

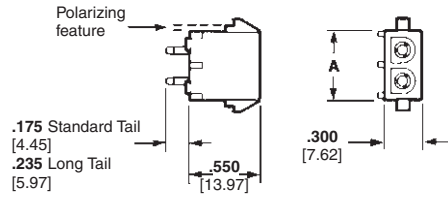
##### Universal MATE-N-LOK II

Plug Housings — pages 193-194

##### Universal MATE-N-LOK

Plug Housings — page 175

### 2, 3, 4 and 5 Circuit, In-Line



Number of Circuits	A Dim.	Pin Finish	Pin Header Part Numbers			Mates with Plug Housing Part Number (Using Socket Contacts)	
			Standard Tail <sup>2</sup>	Standard Tail Polarized <sup>2</sup>	Long Tail <sup>3</sup>	Universal MATE-N-LOK II	Universal MATE-N-LOK
2	.550 13.97	Pre-tin	350786-1	641964-1 1-641964-14	350787-1	770017-1	350777-1
		Duplex <sup>1</sup>	350786-3	641964-3	350787-3		
3	.800 20.32	Pre-tin	350789-1	641966-1 1-641966-14	350790-1	770018-1	350766-1
		Duplex <sup>1</sup>	350789-3	—	350790-3		
4	1.050 26.67	Pre-tin	350792-1	641968-1	350793-1	770019-1	350779-1
		Duplex <sup>1</sup>	350792-3	—	350793-3		
5	1.300 33.02	Pre-tin	640900-1	643406-1	—	770016-1	350809-1
		Duplex <sup>1</sup>	640900-3	—	—		

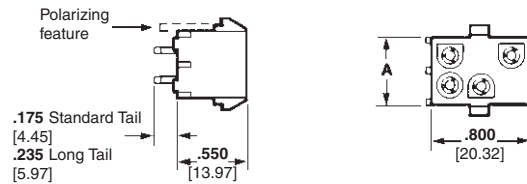
<sup>1</sup>Duplex Finish — Plated with .000030 [.000762] min. gold in mating area, matte tin on solder tail end over .000050 [.00127] min. nickel underplate on entire contact.

<sup>2</sup>Use Standard Tail for .062 [1.57] thick PC Board.

<sup>3</sup>Use Long Tail for .125 [3.18] thick PC Board.

<sup>4</sup>Black in color.

### 6, 9, 12 and 15 Circuit, Matrix



Number of Circuits	A Dim.	Pin Finish	Pin Header Part Numbers			Mates with Plug Housing Part Number (Using Socket Contacts)	
			Standard Tail <sup>2</sup>	Standard Tail Polarized <sup>2</sup>	Long Tail <sup>3</sup>	Universal MATE-N-LOK II	Universal MATE-N-LOK
6	.550 13.97	Pre-tin	350711-1	641970-1	350732-1	770020-1	350715-1
		Duplex <sup>1</sup>	350711-4	641970-3	350732-4		
9	.800 20.32	Pre-tin	350712-1	641972-1 1-641972-14	350742-1	770021-1	350720-1
		Duplex <sup>1</sup>	350712-4	641972-3	350742-4		
12	1.050 26.67	Pre-tin	350713-1	641974-1 1-641974-14	350737-1	770022-1	350735-1
		Duplex <sup>1</sup>	350713-4	641974-3	350737-4		
15	1.300 33.02	Pre-tin	350714-1	641976-1	350738-1	770023-1	350736-1
		Duplex <sup>1</sup>	350714-4	641976-4	350738-4		

<sup>1</sup>Duplex Finish — Plated with .000030 [.000762] min. gold in mating area, matte tin on solder tail end over .000050 [.00127] min. nickel underplate on entire contact.

<sup>2</sup>Use Standard Tail for .062 [1.57] thick PC Board.

<sup>3</sup>Use Long Tail for .125 [3.18] thick PC Board.

<sup>4</sup>Black in color.

**Note:** All part numbers are RoHS Compliant.

Dimensions are in inches and millimeters unless otherwise specified. Values in brackets are metric equivalents.

Dimensions are shown for reference purposes only. Specifications subject to change.

USA: 1-800-522-6752  
Canada: 1-905-470-4425  
Mexico: 01-800-733-8926  
C. America: 52-55-1106-0803

South America: 55-11-2103-6000  
Hong Kong: 852-2735-1628  
Japan: 81-44-844-8013  
UK: 44-8706-080-208

Standard Density

Universal MATE-N-LOK Headers  
.250 [6.35] Centerline



**Universal MATE-N-LOK Headers for UMNL II Connectors** (Continued)

**PC Board Vertical Socket Headers**

.250 [6.35] Centerline spacing

**Material**

**Housing** — Nylon

**Flammability Rating** — UL94V-0

**Contacts** — Phosphor bronze

Solder tail diameter .062 [1.57]

**Related Product Data**

**Product Specification**

108-1053 Universal MATE-N-LOK  
PC Board Headers

**Performance Characteristics** —  
pages 189-190

**Recommended PC Board Hole Layout** — page 199

**Technical Documents** — pages 189  
and 205-206

**Mating Connectors**

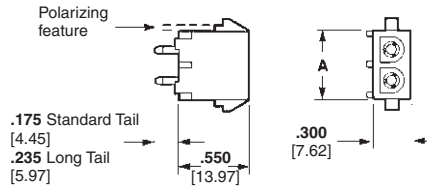
**Universal MATE-N-LOK II**

Plug Housings — pages 193-194

**Universal MATE-N-LOK**

Plug Housings — page 175

**2, 3, 4 and 5  
Circuit, In-Line**



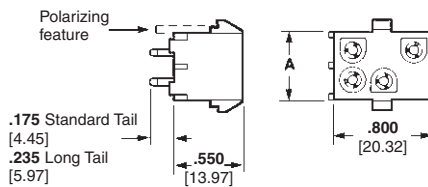
Number of Circuits	A Dim.	Socket Finish	Socket Header Part Numbers			Mates with Plug Housing Part Number (Using Pin Contacts)	
			Standard Tail <sup>2</sup>	Standard Tail Polarized <sup>2</sup>	Long Tail <sup>3</sup>	Universal MATE-N-LOK II	Universal MATE-N-LOK
2	.550 13.97	Pre-tin	350824-1	643412-1	350831-1	770017-1	350777-1
		Duplex <sup>1</sup>	350824-4	643412-3	—		
3	.800 20.32	Pre-tin	350825-1	643414-1	350832-1	770018-1	350766-1
		Duplex <sup>1</sup>	350825-4	643414-3	350832-4		
4	1.050 26.67	Pre-tin	350826-1	643416-1	350833-1	770019-1	350779-1
		Duplex <sup>1</sup>	350826-4	—	350833-4		
5	1.300 33.02	Pre-tin	640901-1	—	—	770016-1	350809-1
		Duplex <sup>1</sup>	640901-3	—	—		

<sup>1</sup>Duplex Finish — Plated with .000030 [.000762] min. gold in mating area, matte tin on solder tail end over .000050 [.00127] min. nickel underplate on entire contact.

<sup>2</sup>Use Standard Tail for .062 [1.57] thick PC Board.

<sup>3</sup>Use Long Tail for .125 [3.18] thick PC Board.

**6, 9, 12 and 15  
Circuit, Matrix**



Number of Circuits	A Dim.	Socket Finish	Socket Header Part Numbers			Mates with Plug Housing Part Number (Using Pin Contacts)	
			Standard Tail <sup>2</sup>	Standard Tail Polarized <sup>2</sup>	Long Tail <sup>3</sup>	Universal MATE-N-LOK II	Universal MATE-N-LOK
6	.550 13.97	Pre-tin	350827-1	643424-1	350834-1	770020-1	350715-1
		Duplex <sup>1</sup>	350827-4	643424-3	350834-4		
9	.800 20.32	Pre-tin	350828-1	643426-1	350835-1	770021-1	350720-1
		Duplex <sup>1</sup>	350828-4	643426-3	350835-4		
12	1.050 26.67	Pre-tin	350829-1	643428-1	350836-1	770022-1	350735-1
		Duplex <sup>1</sup>	350829-4	—	350836-4		
15	1.300 33.02	Pre-tin	350830-1	643430-1	350837-1	770023-1	350736-1
		Duplex <sup>1</sup>	350830-4	—	350837-4		

<sup>1</sup>Duplex Finish — Plated with .000030 [.000762] min. gold in mating area, matte tin on solder tail end over .000050 [.00127] min. nickel underplate on entire contact.

<sup>2</sup>Use Standard Tail for .062 [1.57] thick PC Board.

<sup>3</sup>Use Long Tail for .125 [3.18] thick PC Board.

**Note:** All part numbers are RoHS Compliant.

Standard Density

Universal MATE-N-LOK Headers  
.250 [6.35] Centerline

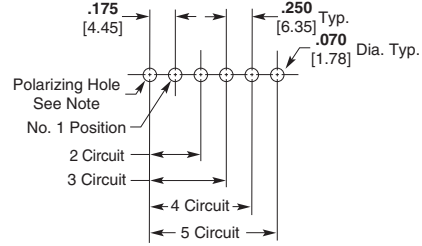
**Universal MATE-N-LOK Headers for UMNL II Connectors** (Continued)

**Recommended  
PC Board  
Hole Layouts  
for Pin and Socket  
Vertical Headers**

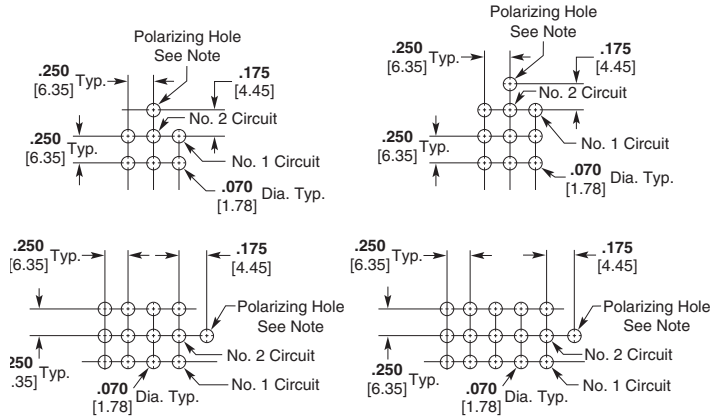
**Related Product Data**

Vertical Headers — pages 197-198

**2, 3, 4 and 5  
Circuit, In-Line**



**6, 9, 12 and 15  
Circuit, Matrix**



**Note:** Polarizing hole .070 [1.78] Dia. required for polarized headers only.

**PC Board Vertical  
Pin Headers with  
ACTION PIN Contacts**

**Material and Finish**

Housing — PBT, black

Flammability Rating — UL94V-0

Contacts — Copper alloy, plated with tin over nickel on entire contact

**Related Product Data**

Performance Characteristics — pages 189-190

Technical Documents — pages 189 and 205-206

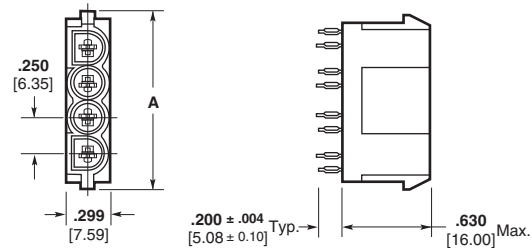
**Product Specification**

108-5222 ACTION PIN Universal  
MATE-N-LOK Header  
Assembly

**Mating Connectors**

Universal MATE-N-LOK II  
Plug Housings — pages 193-194

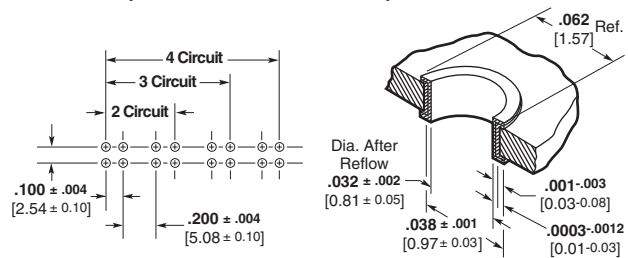
Universal MATE-N-LOK  
Plug Housings — page 175



Number of Circuits	A Dim.	Part Number	Mates with Plug Housing Part Number (Using Socket Contacts)	
			Universal MATE-N-LOK II	Universal MATE-N-LOK
2	.750 19.05	173924-1*	770017-1	350777-1
3	1.000 25.40	173925-1*	770018-1	350766-1
4	1.250 31.75	173926-1*	770019-1	350779-1

\*Install in PC Board with arbor tool.

**Note:** All part numbers are RoHS Compliant.



Recommended PC Board Hole Layout

PC Board Hole Dimensions

Standard Density

Universal MATE-N-LOK Headers  
.250 [6.35] Centerline



**Universal MATE-N-LOK Headers for UMNL II Connectors** (Continued)

**PC Board Right-Angle Pin and Socket Headers**

.250 [6.35] Centerline spacing

**Material**

**Housing** — Nylon

**Flammability Rating** — UL 94V-0

**Contacts** — Phosphor bronze

Solder tail width .052 [1.32]

**Related Product Data**

**Product Specification**

108-1053 Universal MATE-N-LOK  
PC Board Headers

**Performance Characteristics** —  
pages 189-190

**Technical Documents** — pages 189  
and 205-206

**Mating Connectors**

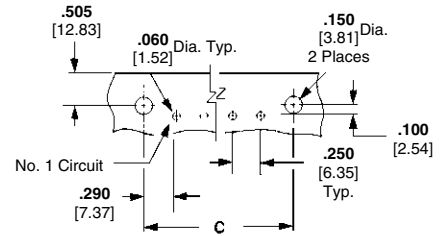
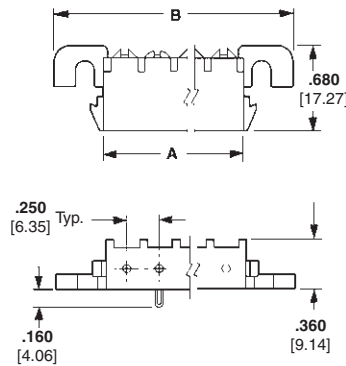
**Universal MATE-N-LOK II**

Plug Housings — pages 193-194

**Universal MATE-N-LOK**

Plug Housings — page 175

**2, 3, 4 and 5 Circuit, In-line**



Use 6-32 UNC Pan Head Screw  
3/8 [9.53] long for mounting  
(Not Supplied)

**Recommended PC Board Hole Layout**  
.062 [1.57] Board Thickness

Number of Circuits	Dimensions			Contact Finish	Part Numbers			
	A	B	C		Right-Angle Header		Mates with Plug Housing	
					Pin	Socket	Universal MATE-N-LOK II	Universal MATE-N-LOK
2	.550 13.97	1.245 31.62	.830 21.08	Pre-tin	1-350942-0	643226-1	770017-1	350777-1
				Duplex <sup>1</sup>	3-350942-0	—		
3	.800 20.32	1.495 37.97	1.080 27.43	Pre-tin	1-350943-0	643228-1	770018-1	350766-1
				Duplex <sup>1</sup>	3-350943-0	3-643228-0		
4	1.050 26.67	1.745 44.32	1.330 33.78	Pre-tin	1-350944-0	643230-1	770019-1	350779-1
				Duplex <sup>1</sup>	3-350944-0	3-643230-0		
5	1.300 33.02	1.995 50.67	1.580 40.13	Pre-tin	1-350945-0	643232-1	770016-1	350809-1
				Duplex <sup>1</sup>	3-350945-0	3-643232-0		

<sup>1</sup>Duplex Finish — Plated with .000030 [.000762] min. gold in mating area, matte tin on solder tail end over .000050 [.00127] min. nickel underplate on entire contact.

**Note:** All part numbers are RoHS Compliant.

**Universal MATE-N-LOK Headers for UMNL II Connectors** (Continued)

**High Current Contacts**

The Louvertac bands have the versatility of being designed into contact dimensions used in existing AMP connectors.

Universal MATE-N-LOK II High Current contacts have been designed to fit into an existing Universal MATE-N-LOK II housing. An initial T-Rise test of a fully energized 4 circuit connector with 10 gage wires has shown a 31 amp capability per line with a 30° T-rise.

**Cable-to-Cable**

**Material**

**Body** — Copper Alloy

**Louvertac Band** — Beryllium Copper

**Finish** — Silver

Contact Extraction Tool No. 318851-1

Latch Disengaging Tool No. 58382-1

■ **Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476**



■ **Certified by Canadian Standards Association, File No. LR7189**



■ **Passed test by VDE under their Registration Number 3980/Continuous Surveillance**



**Design Objective** — 108-1583

**Application Specification** — 114-16021

**Cable-to-Right-Angle Board**

**Material**

**Housing** — UL 94V-0 Nylon

**Contact Body** — Copper Alloy

**Louvertac Band** — Beryllium Copper

**Finish** — Silver

■ **Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476**



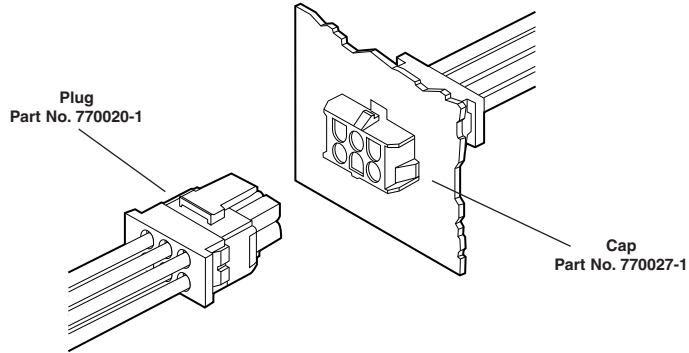
■ **Certified by Canadian Standards Association, File No. LR7189**



■ **Passed test by VDE under their Registration Number 3980/Continuous Surveillance**



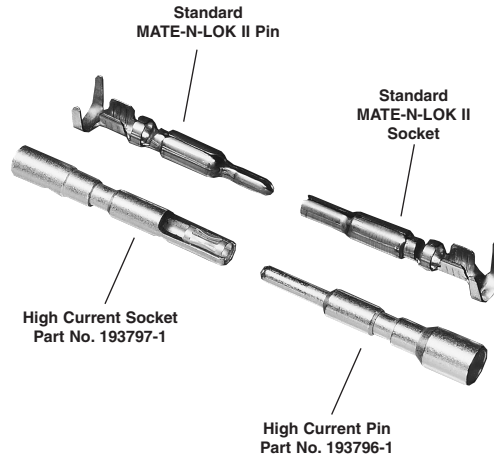
**Design Objective** — 108-1594



**Contacts**

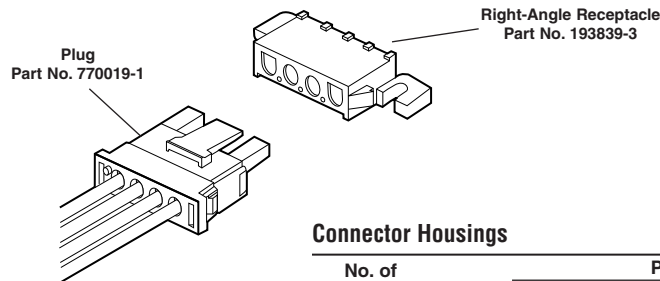
Wire Size AWG	Contact Part Numbers		Crimp Tools
	Pin	Socket	
10	193796-1	193797-1	Daniels Hand Tool #M310 or AMP P/N 356114-1 Positioner #TP1013 or AMP P/N 356337-1
12-14	193841-1	193842-1	

**Note:** High Current contacts are **not** intermateable with any other Universal MATE-N-LOK contact.



**Connector Housings**

No. of Circuits	Kit Part Numbers	
	Plug	Cap
2	770017-1	770024-1
3	770018-1	770025-1
4	770019-1	770026-1
5	770016-1	—
6	770020-1	770027-1
9	770021-1	770028-1
12	770022-1	770029-1
15	770023-1	770030-1



**Connector Housings**

No. of Circuits	Part Numbers	
	Socket Header	Mates with Plug Housing
2	193839-1	770017-1
3	193839-2	770018-1
4	193839-3	770019-1
5	193839-4	770016-1

**Notes:** 1. High Current contacts with Louvertac bands are **not** intermateable with any other contact.  
2. Additional information on connectors is available in AMP High Current Products Catalog 65141.  
3. Additional information on contacts is available in AMP Precision Pin and Socket Contacts Catalog 65910.

**Note:** All part numbers are RoHS Compliant.

Dimensions are in inches and millimeters unless otherwise specified. Values in brackets are metric equivalents.

Dimensions are shown for reference purposes only. Specifications subject to change.

USA: 1-800-522-6752  
Canada: 1-905-470-4425  
Mexico: 01-800-733-8926  
C. America: 52-55-1106-0803

South America: 55-11-2103-6000  
Hong Kong: 852-2735-1628  
Japan: 81-44-844-8013  
UK: 44-8706-080-208

Standard Density

Universal MATE-N-LOK Headers  
.250 [6.35] Centerline

**Universal MATE-N-LOK Headers for UMNL II Connectors** (Continued)

**High Current Vertical Pin Headers**

High Current Universal MATE-N-LOK II Vertical Pin Headers are designed to accept Universal MATE-N-LOK II Plugs with High Current Socket contacts. All housings are polarized in order to allow proper circuit board placement. Eight versions are available from 2 circuit to 15 circuits.

**Material**

**Housing** — UL 94V-0 Nylon

**Contacts** — Copper Alloy

**Finish** — Silver

■ **Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476**



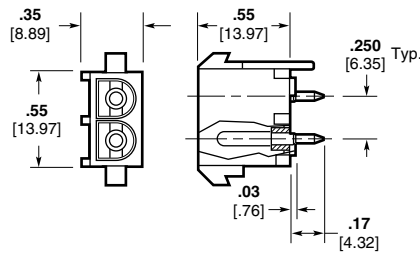
■ **Certified by Canadian Standards Association, File No. LR7189**



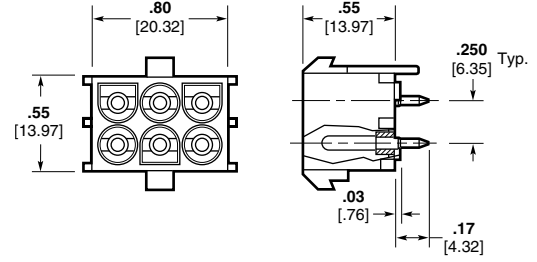
■ **Passed test by VDE under their Registration Number 3980/Continuous Surveillance**



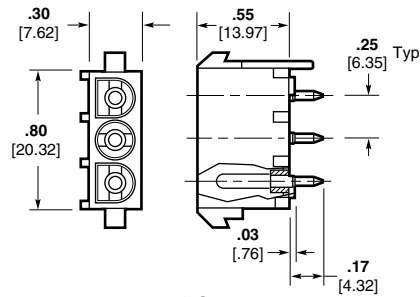
**Design Objective** — 108-1594



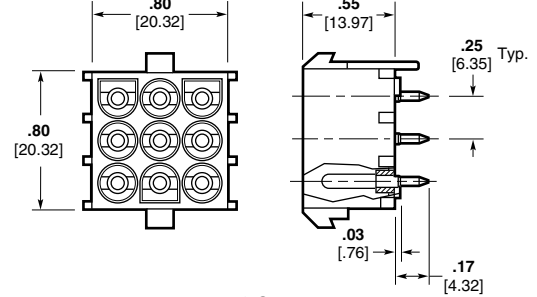
**2 Circuit**  
Part No. 194009-1



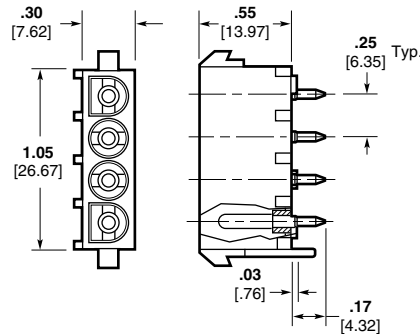
**6 Circuit**  
Part No. 194002-1



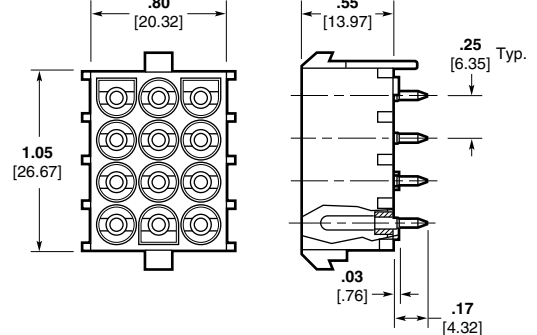
**3 Circuit**  
Part No. 194017-1



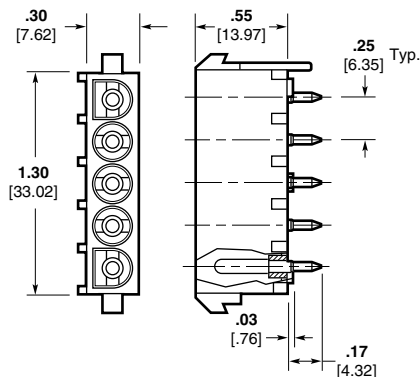
**9 Circuit**  
Part No. 194012-1



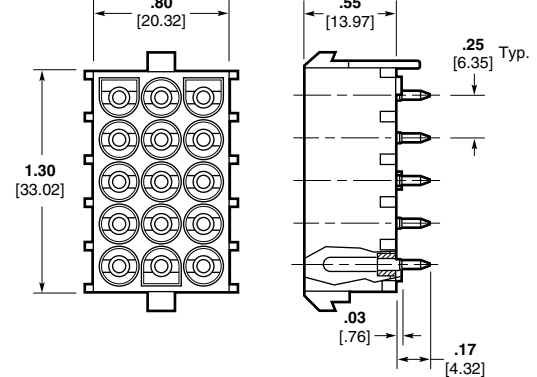
**4 Circuit**  
Part No. 194010-1



**12 Circuit**  
Part No. 194014-1



**5 Circuit**  
Part No. 194018-1



**15 Circuit**  
Part No. 194013-1


**Notes:** 1. High Current contacts with Louvertac bands are **not** intermateable with any other contact.  
2. Additional information on connectors is available in AMP High Current Products Catalog 65141.

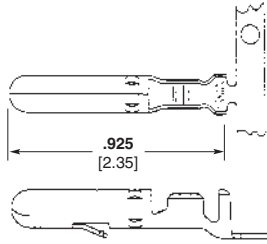
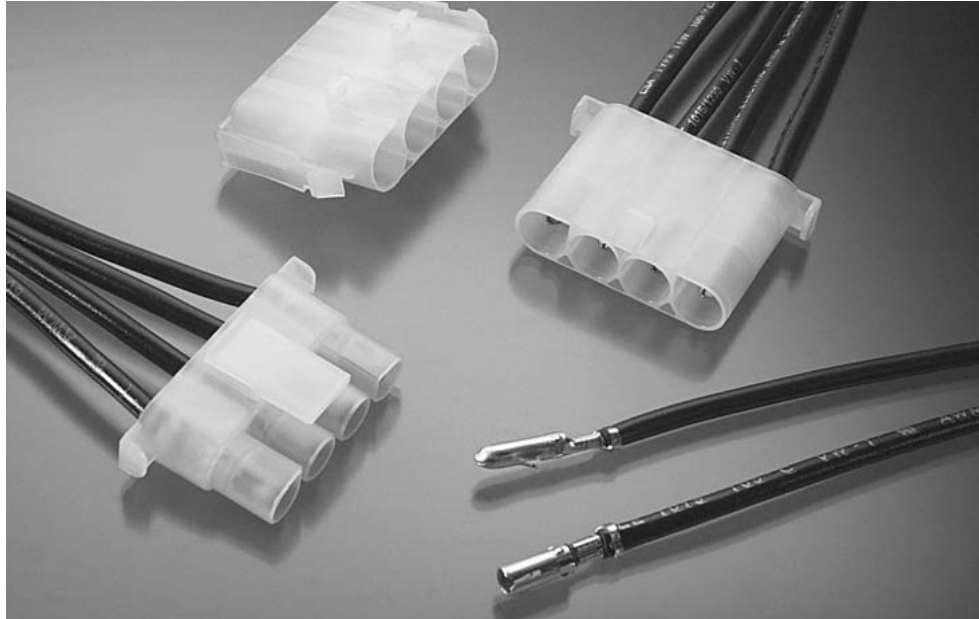
Standard Density

Universal MATE-N-LOK Headers  
.250 [6.35] Centerline

## .156 MATE-N-LOK Connectors

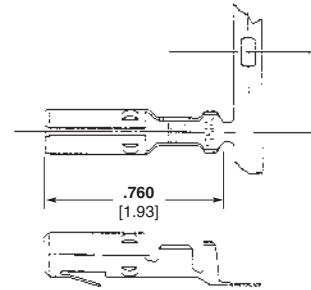
### Product Facts

- Positive polarized nylon housings
- Panel mount or free-hanging
- Numbered cavities for easy circuit identification
- Removable, crimp snap-in contacts
- Contacts accept 20-10 AWG wire sizes
- Pin contacts are used in cap housings, socket contacts are used in plug housings
- Not for interrupting current
- Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476 
- Certified by Canadian Standards Association File No. LR7189



Pin

Used in Caps



Socket

Used in Plugs

### Contacts

Pin diameter .156 [3.96]

### Material and Finish

#### Contacts—

Brass, Pre-tin plated  
Stock thickness .018 [.457]

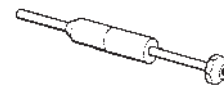
Wire Size Range AWG [mm <sup>2</sup> ]	Ins. Dia. Range	Contact Part Number				HDM <sup>1</sup> Applicator Part No.	Hand Tool Part No.
		Pin		Socket			
		Strip Form	Loose Piece	Strip Form	Loose Piece		
20-14 [.5-2.0]	.125 max.	61086-1	61251-1	61085-1	61250-1	466462-1 466462-2 466462-3	58631-1
12-10 [3.0-6.0]	.185 max.	61234-1	61253-1	61233-1	61252-1	687765-2 687765-3	58632-1

<sup>1</sup>To be used with appropriate application machine. See pages 201-204 for further information.

**Note:** All part numbers are RoHS Compliant.



Insertion Tool  
Part No. 91002-1  
(IS 408-7347)



Extraction Tool  
Part No. 691458-1 (Pins)  
Part No. 691458-2 (Sockets)  
(IS 408-4322)

**.156 MATE-N-LOK Connectors** (Continued)

**Housings**  
Free-Hanging or Panel Mount

**Related Product Data**

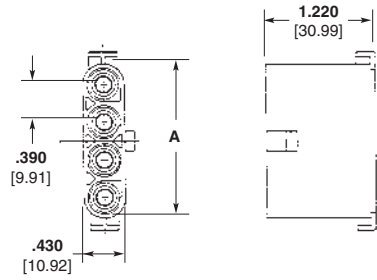
**Contacts**—page 203

**Product Specification**  
108-8002

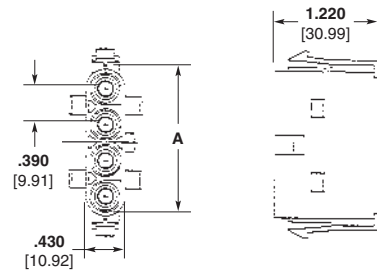
**Application Specification**  
114-1109

**Material**

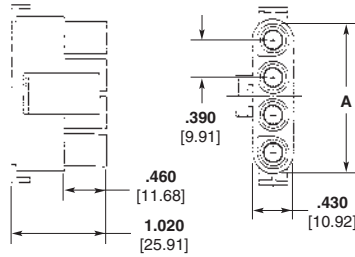
**Housings**—  
Nylon, Natural Color  
Flammability Rating—UL94V-2



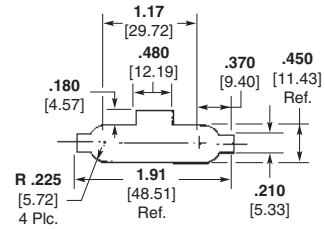
**Pin Housing (Cap)**  
Free-Hanging  
Part Number 794117-1



**Pin Housing (Cap)**  
Panel Mount  
Part Number 794118-1



**Socket Housing (Plug)**  
Part Number 794116-1



**Panel Mount Cutout**

**Note:** Panel must be punched in the same direction as the housing will be inserted.

Number of Circuits	A Dim.	Plug	Cap	
			Free-Hanging	Panel Mount
3	.048 1.210	794412-1	794413-1	—
4	.063 1.590	794116-1	794117-1	794118-1

**Note:** All part numbers are RoHS Compliant.

## Technical Documents

### Related Product Data

#### Connectors

<b>2.5 mm Signal Double Lock (SDL)</b> — pages 9-16
<b>Micro MATE-N-LOK 3 mm</b> — pages 17-47
<b>Grace Inertia Connectors (GIC) 3.5</b> —pages 49-52
<b>.062 Commercial Pin and Socket</b> —pages 53-57
<b>Power Double Lock (PDL)</b> — pages 59-81
<b>Mini Universal MATE-N-LOK</b> — pages 83-94
<b>Mini Universal MATE-N-LOK 2</b> — pages 99-107
<b>(MR) Miniature Rectangular</b> — pages 109-118
<b>VAL-U-LOK Connector System</b> — pages 119-124
<b>AMP-DUAC</b> —pages 125-133
<b>5.0 mm Power Key Connectors (PKC)</b> —pages 135-141
<b>.093 Commercial Pin and Socket</b> —pages 143-149
<b>Commercial MATE-N-LOK</b> — pages 151-162
<b>.140 MATE-N-LOK</b> —pages 165-167
<b>Universal MATE-N-LOK</b> — pages 169-188
<b>Universal MATE-N-LOK II</b> — pages 189-195
<b>.156 MATE-N-LOK</b> —pages 203-204

Various technical documents are available for your use:

**Product Specifications** describe technical performance characteristics and verification tests.

They are intended for the Design, Component and Quality Engineer.

108-1000	Commercial MATE-N-LOK Connectors
108-1022	(MR) Miniature Rectangular Connectors
108-1031	Universal MATE-N-LOK Connectors
108-1031-1	Splash Proof Seal, Universal MATE-N-LOK Connectors
108-1032	.140 Diameter MATE-N-LOK Pin and Socket Connectors
108-1037	.062 Commercial Pin and Socket Connectors
108-1037-1	.062 Commercial Pin and Socket Contacts
108-1038	.093 Commercial Pin and Socket Connector
108-1053	Universal MATE-N-LOK Printed Circuit Board Headers
108-1077	Commercial MATE-N-LOK Printed Circuit Board Headers
108-1078	(MR) Miniature Rectangular Printed Circuit Board Headers
108-1090	Universal MATE-N-LOK II Connectors
108-1542	Mini-Universal MATE-N-LOK Connectors
108-1542-2	Splash Proof Seals for Mini-Universal MATE-N-LOK Connectors
108-1543	Mini-Universal MATE-N-LOK Headers
108-1594	Universal MATE-N-LOK Headers with High Current Contacts
108-1693	Mini-Universal MATE-N-LOK II Connectors
108-1694	Mini-Universal MATE-N-LOK II Headers
108-1699	AMP-DUAC Headers
108-1836	Micro MATE-N-LOK 3 mm Connectors
108-2069	Universal MATE-N-LOK Circular Connector
108-5138	Mini-Universal MATE-N-LOK Connectors (UL 94V-0)
108-5151	Mini-Universal MATE-N-LOK Connectors (UL 94V-2)
108-5155	Commercial MATE-N-LOK Pin Header Assembly
108-5222	Universal MATE-N-LOK Headers with ACTION PIN Contacts
108-5410	Power Double Lock (PDL) Connectors
108-5439	Power Double Lock (PDL) Connectors (SMT)
108-5459	2.5 mm Signal Double Lock (SDL) Connectors
108-5699	5.0 mm Power Key Connectors (PKC)
108-5810	Grace Inertia Connectors (GIC) 3.5
108-8002	.156 Diameter MATE-N-LOK Connectors
108-19099	AMP-DUAC Receptacles
108-49000	Commercial MATE-N-LOK IDC Insulation Displacement Connectors

**Application Specifications** describe requirements for using the product in its intended application and/or crimping information. They are intended for the Packaging and Design Engineer and the Machine Setup Person.

114-1007	.140 Diameter MATE-N-LOK Contacts
114-1010	Universal MATE-N-LOK Connectors
114-1012	Commercial MATE-N-LOK Contacts
114-1013	.062 Commercial Pin and Socket Connectors
114-1014	(MR) Miniature Rectangular Contacts
114-1043	Universal MATE-N-LOK II Connectors ( housings, contacts and strain reliefs)
114-1109	.156 Diameter MATE-N-LOK Connectors
114-1111	Mini-Universal MATE-N-LOK 2 Connectors
114-5175	Power Double Lock (PDL) Connectors
114-5203	2.5 mm Signal Double Lock (SDL) Connectors
114-5292	5.0 mm Power Key Connectors (PKC)
114-5306	Grace Inertia Connectors (GIC) 3.5
114-6067	AMP-DUAC Crimping Contacts
114-13000	Micro MATE-N-LOK 3 mm Connectors



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## Technical Documents (Continued)

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### Application Specifications (Continued)

114-13089	Mini-Universal MATE-N-LOK Sealed Connectors
114-16017	Mini-Universal MATE-N-LOK Connectors
114-19048	AMP-DUAC Receptacles (Use of)
114-49000	.093 Commercial Pin and Socket Connectors
114-49001	Commercial MATE-N-LOK IDC Insulation Displacement Connectors

**Instruction Sheets** provide instructions for assembling or applying the product. They are intended for the Manufacturing Assembler or Operator.

408-3186	Terminating Head (PN 231894-1) (Commercial MATE-N-LOK IDC Connector)
408-3200	Universal MATE-N-LOK II Connectors (Housings, Contacts and Accessories)
408-3231	(MR) Miniature Rectangular Connectors (Pin Housing, Socket Housing, Contacts, and Accessories)
408-3234	Mini-Universal MATE-N-LOK Connectors
408-3320	Universal MATE-N-LOK Strain Relief Assembly and Keying Plug
408-3392	Universal MATE-N-LOK Splash Proof Seals
408-3393	Mini-Universal MATE-N-LOK 2 Connectors
408-4118	Contact Extraction Tool (PN 189727-1)
408-4322	Contact Extraction Tools [PN 691458-1 (Pins) and 691458-2 (Sockets)]
408-4370	Contact Extraction Tool (PN 318831-1)
408-4371	Contact Extraction Tool (PN 318851-1)
408-4375	Contact Extraction Tool (PN 318837-1)
408-4378	Extraction Tool (PN 318845-1)
408-6790	Hand Tool Handle (PN 58074-1)
408-7158	Contact Extraction Tools [PN 1-305183-1 (Pins) and 1-305183-2 (Sockets)]
408-7166	Commercial MATE-N-LOK Panel Mount Connector
408-7200	Commercial MATE-N-LOK Free-Hanging Connector
408-7201	Commercial MATE-N-LOK Detent Engagement Connectors, 2 and 3 circuit
408-7209	Commercial MATE-N-LOK Commoning Tabs
408-7211	Pin and Socket Extraction Tool (PN 465644-1)
408-7215	Commercial MATE-N-LOK Single Circuit Connector
408-7300	MATE-N-LOK Contact and Housing Selection Charts
408-7347	Contact Insertion Tool (PN 91002-1)
408-7582	Commercial MATE-N-LOK Keying Plug
408-7714	Universal MATE-N-LOK Connectors
408-7763	Power Unit (PN 91112-2)
408-7984	Contact Insertion Tool (PN 455830-1)
408-9330	Head (PN 231920-2) (Used with Arbor Tool PN 91085-2)
408-9436	Latch Disengaging Tool (PN 58382-1)
408-9570	Contact Extraction Tool (PN 455822-2)
408-10003	Contact Retention Test Tool (PN 1586700-1)
408-10017	Universal MATE-N-LOK Sealed Bulkhead Connectors
411-5105	Mini-Universal MATE-N-LOK Connectors
411-5638	Power Double Lock (PDL) Connectors

## Application Tooling

### Semiautomatic Machines

#### AMP-O-LECTRIC Model "G" Terminating Machines, 354500-1, -9, -11



Semiautomatic bench machines for crimping reeled terminals and contacts, featuring a quiet and reliable direct motor drive, microprocessor controls for ease of setup and operation, and guarding and lighting designed for operator convenience and safety. All models are equipped with either manual or automatic precision adjustment of crimp height. Machine-mounted sensors are available for crimp quality monitoring using conventional miniature-style applicators.

#### Specifications

**Width**—18.7-25.3 [475-643] depending on applicator type

**Depth**—21.5-28.1 [546-713] depending on applicator type

**Height**—20 [508]

**Weight**—240 lb [110 kg]

**Electrical**—120 or 220 VAC, 50 or 60 Hz

**Air**—90-110 psi [6.21-7.59 bar], 6 scfm [0.00282 m<sup>3</sup>/s] when required with air-feed applicators

**Wire Range**—26-10 AWG [0.12-6 mm<sup>2</sup>] solid or stranded, depending on product applied

For more information, request Catalog **65828**, Catalog **82275 (Crimp Quality Monitor (CQM))**.

#### AMP-O-MATIC Stripper-Crimper Machine, 854040-3, -4



Semiautomatic bench crimping machines that also strip the wire, and are therefore used for terminating jacketed cable. Feature manual precision adjustment of crimp height, keyed strip blades for faster, more accurate setups, and an efficient scrap removal system. All adjustments can be made from the front of the machines without special tools. Available with crimp quality monitoring.

#### Specifications

**Width**—14 [355]

**Depth**—18 [457]

**Height**—33 [838] without reel

**Weight**—150 lb [68 kg]

**Electrical**—120 VAC, 50 or 60 Hz, .5 A

**Air**—80-100 psi [5.52-6.90 bar], 3.5 scfm [0.00165 m<sup>3</sup>/s]

**Wire Range**—32-14 AWG [0.03-2 mm<sup>2</sup>]

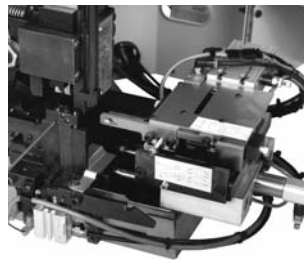
For more information, request Catalog **65004**.

#### AMP 3K/40 and AMP 5K/40 Terminators



As value oriented terminators, the AMP 3K/40 and AMP 5K/40 are designed for customers that require the increased output and quality of a semi-automatic machine at a competitive price. By incorporating the most commonly requested features as standard and offering a long list of optional equipment, these terminators offer flexibility to meet the specific needs of various applications at the lowest possible cost.

#### Optional Stripping Module for the AMP 3K/40, AMP 5K/40 and AMP-O-LECTRIC Model G Terminators



The combination of the Stripping Module with the AMP-O-LECTRIC Model G Terminator or the AMP 3K/40, 5K/40 provides an economical, proficient method of stripping wire and crimping terminals on the same machine. Wires are stripped moments before crimping, meaning there is virtually no chance of damaging wire conductors during handling or storage. Once the wire is fed into the start sensor the Stripping Module does the rest, improving placement accuracy.

For more information, request Catalog **1309085**.

#### Crimp Quality Monitor



This system measures the crimp height of each termination as it is made. It also evaluates the quality of each crimp. If a crimp is questionable, the monitor alerts the operator with both visual and audible alarms. It also features ports for printing and networking. For use with AMP-O-LECTRIC Model "G" and AMP-O-MATIC Stripper-

Crimper Machines, the monitor is mounted to the machine. For use with AMPOMATOR CLS IV+ Machines, it is integrated into the machine's operating system, with the displays appearing on the machine's touch screen.

For more information, request Catalog **82275**.

**Note:** This listing is for reference purposes only. To obtain part numbers for specific applications call Technical Support.



## Application Tooling (Continued)

### Automatic Machines

#### AMPOMATOR System III Leadmaker



The AMPOMATOR System III Leadmaker is designed for the demands of low-volume/high-mix manufacturing and precision quality. This leadmaker combines the best wire processing capabilities with

new technologies in terminal feeding and machine set-up found in the System III Applicator to offer significant advantages for higher throughput and efficiencies. Request Catalog 1654956-5.

#### System III Applicator



The System III Applicator introduces several new technologies into the applicator including a precision servo-electric motorized feeding system, a built-in data module for storing terminal crimp and

set-up information, a precision fit round ram, and a newly designed terminal depressor. It still utilizes the proven quality of the HD-M crimper and anvil tooling.

#### AMPOMATOR CLS IV+ Lead-Making Machines, 356500-1, -2



Fully-automatic machines that measure, cut, strip and terminate single leads. Microprocessor-controlled, and programmed and operated using an easy-to-follow, menu-driven touchscreen. Features include direct-drive terminating units with precision crimp height adjustment, fully programmable setups, wire runout and splice detection, and motorized pre-feed with wire straightener. Crimp quality monitoring is also available.

#### Specifications

**Width**—159 [4 039]  
**Depth**—68 [1 730]  
**Height**—90 [2 285] min., with 24 [610] dia. reel  
**Weight**—2 000 lb [907 kg]  
**Electrical**—220 VAC, 50 or 60 Hz, 1  $\emptyset$ , 20 A with neutral and ground  
**Air**—90 psi [6.21 bar], 15 scfm [0.00708 m<sup>3</sup>/s] sustained  
**Wire Range**—26-10 AWG [0.12-6 mm<sup>2</sup>] stranded, 26-16 AWG [0.12-1.4 mm<sup>2</sup>] solid  
**Lead Lengths**—3-90 [76.2-2 286], 90-1 000 [2 286-25 400] with long lead conveyors  
For more information, request Catalog 124324.

#### EDGE Electronic Applicator Counter



The new, versatile EDGE applicator counter tracks wearable tool usage for the most effective maintenance planning. The completely electronic counter, with clear LCD display, indicates cycles since installation. By performing maintenance at measured intervals with pre-set

limits, operators avoid breakdowns and rejects caused by tool wear or mis-adjustment. For more information, request Catalog 1773385.

**Application Tooling** (Continued)

**Applicator Styles**

**End- and Side-Feed Heavy-Duty Miniature (HDM) Applicators**



- Handle a wide variety of products
- Used with both semi- and fully-automatic machines
- Quickly interchangeable to run different products
- Easily repaired
- Simple dial-in settings to handle similar products and various wire sizes

**Stripper-Crimper (SCA) Applicators**



- For use with AMP-O-MATIC Stripper-Crimper Machines
- Terminate a wide variety of open-barrel products
- Quickly interchangeable to run different products
- Easily repaired
- Simple dial-in settings to handle similar products and various wire sizes
- CQM applicators are available

**Crimp Quality Monitor (CQM) Applicators**



- Same basic features as regular HDM and SCA applicators
- Recommended for use with machines featuring manual or automatic precision-adjust
- Use two built-in sensors to provide the Crimp Quality Monitor with data to measure crimp height, and evaluate the quality of each crimp

**Applicator and Hand Tool Selection Guide**

**Related Product Data**

**Contacts**

- 2.5 mm Signal Double Lock (SDL)—page 12
- Micro MATE-N-LOK 3 mm—page 22
- Grace Inertia Connectors (GIC) 3.5—page 50
- .062 Commercial Pin and Socket—page 55
- Power Double Lock (PDL)—page 61
- Mini Universal MATE-N-LOK—page 84
- Mini Universal MATE-N-LOK 2—pages 100-101
- (MR) Miniature Rectangular—page 112
- VAL-U-LOK Connector System—page 120
- AMP-DUAC—pages 126-127
- 5.0 mm Power Key Connectors (PKC)—page 137
- .093 Commercial Pin and Socket—page 145
- Commercial MATE-N-LOK—pages 155-156
- .140 MATE-N-LOK—page 166
- Universal MATE-N-LOK—pages 172-173
- Universal MATE-N-LOK II—page 192
- .156 MATE-N-LOK—page 203

Density	Product Line	Applicators			Hand Tools	
		A	B	C	D	E
High	2.5 mm Signal Double Lock (SDL)	*	*	*	X	-
	Micro MATE-N-LOK 3 mm	X	X	X	X	-
	Grace Inertia Connectors (GIC) 3.5	*	*	*	X	-
	.062 Commercial Pin and Socket	X	X	X	-	X
	Power Double Lock (PDL)	*	*	*	X	-
	Mini-Universal MATE-N-LOK	X	X	X	X	X
	Sealed Mini-Universal MATE-N-LOK	X	X	X	X	-
	Mini-Universal MATE-N-LOK 2	X	X	X	X	X
	(MR) Miniature Rectangular	X	X	X	X	-
	VAL-U-LOK Connector System	X	-	-	-	X
	AMP-DUAC	X	X	-	X	-
	Standard	5.0 mm Power Key Connectors (PKC)	*	*	*	X
.093 Commercial Pin and Socket		X	X	X	-	X
Commercial MATE-N-LOK		X	X	X	X	X
.140 MATE-N-LOK		X	X	X	X	-
Universal MATE-N-LOK		X	X	X	X	X
Universal MATE-N-LOK II		X	X	X	X	X
	.156 MATE-N-LOK	X	-	-	X	-

- A—Heavy Duty Miniature (HDM) Applicators
- B—Stripper-Crimper Applicators (SCA)
- C—Crimp Quality Monitor (CQM) Applicators
- D—CERTI-CRIMP Hand Tool
- E—PRO-CRIMPER III Commercial Hand Tool

\* Contact the Tooling Assistance Center (TAC) at 1-800-722-1111 for Applicator Part Numbers.

**Mechanical Hand Tools**

**CERTI-CRIMP II Straight Action Hand Tools (SAHT) 91501-1, 91502-1**



Premium grade hand tools. Feature ratchet control to provide complete crimp cycle. Die sets close in a straight line. Include a contact locator and wire stop, plus an insulation crimp

adjustment lever, when applicable. Approximate weight 1.3 lb [0.59 kg] For more information, request Catalog 65780.

**Note:** This listing is for reference purposes only. To obtain part numbers for specific applications call Technical Support.

Dimensions are in inches and millimeters unless otherwise specified. Values in brackets are metric equivalents.

Dimensions are shown for reference purposes only. Specifications subject to change.

USA: 1-800-522-6752  
Canada: 1-905-470-4425  
Mexico: 01-800-733-8926  
C. America: 52-55-1106-0803

South America: 55-11-2103-6000  
Hong Kong: 852-2735-1628  
Japan: 81-44-844-8013  
UK: 44-8706-080-208

**Application Tooling** (Continued)**Hand Tools****Related Product Data****Contacts**

- 2.5 mm Signal Double Lock (SDL)**—page 12
- Micro MATE-N-LOK 3 mm**—page 22
- Grace Inertia Connectors (GIC) 3.5**—page 50
- .062 Commercial Pin and Socket**—page 55
- Power Double Lock (PDL)**—page 61
- Mini Universal MATE-N-LOK**—page 86
- Mini Universal MATE-N-LOK 2**—pages 100-101
- (MR) Miniature Rectangular**—page 112
- VAL-U-LOK Connector System**—page 120
- AMP-DUAC**—pages 126-127
- 5.0 mm Power Key Connectors (PKC)**—page 137
- .093 Commercial Pin and Socket**—page 145
- Commercial MATE-N-LOK**—pages 155-156
- .140 MATE-N-LOK**—page 166
- Universal MATE-N-LOK**—pages 172-173
- Universal MATE-N-LOK II**—page 192
- .156 MATE-N-LOK**—page 203

**CERTI-CRIMP II Hand Tool**

Catalog 65780

**PRO-CRIMPER III Hand Tool**

Catalog 82276

Features	CERTI-CRIMP Hand Tool	PRO-CRIMPER III Hand Tool
Field Repair/Prototyping	X	X
OEM Applications/Low Volume Production	X	—
Ratchet Control	X	X
Brush/Bellmouth Control	X	X
Precision Crimp Height Control	X	X
Little/No Operator Training	X	—
Insulation Adjustment	X	—
Repairable	X	—

Density	Product Line	CERTI-CRIMP Hand Tool		PRO-CRIMPER III Hand Tool	
		Part Number	Instruction Sheet	Part Number	Instruction Sheet
High	2.5 mm Signal Double Lock (SDL)	234603-1	411-5735	—	—
		234604-1	411-5736	—	—
	Micro MATE-N-LOK 3 mm	91501-1	408-8547	—	—
		91502-1	408-8547	—	—
	Grace Inertia Connectors (GIC) 3.5	1596277-1	411-78101	—	—
		—	—	90870-1	408-9965
	.062 Commercial Pin & Socket	—	—	90869-1	408-9964
		—	—	—	—
	Power Double Lock (PDL)	91567-1	408-8547	—	—
		91569-1	408-8547	—	—
	Mini-Universal MATE-N-LOK and Sealed Mini-Universal MATE-N-LOK	91529-1	408-8547	90758-1	408-9938
		91522-1	408-8547	90759-1	408-9962
		91594-1	408-8547	90760-1	408-9963
		90717-2	408-4443	—	—
	Mini-Universal MATE-N-LOK 2	91529-1	408-8547	—	—
91522-1		408-8547	—	—	
(MR) Miniature Rectangular	91594-1	408-8547	—	—	
	90717-2	408-4443	—	—	
VAL-U-LOK Connector System	91534-1	408-8547	58514-1	408-9973	
	91526-1	408-8547	58514-1	408-9973	
AMP-DUAC	—	—	91387-1	408-8917	
	—	—	91388-1	408-8918	
Standard	5.0 mm Power Key Connectors (PKC)	90714-1	408-4385	—	—
		734202-2	—	—	—
	.093 Commercial Pin & Socket	—	—	90872-1	408-9967
		—	—	90871-1	408-9966
	Commercial MATE-N-LOK	91515-1	408-8547	—	—
		91512-1	408-8547	90574-1	408-9886
		91504-1	408-8547	90575-1	408-9887
		91552-1	408-8547	—	—
	.140 MATE-N-LOK	69710-1 <sup>1</sup>	408-2095	—	—
		58373-1 <sup>2</sup>	408-9442	—	—
	Universal MATE-N-LOK and Universal MATE-N-LOK II	58374-1 <sup>2</sup>	408-9442	—	—
		58439-1	408-9591	—	—
		91510-1	408-8547	90548-1	408-9885
		91500-1	408-8547	90546-1	408-9883
	.156 MATE-N-LOK	91508-1	408-8547	90547-1	408-9884
91506-1		408-8547	90547-1	408-9884	
69710-1 <sup>1</sup>		408-2095	—	—	
58380-1 <sup>2</sup>		408-9433	—	—	
58380-2 <sup>2</sup>		408-9433	—	—	
58631-1		408-4341	—	—	
58632-1	408-4340	—	—		

<sup>1</sup>Hand tool requires die set. <sup>2</sup>Die set.**Note:** This listing is for reference purposes only. To obtain part numbers for specific applications call Technical Support.

## Applicator Options

	Strip Form Contact Part Number		Heavy-Duty Miniature Applicator Part Numbers				
	Pin	Socket	Used on Bench Top Terminators		Used on Automatic Leadmaking Equipment (AMPOMATOR CLS Machine with T or G Terminators)	Used on AMP-O-MATIC Stripper-Crimper Machine	
			AMP-O-LECTRIC Model K Machine	AMP-O-LECTRIC Model G Machine			
2.5 mm Signal Double Lock (SDL) Contacts	917764-1	917683-1	*	*	*	*	
	917765-1	917684-1	*	*	*	*	
Micro MATE-N-LOK 3 mm Connector System	1-794608-0	—					
	1-794608-1	—	1385194-2	1385194-3	1385194-1	—	
	1-794608-2	—					
	1-794609-0	—					
	1-794609-1	—	1385377-2	1385377-3	1385377-1	—	
	1-794609-2	—					
	—	794606-1					
	—	1-794606-1	680893-2	680893-3	680893-1	—	
	—	1-794606-2					
	—	794607-1					
Grace Inertia Connectors (GIC) 3.5 .062 Commercial Pin and Socket Contacts	—	1-794607-1	680894-2	680894-3	680894-1	—	
	—	1-794607-2					
	1565080-1	1565079-1	*	*	*	*	
	1612335-1	1612334-1	*	*	*	*	
	640391-1	640392-1					
	640391-5	640392-5	466686-2	466686-3	466686-1	466955-1	
	—	640392-2					
	—	794046-1					
	350629-1	350628-1					
	—	350628-2					
Power Double Lock (PDL)	350629-5	350628-5	687996-2	687996-3	687996-1	—	
	—	350628-6					
	—	794103-1					
	177916-1	177914-1	*	*	*	*	
		177914-2†	*	*	*	*	
	177917-1	177915-1	*	*	*	*	
		177915-2†	*	*	*	*	
	† High contact pressure type.						
	Mini-Universal MATE-N-LOK Contacts	770835-1	770834-1	567418-2	567418-3	567418-1	—
		1-770835-0	1-770834-0				
770901-1		770902-1	567066-4	567066-5	567066-3	466990-2	
1-770901-0		1-770902-0					
770903-1		770904-1	567067-2	567067-3	567067-1	466986-1	
1-770903-0		1-770904-0					
171636-1		171637-1	680582	567251-1	680582	567902-1	
—	171637-3						
Mini-Universal MATE-N-LOK 2 Contacts	794216-1	794217-1	567418-2	567418-3	567418-1	—	
	1-794216-0	1-794217-0					
	794218-1	794219-1	567066-4	567066-5	567066-3	466990-2	
	1-794218-0	1-794219-0					
	794220-1	794221-1	680854-2	680854-3	680854-1	466986-1	
	1-794220-0	1-794221-0					
	794222-1	794223-1	680582-2	680582-3	—	567902-1	
	1-794222-0	1-794223-0					
(MR) Miniature Rectangular Contacts	350968-1	794000-1	466352-2	466352-3	466352-1	—	
	350968-2	794000-2					
	350967-1	641294-1	466351-2	466351-4	466351-1	466913-1	
	350967-2	641294-2					
	350969-1	—	466351-2	466351-4	466351-1	466913-1	
	350969-2	—					

Note: Stripper Crimper (SCA) and Crimp Quality Monitor Applicators may be available. Call Technical Support for Part Numbers.

\* Contact the Tooling Assistance Center (TAC) at 1-800-722-1111 for Applicator Part Numbers.

Note: All part numbers are RoHS Compliant.

Dimensions are in inches and millimeters unless otherwise specified. Values in brackets are metric equivalents.

Dimensions are shown for reference purposes only. Specifications subject to change.

USA: 1-800-522-6752  
Canada: 1-905-470-4425  
Mexico: 01-800-733-8926  
C. America: 52-55-1106-0803

South America: 55-11-2103-6000  
Hong Kong: 852-2735-1628  
Japan: 81-44-844-8013  
UK: 44-8706-080-208

**Applicator Options** (Continued)

Applicator Options

	Strip Form Contact Part Number		Heavy-Duty Miniature Applicator Part Numbers			
	Pin	Socket	Used on Bench Top Terminators		Used on Automatic Leadmaking Equipment (AMPOMATOR CLS Machine with T or G Terminators)	Used on AMP-O-MATIC Stripper-Crimper Machine
			AMP-O-LECTRIC Model K Machine	AMP-O-LECTRIC Model G Machine		
VAL-U-LOK Connector System	794955-1	794956-1				
	794955-2	794956-2				
	794955-3	794956-3	1385817-2	1385817-3	1385817-1	—
	794955-4	794956-4				
	794957-1	794958-1				
	794957-2	794958-2				
	794957-3	794958-3	1385448-2	1385448-3	1385448-1	—
AMP-DUAC	794957-4	794958-4				
	794576-1	106529-2	680308-2	680308-3	—	567959-1
		1-794138-3				
	794578-1	106528-2	680307-2	680307-3	—	567960-1
		1-794139-3				
5.0 mm Power Key Connectors (PKC)	—	1-794140-3	680350-2	680350-3	—	—
		794418-1				
	—	1376347-1	*	*	*	*
	—	1376348-1	*	*	*	*
.093 Commercial Pin and Socket Contacts	350418-1	350417-1				
	—	350417-3	466656-2	466656-3	466656-1	466922-1
	350418-5	350417-5				
	350416-1	350415-1				
	350416-5	350415-5	466878-2	466878-3	466878-1	466959-1
	770530-1	770529-1	567337-4	567337-6	567337-3	—
	770385-1	770383-1	567273-2	567273-4	567273-3	—
Commercial MATE-N-LOK Contacts	—	—				
	350079-1	350078-1				
	350079-4	350078-4	466426-2	466426-3	466426-1	—
	350079-5	350078-5				
	61116-1	61314-1				
	61116-4	61314-4				
	61116-5	61314-5	466320-2	466320-4	466320-1	466917-1
	61116-6	61314-6				
	61116-7	61314-7				
	61118-1	61117-1				
	61118-4	61117-4				
	61118-5	61117-5	687763-2	687763-6	687763-1	466920-1
	61118-6	61117-6				
	61118-7	61117-7				
	350558-1	350557-1				
350558-4	350557-4	687898-2	687898-4	687898-1	—	
61527-2	—	466320-2	466320-4	466320-1	466917-1	
.140 MATE-N-LOK Contacts	61627-1	61626-1	567306-2	567306-3	567306-1	—
	61627-2	61626-2				
	350201-1	350200-1	567309-2	567309-3	587309-1	—
	350201-2	350200-2				
Universal MATE-N-LOK Contacts	350924-1	350925-1				
	350924-6	350925-6	466616-2	466616-3	—	—
	350561-1	350851-1				
	—	350570-1				
	350561-2	350851-2				
	—	350570-2				
	350561-7	350851-7	466320-2	466320-4	466320-1	466917-1
	—	350570-7				
	350561-3	350570-3				
—	350570-6					

**Note:** Stripper Crimper (SCA) and Crimp Quality Monitor Applicators may be available. Call Technical Support for Part Numbers.  
\* Contact the Tooling Assistance Center (TAC) at 1-800-722-1111 for Applicator Part Numbers.  
**Note:** All part numbers are RoHS Compliant.

**Applicator Options** (Continued)

**Universal  
MATE-N-LOK  
Contacts** (Continued)

**Universal  
MATE-N-LOK II  
Contacts**

**.156 MATE-N-LOK  
Contacts**

Strip Form Contact Part Number	Heavy-Duty Miniature Applicator Part Numbers					
	Pin	Socket	Used on Bench Top Terminators		Used on Automatic Leadmaking Equipment (AMPOMATOR CLS Machine with T or G Terminators)	Used on AMP-O-MATIC Stripper-Crimper Machine
			AMP-O-LECTRIC Model K Machine	AMP-O-LECTRIC Model G Machine		
350218-1	350536-1					
350218-2	350536-2					
350218-7	350536-7	687763-2	687763-6	687763-1	466920-1	
350218-3	350536-3					
350218-6	350536-6					
350538-1	350537-1					
350538-2	350537-2					
350538-7	350537-7	687926-2	687926-6	687926-1	466989-1	
350538-3	350537-3					
350538-6	350537-6					
350873-1	350874-1					
350873-3	350874-3	466588-2	466588-3	466588-1	—	
350922-3	350923-3					
350922-6	350923-6	466597-2	466597-3	466597-1	—	
350922-4	350923-4					
350699-1	—					
350699-2	—	466320-2	466320-4	466320-1	466917-1	
350699-7	—					
350687-1	—					
350687-2	—	687763-2	687763-6	687763-1	466920-1	
350687-7	—					
350700-1	—					
350700-2	—	687926-2	687926-6	687926-1	466989-1	
350700-7	—					
770210-1	—	567216-2	567216-3	567216-1		
350654-1	—	687763-2	687763-6	687763-1	466920-1	
770234-3	—	466597-2	466597-3	466597-1		
770011-6	770012-6	—	567252-4	567252-1	—	
770009-1	—					
1-770009-0	—					
—	770010-3	—	567214-4	567214-1	567914-1	
—	1-770010-0					
770007-1	—					
1-770007-0	—					
—	770008-3	—	567213-4	567213-1	567913-1	
—	1-770008-0					
770005-1	—					
1-770005-0	—					
—	770006-3	—	567212-4	567212-1	—	
1-770005-1	1-770006-0					
770003-3	770004-3					
1-770003-0	1-770004-0	—	567211-4	567211-1	—	
770193-1	—					
1-770193-0	—	—	567213-4	567213-1	567913-1	
770194-1	—					
1-770194-0	—	—	567212-4	567212-1	—	
61086-1	61085-1	466462-1	466462-3	466462-1	—	
61234-1	61233-1	687765-2	687765-2	—	—	

Applicator Options

**Note:** Stripper Crimper (SCA) and Crimp Quality Monitor Applicators may be available. Call Technical Support for Part Numbers.  
\* Contact the Tooling Assistance Center (TAC) at 1-800-722-1111 for Applicator Part Numbers.  
**Note: All part numbers are RoHS Compliant.**



Soft Shell  
Pin and Socket Connectors

**Product Feature Comparisons**

Product Feature Comparisons

High Density	2.5 mm Signal Double Lock (SDL)	Micro MATE-N-LOK 3 mm	Grace Inertia Connectors (GIC) 3.5	.062 Commercial Pin & Socket	Power Double Lock (PDL)	Mini- Universal MATE-N-LOK	Sealed Mini- Universal MATE-N-LOK	Mini- Universal MATE-N-LOK 2	(MR) Miniature Rectangular	VAL-U-LOK Connector System	AMP- DUAC
<b>Wire AWG —</b>											
Maximum	20	20	18	18	16	16	18	16	18	18	18
Minimum	26	30	26	30	26	30	26	30	26	26	26
<b>Current Rating —</b>											
10 AWG Wire	—	—	—	—	—	—	—	—	—	—	—
14 AWG Wire	—	—	—	—	—	—	—	—	—	—	—
16 AWG Wire	—	—	—	—	14	—	—	—	—	—	—
18 AWG Wire	—	**	7	17	—	9	9	10.5	6	9	9
20 AWG Wire	3	—	—	—	—	—	—	—	—	—	—
Max. Operating Voltage (AC or DC)	50	250	300	250	300	600	600	600	250	600	600
<b>Flammability Rating —</b>											
UL 94V-0	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
UL 94V-2	No	No	No	Yes	No	Yes*	No	Yes	No	Yes	Yes
<b>Approvals —</b>											
UL	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Submitted	Yes	Yes	Yes
CSA	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Submitted	Yes	Yes	Yes
VDE	Yes	Yes	—	No	Yes	Yes	Yes	Submitted	No	—	No
<b>Contact Material —</b>											
Brass	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	—
Phos. Bronze	Yes	Yes	No	Yes	No	Yes	Yes	No	Yes	Yes	Yes
<b>Plating Finish —</b>											
Tin Plating	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Gold Plating	No	Yes	No	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
<b>Centerline Spacing —</b>	.098 [2.50]	.118 [3.00]	.137 [3.50]	.145 [3.68]	.156 [3.96] 256 [6.50] .312 [7.92] .512 [13.00]	.163 [4.14]	.163 [4.14]	.163 [4.14]	.165 [4.20]	.165 [4.20]	.165 [4.20]
<b>Housings —</b>											
Panel Mount	No	Yes	No	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
Free-Hanging	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
Secondary Locking Latches	Yes	No	Yes	No	Yes	No	No	Yes	No	Yes	Yes
Contact Position Control	Yes	No	No	No	No	No	No	Yes	No	No	Yes
In-Line Config.	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
Dual Row Config.	No	Yes	Yes	No	Yes	Yes	Yes	Yes	No	Yes	Yes
Matrix Config.	No	No	No	Yes	Yes	Yes	No	Yes	Yes	No	No
<b>Accessories —</b>											
Strain Relief	No	No	Yes	No	Yes	Yes	No	No	Yes	No	Yes
Keying Plug	No	No	No	No	No	Yes	Yes	Yes	Yes	No	No
Seals	No	No	No	No	No	Yes	Yes	No	No	No	No
<b>Headers —</b>											
Vertical	Yes	Yes	No	No	Yes	Yes	Yes	Mini-Universal MATE-N-LOK	Yes	Yes	Yes
Blindmate	No	No	No	No	No	Yes	Yes	Mini-Universal MATE-N-LOK	No	Yes	No
Right-Angle	Planned	Yes	No	No	No	Yes	Yes	Mini-Universal MATE-N-LOK	No	Yes	Yes
<b>Positions —</b>											
Minimum	2	2	2	1	1	1	2	2	2	2	2
Maximum	13	24	6	9	12	24	10	24	36	24	24

\* Wire-to-Wire Only.  
\*\* 5 A on 20 AWG\*

Soft Shell  
Pin and Socket Connectors

**Product Feature Comparisons** (Continued)

Standard Density	5.0 mm Power Key Connectors (PKC)	.093 Commercial Pin & Socket	Commercial MATE-N-LOK	.140 MATE-N-LOK	Universal MATE-N-LOK	Universal MATE-N-LOK II	.156 MATE-N-LOK
<b>Wire AWG—</b>							
Maximum	16	14	14	10	10	10	10
Minimum	24	24	30	20	30	30	20
<b>Current Rating —</b>							
10 AWG Wire	—	—	—	28	—	—	32.5
14 AWG Wire	—	19	13	—	15	19	—
16 AWG Wire	10	—	—	—	—	—	—
18 AWG Wire	—	—	—	—	—	—	—
20 AWG Wire	—	—	—	—	—	—	—
Max. Operating Voltage (AC or DC)	300	250	250	600	600	600	600
<b>Flammability Rating —</b>							
UL 94V-0	Yes	No	Yes	No	Yes	Yes	No
UL 94V-2	No	Yes	Yes	Yes	Yes	No	Yes
<b>Approvals —</b>							
UL	Yes	Yes	Yes	Yes	Yes	Yes	Yes
CSA	Yes	Yes	Yes	Yes	Yes	Yes	No
VDE	No	No	No	No	Yes	Yes	No
<b>Contact Material —</b>							
Brass	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Phos. Bronze	No	Yes	Yes	Yes	Yes	Yes	No
<b>Plating Finish —</b>							
Tin Plating	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Gold Plating	No	Yes	Yes	No	Yes	Yes	No
<b>Centerline Spacing —</b>	.197 [5.00]	.198 [5.03] .250 [6.35] .248 [6.30]	.200 [5.08] .240 [6.10] x .202 [5.13] .195 [4.95] x .360 [9.14]	.240 [6.10]	.250 [6.35]	.250 [6.35]	.390 [9.91]
<b>Housings —</b>							
Panel Mount	No	Yes	Yes	Yes	Yes	Yes	Yes
Free-Hanging	No	Yes	Yes	Yes	Yes	Yes	Yes
Secondary Locking Latches	Yes	No	No	Yes	No	Yes	Yes
Contact Position Control	No	No	No	No	No	Yes	No
In-Line Config.	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Dual Row Config.	Yes	No	Yes	No	No	No	No
Matrix Config.	No	Yes	Yes	Yes	Yes	Yes	No
<b>Accessories —</b>							
Strain Relief	Yes	No	No	No	Yes	Universal MATE-N-LOK	No
Keying Plug	No	No	Yes	No	Yes	Yes	No
Seals	No	No	No	No	Yes	No	No
<b>Headers —</b>							
Vertical	Yes	No	Yes	No	Yes	Universal MATE-N-LOK	No
Blindmate	No	No	No	No	No	No	No
Right-Angle	No	No	Yes	No	Yes	Universal MATE-N-LOK	No
<b>Positions —</b>							
Minimum	2	1	1	2	1	2	3
Maximum	6	15	16	9	15	15	4

\* Wire-to-Wire Only.  
\*\* 5 A on 20 AWG\*



**Non-Compliant to RoHS Compliant Part Number Cross Reference**

Non-Compliant to RoHS Compliant Part Number Cross Reference

Non-Compliant Part Number	RoHS Compliant Part Number
350209-2	1586512-2
350210-2	1586514-2
350211-2	1586515-2
350211-3	1586515-3
350212-2	1586518-2
350213-2	1586520-2
350214-2	1586522-2
350220-2	1586524-2
1-350375-0	2-350375-0
1-350376-0	2-350376-0
1-350377-0	2-350377-0
1-350378-1	2-350378-1
1-350379-1	2-350379-1
1-350380-1	2-350380-1
350424-2	1586525-2
350425-2	1586526-2
350426-2	1586528-2
350428-2	350428-4
350429-2	350429-4
350430-2	350430-4
350431-2	350431-4
350432-2	350432-4
350433-2	350433-4
350434-2	350434-4
350539-2	1586530-2
350541-2	1586532-2
350543-2	1586534-2
350544-2	1586536-2
350582-2	350582-4
350583-2	350583-4
350584-2	350584-4
350585-2	350585-4
350586-2	350586-4
350587-2	350587-4
350588-2	350588-4
350641-2	1586539-2
350711-2	350711-4
350712-2	350712-4
350713-2	350713-4
350714-2	350714-4
350714-3	350714-5
350732-2	350732-4
350737-2	350737-4
350738-2	350738-4
350742-2	350742-4
350759-3	350759-5
350760-3	350760-5
350761-3	350761-5
350762-3	350762-5
350763-3	350763-5
350764-3	350764-5
350765-3	350765-5
350786-2	350786-3
350787-2	350787-3
350789-2	350789-3
350790-2	350790-3
350792-2	350792-3
350793-2	350793-3
350824-2	350824-4
350825-2	350825-4
350826-2	350826-4

Non-Compliant Part Number	RoHS Compliant Part Number
350827-2	350827-4
350828-2	350828-4
350829-2	350829-4
350830-2	350830-4
350832-2	350832-4
350833-2	350833-4
350834-2	350834-4
350835-2	350835-4
350836-2	350836-4
350837-2	350837-4
2-350942-0	3-350942-0
2-350943-0	3-350943-0
2-350944-0	3-350944-0
2-350945-0	3-350945-0
350988-3	350988-5
350989-3	350989-5
350990-3	350990-5
350991-3	350991-5
1-380935-0	2-380935-0
1-380936-0	2-380936-0
1-380937-0	2-380937-0
2-380991-0	2-1586544-0
2-380999-0	2-1586546-0
640466-2	640466-3
640467-2	640467-3
640497-2	2-640497-2
640497-4	2-640497-4
640498-2	2-640498-2
640498-4	2-640498-4
640499-2	2-640499-2
640499-4	2-640499-4
640500-2	2-640500-2
640500-4	2-640500-4
640501-2	2-640501-2
640501-4	2-640501-4
640502-2	2-640502-2
640502-4	2-640502-4
640503-2	2-640503-2
640503-4	2-640503-4
640504-2	2-640504-2
640504-4	2-640504-4
640505-2	2-640505-2
640505-4	2-640505-4
640506-2	2-640506-2
640506-4	2-640506-4
640583-2	640583-3
640900-2	640900-3
640901-2	640901-3
641831-2	641831-3
641832-2	641832-3
641963-2	641963-3
641964-2	641964-3
641970-2	641970-3
641971-2	641971-3
641972-2	641972-3
641974-2	641974-3
641976-2	641976-4
643228-2	3-643228-0
643230-2	3-643230-0
643232-2	3-643232-0

Non-Compliant Part Number	RoHS Compliant Part Number
643234-2	3-643234-0
643236-2	3-643236-0
643410-2	643410-3
643412-2	643412-3
643414-2	643414-3
643424-2	643424-3
643426-2	643426-3
770003-4	1-770003-0
770004-4	1-770004-0
770005-2	1-770005-0
770005-4	1-770005-1
770006-4	1-770006-0
770007-2	1-770007-0
770008-4	1-770008-0
770010-4	1-770010-0
770166-1	1-770166-0
770166-2	1-770166-1
770170-1	1-770170-0
770170-2	1-770170-1
770174-1	1-770174-0
770174-2	1-770174-1
770178-1	1-770178-0
770178-2	1-770178-1
770182-1	1-770182-0
770182-2	1-770182-1
770186-1	1-770186-0
770186-2	1-770186-1
770190-1	1-770190-0
770190-2	1-770190-1
770193-2	1-770193-0
770194-2	1-770194-0
770246-4	1-770246-0
770247-4	1-770247-0
770248-2	1-770248-0
770249-4	1-770249-0
770250-2	1-770250-0
770251-4	1-770251-0
770252-2	1-770252-0
770254-2	1-770254-0
770255-2	1-770255-0
770262-2	770262-3
770328-1	1586627-1
1-770328-1	1-1586627-1
770621-1	1-770621-0
770621-2	1-770621-1
770743-1	1-770743-0
770743-2	1-770743-1
770834-3	1-770834-0
770834-6	1-770834-1
770835-3	1-770835-0
770858-1	1-770858-0
770858-2	1-770858-1
770859-1	1-770859-0
770859-2	1-770859-1
770872-1	1-770872-0
770872-2	1-770872-1
770873-1	1-770873-0
770873-2	1-770873-1
770874-2	1-770874-1
770875-1	1-770875-0
770875-2	1-770875-1

Non-Compliant Part Number	RoHS Compliant Part Number
770876-1	1-770876-0
770876-2	1-770876-1
770901-3	1-770901-0
770902-3	1-770902-0
770902-6	1-770902-1
770903-3	1-770903-0
770903-6	1-770903-1
770904-3	1-770904-0
770904-6	1-770904-1
770966-1	1-770966-0
770966-2	1-770966-1
770967-1	1-770967-0
770967-2	1-770967-1
770968-1	1-770968-0
770968-2	1-770968-1
770969-1	1-770969-0
770969-2	1-770969-1
770970-1	1-770970-0
770970-2	1-770970-1
770971-1	1-770971-0
770971-2	1-770971-1
770972-1	1-770972-0
770972-2	1-770972-1
770973-1	1-770973-0
770973-2	1-770973-1
770974-1	1-770974-0
770974-2	1-770974-1
770985-3	1-770985-0
770986-3	1-770986-0
770987-3	1-770987-0
770988-3	1-770988-0
794040-1	1-794040-0
794040-2	1-794040-1
794058-3	1-794058-0
794059-3	1-794059-0
794065-1	1-794065-0
794065-2	1-794065-1
794066-1	1-794066-0
794066-2	1-794066-1
794067-1	1-794067-0
794067-2	1-794067-1
794068-1	1-794068-0
794068-2	1-794068-1
794069-1	1-794069-0
794069-2	1-794069-1
794070-1	1-794070-0
794070-2	1-794070-1
794071-1	1-794071-0
794071-2	1-794071-1
794072-1	1-794072-0
794072-2	1-794072-1
794073-1	1-794073-0
794073-2	1-794073-1
794074-1	1-794074-0
794074-2	1-794074-1
794075-2	1-794075-1
794076-1	1-794076-0
794076-2	1-794076-1
794077-1	1-794077-0
794077-2	1-794077-1
794078-1	1-794078-0

Dimensions are in inches and millimeters unless otherwise specified. Values in brackets are metric equivalents.

Dimensions are shown for reference purposes only. Specifications subject to change.

USA: 1-800-522-6752  
Canada: 1-905-470-4425  
Mexico: 01-800-733-8926  
C. America: 52-55-1106-0803

South America: 55-11-2103-6000  
Hong Kong: 852-2735-1628  
Japan: 81-44-844-8013  
UK: 44-8706-080-208

**Non-Compliant to RoHS Compliant Part Number Cross Reference** (Continued)

Non-Compliant Part Number	RoHS Compliant Part Number	Non-Compliant Part Number	RoHS Compliant Part Number	Non-Compliant Part Number	RoHS Compliant Part Number	Non-Compliant Part Number	RoHS Compliant Part Number
794078-2	1-794078-1	794313-1	794313-3	794472-2	1-794472-2	794610-2	1-794610-1
794079-1	1-794079-0	794313-2	794313-4	794484-1	1-794484-1	794610-3	1-794610-2
794079-2	1-794079-1	794325-1	1-794325-0	794484-2	1-794484-2	794611-2	1-794611-1
794105-1	1-794105-0	794326-2	1-794326-1	794485-1	1-794485-1	794611-3	1-794611-2
794105-2	1-794105-1	794327-1	1-794327-0	794485-2	1-794485-2	794612-1	1-794612-0
794106-1	1-794106-0	794327-2	1-794327-1	794486-1	1-794486-1	794612-2	1-794612-1
794106-2	1-794106-1	794328-1	1-794328-0	794486-2	1-794486-2	794612-3	1-794612-2
794107-1	1-794107-0	794330-2	1-794330-1	794487-1	1-794487-1	794613-1	1-794613-0
794107-2	1-794107-1	794349-1	1-794349-1	794487-2	1-794487-2	794613-2	1-794613-1
794108-1	1-794108-0	794349-2	1-794349-2	794488-1	1-794488-1	794613-3	1-794613-2
794108-2	1-794108-1	794350-1	1-794350-1	794488-2	1-794488-2	794618-2	3-794618-2
794126-1	1-794126-0	794350-2	1-794350-2	794489-1	1-794489-1	794618-4	3-794618-4
794130-2	1-794130-1	794351-1	1-794351-1	794489-2	1-794489-2	794618-6	3-794618-6
794136-3	1-794136-1	794351-2	1-794351-2	794490-1	1-794490-1	794618-8	3-794618-8
794137-3	1-794137-1	794352-1	1-794352-1	794490-2	1-794490-2	1-794618-0	4-794618-0
794138-3	1-794138-3	794352-2	1-794352-2	794491-1	1-794491-1	1-794618-2	4-794618-2
794139-3	1-794139-3	794353-1	1-794353-1	794491-2	1-794491-2	1-794618-4	4-794618-4
794140-3	1-794140-3	794353-2	1-794353-2	794492-1	1-794492-1	1-794618-6	4-794618-6
794141-3	1-794141-3	794354-1	1-794354-1	794492-2	1-794492-2	1-794618-8	4-794618-8
794142-3	1-794142-3	794354-2	1-794354-2	794493-1	1-794493-1	2-794618-0	5-794618-0
794143-3	1-794143-3	794355-1	1-794355-1	794493-2	1-794493-2	2-794618-2	5-794618-2
794181-1	1-794181-1	794355-2	1-794355-2	794494-1	1-794494-1	2-794618-4	5-794618-4
794181-2	1-794181-2	794356-1	1-794356-1	794494-2	1-794494-2	794619-2	3-794619-2
794216-3	1-794216-0	794356-2	1-794356-2	794507-1	1-794507-1	794619-4	3-794619-4
794217-3	1-794217-0	794357-1	1-794357-1	794508-1	1-794508-1	794619-6	3-794619-6
794218-3	1-794218-0	794357-2	1-794357-2	794509-1	1-794509-1	794619-8	3-794619-8
794219-3	1-794219-0	794358-1	1-794358-1	794510-1	1-794510-1	1-794619-0	4-794619-0
794220-3	1-794220-0	794358-2	1-794358-2	794511-1	1-794511-1	1-794619-2	4-794619-2
794221-3	1-794221-0	794359-1	1-794359-1	794512-1	1-794512-1	1-794619-4	4-794619-4
794222-3	1-794222-0	794359-2	1-794359-2	794513-1	1-794513-1	1-794619-6	4-794619-6
794223-3	1-794223-0	794360-1	1-794360-1	794514-1	1-794514-1	1-794619-8	4-794619-8
794224-3	1-794224-0	794360-2	1-794360-2	794515-1	1-794515-1	2-794619-0	5-794619-0
794225-3	1-794225-0	794374-1	1-794374-0	794516-1	1-794516-1	2-794619-2	5-794619-2
794226-3	1-794226-0	794374-2	1-794374-1	794526-1	1-794526-1	2-794619-4	5-794619-4
794227-3	1-794227-0	794406-3	1-794406-0	794527-1	1-794527-1	794620-2	3-794620-2
794228-3	1-794228-0	794407-3	1-794407-0	794528-1	1-794528-1	794620-4	3-794620-4
794229-3	1-794229-0	794415-1	1-794415-1	794529-1	1-794529-1	794620-6	3-794620-6
794230-3	1-794230-0	794415-2	1-794415-2	794530-1	1-794530-1	794620-8	3-794620-8
794231-3	1-794231-0	794429-1	1-794429-1	794531-1	1-794531-1	1-794620-0	4-794620-0
794302-1	1-794302-1	794429-2	1-794429-2	794532-1	1-794532-1	1-794620-2	4-794620-2
794302-2	1-794302-2	794448-1	1-794448-1	794533-1	1-794533-1	1-794620-4	4-794620-4
794303-1	1-794303-1	794449-1	1-794449-1	794534-1	1-794534-1	1-794620-6	4-794620-6
794303-2	1-794303-2	794453-1	1-794453-1	794540-1	1-794540-1	1-794620-8	4-794620-8
794304-1	1-794304-1	794453-2	1-794453-2	794540-2	1-794540-2	2-794620-0	5-794620-0
794304-2	1-794304-2	794454-1	1-794454-1	794543-1	1-794543-1	2-794620-2	5-794620-2
794305-1	1-794305-1	794454-2	1-794454-2	794543-2	1-794543-2	2-794620-4	5-794620-4
794305-2	1-794305-2	794455-1	1-794455-1	794576-2	794576-4	794621-2	3-794621-2
794306-1	1-794306-1	794455-2	1-794455-2	794578-2	794578-4	794621-4	3-794621-4
794306-2	1-794306-2	794466-1	1-794466-1	794588-1	1-794588-1	794621-6	3-794621-6
794307-1	1-794307-1	794466-2	1-794466-2	794589-1	1-794589-1	794621-8	3-794621-8
794307-2	1-794307-2	794467-1	1-794467-1	794590-1	1-794590-1	1-794621-0	4-794621-0
794308-1	1-794308-1	794467-2	1-794467-2	794606-2	1-794606-1	1-794621-2	4-794621-2
794308-2	1-794308-2	794468-1	1-794468-1	794606-3	1-794606-2	1-794621-4	4-794621-4
794309-1	1-794309-1	794468-2	1-794468-2	794607-2	1-794607-1	1-794621-6	4-794621-6
794309-2	1-794309-2	794469-1	1-794469-1	794607-3	1-794607-2	1-794621-8	4-794621-8
794310-1	1-794310-1	794469-2	1-794469-2	794608-1	1-794608-0	2-794621-0	5-794621-0
794310-2	1-794310-2	794470-1	1-794470-1	794608-2	1-794608-1	2-794621-2	5-794621-2
794311-1	1-794311-1	794470-2	1-794470-2	794608-3	1-794608-2	2-794621-4	5-794621-4
794311-2	1-794311-2	794471-1	1-794471-1	794609-1	1-794609-0	794622-2	3-794622-2
794312-1	1-794312-1	794471-2	1-794471-2	794609-2	1-794609-1	794622-4	3-794622-4
794312-2	1-794312-2	794472-1	1-794472-1	794609-3	1-794609-2	794622-6	3-794622-6

Non-Compliant to RoHS Compliant Part Number Cross Reference

Dimensions are in inches and millimeters unless otherwise specified. Values in brackets are metric equivalents.

Dimensions are shown for reference purposes only. Specifications subject to change.

USA: 1-800-522-6752  
Canada: 1-905-470-4425  
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C. America: 52-55-1106-0803

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Japan: 81-44-844-8013  
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**Non-Compliant to RoHS Compliant Part Number Cross Reference** (Continued)

Non-Compliant Part Number	RoHS Compliant Part Number	Non-Compliant Part Number	RoHS Compliant Part Number	Non-Compliant Part Number	RoHS Compliant Part Number	Non-Compliant Part Number	RoHS Compliant Part Number
794622-8	3-794622-8	1-794627-0	4-794627-0	1-794632-2	4-794632-2	1-794637-4	4-794637-4
1-794622-0	4-794622-0	1-794627-2	4-794627-2	1-794632-4	4-794632-4	1-794637-6	4-794637-6
1-794622-2	4-794622-2	1-794627-4	4-794627-4	1-794632-6	4-794632-6	1-794637-8	4-794637-8
1-794622-4	4-794622-4	1-794627-6	4-794627-6	1-794632-8	4-794632-8	2-794637-0	5-794637-0
1-794622-6	4-794622-6	1-794627-8	4-794627-8	2-794632-0	5-794632-0	2-794637-2	5-794637-2
1-794622-8	4-794622-8	2-794627-0	5-794627-0	2-794632-2	5-794632-2	2-794637-4	5-794637-4
2-794622-0	5-794622-0	2-794627-2	5-794627-2	2-794632-4	5-794632-4	794638-2	3-794638-2
2-794622-2	5-794622-2	2-794627-4	5-794627-4	794633-2	3-794633-2	794638-4	3-794638-4
2-794622-4	5-794622-4	794628-2	3-794628-2	794633-4	3-794633-4	794638-6	3-794638-6
794623-2	3-794623-2	794628-4	3-794628-4	794633-6	3-794633-6	794638-8	3-794638-8
794623-4	3-794623-4	794628-6	3-794628-6	794633-8	3-794633-8	1-794638-0	4-794638-0
794623-6	3-794623-6	794628-8	3-794628-8	1-794633-0	4-794633-0	1-794638-2	4-794638-2
794623-8	3-794623-8	1-794628-0	4-794628-0	1-794633-2	4-794633-2	1-794638-4	4-794638-4
1-794623-0	4-794623-0	1-794628-2	4-794628-2	1-794633-4	4-794633-4	1-794638-6	4-794638-6
1-794623-2	4-794623-2	1-794628-4	4-794628-4	1-794633-6	4-794633-6	1-794638-8	4-794638-8
1-794623-4	4-794623-4	1-794628-6	4-794628-6	1-794633-8	4-794633-8	2-794638-0	5-794638-0
1-794623-6	4-794623-6	1-794628-8	4-794628-8	2-794633-0	5-794633-0	2-794638-2	5-794638-2
1-794623-8	4-794623-8	2-794628-0	5-794628-0	2-794633-2	5-794633-2	2-794638-4	5-794638-4
2-794623-0	5-794623-0	2-794628-2	5-794628-2	2-794633-4	5-794633-4	794662-2	1586489-2
2-794623-2	5-794623-2	2-794628-4	5-794628-4	794634-2	3-794634-2	794662-4	1586489-4
2-794623-4	5-794623-4	794629-2	3-794629-2	794634-4	3-794634-4	794662-6	1586489-6
794624-2	3-794624-2	794629-4	3-794629-4	794634-6	3-794634-6	794662-8	1586489-8
794624-4	3-794624-4	794629-6	3-794629-6	794634-8	3-794634-8	1-794662-0	1-1586489-0
794624-6	3-794624-6	794629-8	3-794629-8	1-794634-0	4-794634-0	1-794662-2	1-1586489-2
794624-8	3-794624-8	1-794629-0	4-794629-0	1-794634-2	4-794634-2	1-794662-4	1-1586489-4
1-794624-0	4-794624-0	1-794629-2	4-794629-2	1-794634-4	4-794634-4	1-794662-6	1-1586489-6
1-794624-2	4-794624-2	1-794629-4	4-794629-4	1-794634-6	4-794634-6	1-794662-8	1-1586489-8
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1-794624-8	4-794624-8	2-794629-0	5-794629-0	2-794634-2	5-794634-2	2-794662-4	2-1586489-4
2-794624-0	5-794624-0	2-794629-2	5-794629-2	2-794634-4	5-794634-4	2-794662-6	2-1586489-6
2-794624-2	5-794624-2	2-794629-4	5-794629-4	794635-2	3-794635-2	794663-4	1586490-4
2-794624-4	5-794624-4	794630-2	3-794630-2	794635-4	3-794635-4	794663-6	1586490-6
794625-2	3-794625-2	794630-4	3-794630-4	794635-6	3-794635-6	794663-8	1586490-8
794625-4	3-794625-4	794630-6	3-794630-6	794635-8	3-794635-8	1-794663-0	1-1586490-0
794625-6	3-794625-6	794630-8	3-794630-8	1-794635-0	4-794635-0	1-794663-2	1-1586490-2
794625-8	3-794625-8	1-794630-0	4-794630-0	1-794635-2	4-794635-2	1-794663-4	1-1586490-4
1-794625-0	4-794625-0	1-794630-2	4-794630-2	1-794635-4	4-794635-4	1-794663-6	1-1586490-6
1-794625-2	4-794625-2	1-794630-4	4-794630-4	1-794635-6	4-794635-6	1-794663-8	1-1586490-8
1-794625-4	4-794625-4	1-794630-6	4-794630-6	1-794635-8	4-794635-8	2-794663-0	2-1586490-0
1-794625-6	4-794625-6	1-794630-8	4-794630-8	2-794635-0	5-794635-0	2-794663-2	2-1586490-2
1-794625-8	4-794625-8	2-794630-0	5-794630-0	2-794635-2	5-794635-2	2-794663-4	2-1586490-4
2-794625-0	5-794625-0	2-794630-2	5-794630-2	2-794635-4	5-794635-4	794664-2	1586491-2
2-794625-2	5-794625-2	2-794630-4	5-794630-4	794636-2	3-794636-2	794664-4	1586491-4
2-794625-4	5-794625-4	794631-2	3-794631-2	794636-4	3-794636-4	794664-6	1586491-6
794626-2	3-794626-2	794631-4	3-794631-4	794636-6	3-794636-6	794664-8	1586491-8
794626-4	3-794626-4	794631-6	3-794631-6	794636-8	3-794636-8	1-794664-0	1-1586491-0
794626-6	3-794626-6	794631-8	3-794631-8	1-794636-0	4-794636-0	1-794664-2	1-1586491-2
794626-8	3-794626-8	1-794631-0	4-794631-0	1-794636-2	4-794636-2	1-794664-4	1-1586491-4
1-794626-0	4-794626-0	1-794631-2	4-794631-2	1-794636-4	4-794636-4	1-794664-6	1-1586491-6
1-794626-2	4-794626-2	1-794631-4	4-794631-4	1-794636-6	4-794636-6	1-794664-8	1-1586491-8
1-794626-4	4-794626-4	1-794631-6	4-794631-6	1-794636-8	4-794636-8	2-794664-0	2-1586491-0
1-794626-6	4-794626-6	1-794631-8	4-794631-8	2-794636-0	5-794636-0	2-794664-2	2-1586491-2
1-794626-8	4-794626-8	2-794631-0	5-794631-0	2-794636-2	5-794636-2	2-794664-4	2-1586491-4
2-794626-0	5-794626-0	2-794631-2	5-794631-2	2-794636-4	5-794636-4	794665-2	1586492-2
2-794626-2	5-794626-2	2-794631-4	5-794631-4	794637-2	3-794637-2	794665-4	1586492-4
2-794626-4	5-794626-4	794632-2	3-794632-2	794637-4	3-794637-4	794665-6	1586492-6
794627-2	3-794627-2	794632-4	3-794632-4	794637-6	3-794637-6	794665-8	1586492-8
794627-4	3-794627-4	794632-6	3-794632-6	794637-8	3-794637-8	1-794665-0	1-1586492-0
794627-6	3-794627-6	794632-8	3-794632-8	1-794637-0	4-794637-0	1-794665-2	1-1586492-2
794627-8	3-794627-8	1-794632-0	4-794632-0	1-794637-2	4-794637-2	1-794665-4	1-1586492-4

Non-Compliant to RoHS Compliant Part Number Cross Reference

Dimensions are in inches and millimeters unless otherwise specified. Values in brackets are metric equivalents.

Dimensions are shown for reference purposes only. Specifications subject to change.

USA: 1-800-522-6752  
Canada: 1-905-470-4425  
Mexico: 01-800-733-8926  
C. America: 52-55-1106-0803

South America: 55-11-2103-6000  
Hong Kong: 852-2735-1628  
Japan: 81-44-844-8013  
UK: 44-8706-080-208

### Non-Compliant to RoHS Compliant Part Number Cross Reference (Continued)

Non-Compliant Part Number	RoHS Compliant Part Number	Non-Compliant Part Number	RoHS Compliant Part Number	Non-Compliant Part Number	RoHS Compliant Part Number	Non-Compliant Part Number	RoHS Compliant Part Number
1-794665-8	1-1586492-8	2-794677-0	5-794677-0	2-794682-2	5-794682-2	1445055-5	2-1445055-5
2-794665-0	2-1586492-0	2-794677-2	5-794677-2	2-794682-4	5-794682-4	1445055-6	2-1445055-6
2-794665-2	2-1586492-2	2-794677-4	5-794677-4	794704-1	1586542-1	1445055-7	2-1445055-7
2-794665-4	2-1586492-4	794678-2	3-794678-2	1445050-2	2-1445050-2	1445055-8	2-1445055-8
794666-2	1586493-2	794678-4	3-794678-4	1445050-3	2-1445050-3	1445055-9	2-1445055-9
794666-4	1586493-4	794678-6	3-794678-6	1445050-4	2-1445050-4	1-1445055-0	3-1445055-0
794666-6	1586493-6	794678-8	3-794678-8	1445050-5	2-1445050-5	1-1445055-1	3-1445055-1
794666-8	1586493-8	1-794678-0	4-794678-0	1445050-6	2-1445050-6	1-1445055-2	3-1445055-2
1-794666-0	1-1586493-0	1-794678-2	4-794678-2	1445050-7	2-1445050-7	1445056-2	2-1445056-2
1-794666-2	1-1586493-2	1-794678-4	4-794678-4	1445050-8	2-1445050-8	1445056-3	2-1445056-3
1-794666-4	1-1586493-4	1-794678-6	4-794678-6	1445050-9	2-1445050-9	1445056-4	2-1445056-4
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1-794666-8	1-1586493-8	2-794678-0	5-794678-0	1-1445050-1	3-1445050-1	1445056-6	2-1445056-6
2-794666-0	2-1586493-0	2-794678-2	5-794678-2	1-1445050-2	3-1445050-2	1445056-7	2-1445056-7
2-794666-2	2-1586493-2	2-794678-4	5-794678-4	1445051-2	2-1445051-2	1445056-8	2-1445056-8
2-794666-4	2-1586493-4	794679-2	3-794679-2	1445051-3	2-1445051-3	1445056-9	2-1445056-9
794667-2	1586494-2	794679-4	3-794679-4	1445051-4	2-1445051-4	1-1445056-0	3-1445056-0
794667-4	1586494-4	794679-6	3-794679-6	1445051-5	2-1445051-5	1-1445056-1	3-1445056-1
794667-6	1586494-6	794679-8	3-794679-8	1445051-6	2-1445051-6	1-1445056-2	3-1445056-2
794667-8	1586494-8	1-794679-0	4-794679-0	1445051-7	2-1445051-7	1445057-2	2-1445057-2
1-794667-0	1-1586494-0	1-794679-2	4-794679-2	1445051-8	2-1445051-8	1445057-3	2-1445057-3
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1-794667-4	1-1586494-4	1-794679-6	4-794679-6	1-1445051-0	3-1445051-0	1445057-5	2-1445057-5
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2-794667-2	2-1586494-2	2-794679-4	5-794679-4	1445052-3	2-1445052-3	1445057-9	2-1445057-9
2-794667-4	2-1586494-4	794680-2	3-794680-2	1445052-4	2-1445052-4	1-1445057-0	3-1445057-0
794668-2	1586495-2	794680-4	3-794680-4	1445052-5	2-1445052-5	1-1445057-1	3-1445057-1
794668-4	1586495-4	794680-6	3-794680-6	1445052-6	2-1445052-6	1-1445057-2	3-1445057-2
794668-6	1586495-6	794680-8	3-794680-8	1445052-7	2-1445052-7	1445058-2	2-1445058-2
794668-8	1586495-8	1-794680-0	4-794680-0	1445052-8	2-1445052-8	1445058-3	2-1445058-3
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1-794669-4	1-1586496-4	1-794681-6	4-794681-6	1-1445053-2	3-1445053-2	1445084-7	2-1445084-7
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794677-4	3-794677-4	794682-6	3-794682-6	1445054-8	2-1445054-8	1445085-3	2-1445085-3
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794677-8	3-794677-8	1-794682-0	4-794682-0	1-1445054-0	3-1445054-0	1445085-5	2-1445085-5
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1-794677-8	4-794677-8	2-794682-0	5-794682-0	1445055-4	2-1445055-4	1-1445085-0	3-1445085-0

Non-Compliant to RoHS Compliant Part Number Cross Reference

Dimensions are in inches and millimeters unless otherwise specified. Values in brackets are metric equivalents.

Dimensions are shown for reference purposes only. Specifications subject to change.

USA: 1-800-522-6752  
Canada: 1-905-470-4425  
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Hong Kong: 852-2735-1628  
Japan: 81-44-844-8013  
UK: 44-8706-080-208

**Non-Compliant to RoHS Compliant Part Number Cross Reference** (Continued)

Non-Compliant to RoHS Compliant Part Number Cross Reference

Non-Compliant Part Number	RoHS Compliant Part Number
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1445086-2	2-1445086-2
1445086-3	2-1445086-3
1445086-4	2-1445086-4
1445086-5	2-1445086-5
1445086-6	2-1445086-6
1445086-7	2-1445086-7
1445086-8	2-1445086-8
1445086-9	2-1445086-9
1-1445086-0	3-1445086-0
1-1445086-1	3-1445086-1
1-1445086-2	3-1445086-2
1445087-2	2-1445087-2
1445087-3	2-1445087-3
1445087-4	2-1445087-4
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1445087-7	2-1445087-7
1445087-8	2-1445087-8
1445087-9	2-1445087-9
1-1445087-0	3-1445087-0
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1445088-2	2-1445088-2
1445088-3	2-1445088-3
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1445088-7	2-1445088-7
1445088-8	2-1445088-8
1445088-9	2-1445088-9
1-1445088-0	3-1445088-0
1-1445088-1	3-1445088-1
1-1445088-2	3-1445088-2
1445089-2	2-1445089-2
1445089-3	2-1445089-3
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1445089-6	2-1445089-6
1445089-7	2-1445089-7
1445089-8	2-1445089-8
1445089-9	2-1445089-9
1-1445089-0	3-1445089-0
1-1445089-1	3-1445089-1

Non-Compliant Part Number	RoHS Compliant Part Number
1-1445089-2	3-1445089-2
1445090-2	2-1445090-2
1445090-3	2-1445090-3
1445090-4	2-1445090-4
1445090-5	2-1445090-5
1445090-6	2-1445090-6
1445090-7	2-1445090-7
1445090-8	2-1445090-8
1445090-9	2-1445090-9
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1445091-7	2-1445091-7
1445091-8	2-1445091-8
1445091-9	2-1445091-9
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1445092-2	2-1445092-2
1445092-3	2-1445092-3
1445092-4	2-1445092-4
1445092-5	2-1445092-5
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1445092-7	2-1445092-7
1445092-8	2-1445092-8
1445092-9	2-1445092-9
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1-1445092-2	3-1445092-2
1445093-2	2-1445093-2
1445093-3	2-1445093-3
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1445093-7	2-1445093-7
1445093-8	2-1445093-8
1445093-9	2-1445093-9
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1-1445093-1	3-1445093-1
1-1445093-2	3-1445093-2

Non-Compliant Part Number	RoHS Compliant Part Number
1445094-2	2-1445094-2
1445094-3	2-1445094-3
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1445094-6	2-1445094-6
1445094-7	2-1445094-7
1445094-8	2-1445094-8
1445094-9	2-1445094-9
1-1445094-0	3-1445094-0
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1-1445094-2	3-1445094-2
1445095-2	2-1445095-2
1445095-3	2-1445095-3
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1445095-7	2-1445095-7
1445095-8	2-1445095-8
1445095-9	2-1445095-9
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1445096-7	2-1445096-7
1445096-8	2-1445096-8
1445096-9	2-1445096-9
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1445097-7	2-1445097-7
1445097-8	2-1445097-8
1445097-9	2-1445097-9
1-1445097-0	3-1445097-0
1-1445097-1	3-1445097-1
1-1445097-2	3-1445097-2
1445098-2	2-1445098-2

Non-Compliant Part Number	RoHS Compliant Part Number
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1445098-4	2-1445098-4
1445098-5	2-1445098-5
1445098-6	2-1445098-6
1445098-7	2-1445098-7
1445098-8	2-1445098-8
1445098-9	2-1445098-9
1-1445098-0	3-1445098-0
1-1445098-1	3-1445098-1
1-1445098-2	3-1445098-2
1445099-2	2-1445099-2
1445099-3	2-1445099-3
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1445099-7	2-1445099-7
1445099-8	2-1445099-8
1445099-9	2-1445099-9
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1445100-2	2-1445100-2
1445100-3	2-1445100-3
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1445100-7	2-1445100-7
1445100-8	2-1445100-8
1445100-9	2-1445100-9
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1-1445100-1	3-1445100-1
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1445101-2	2-1445101-2
1445101-3	2-1445101-3
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1445101-6	2-1445101-6
1445101-7	2-1445101-7
1445101-8	2-1445101-8
1445101-9	2-1445101-9
1-1445101-0	3-1445101-0
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Soft Shell  
Pin and Socket Connectors

**Part Number Index**

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