AMP Circular Connectors for Commercial Signal & Power Applications

Tyco Electronics

Our commitment. Your advantage.

Note: All part numbers are RoHS Compliant.

Introduction

Product Facts

- Lightweight, all-plastic and metal-shell connectors
- CPC connectors are UL 94V-0 rated and made of stabilized, heat resistant, self-extinguishing thermoplastic material
- Metal-shell CPC connector housings made of UL 94V-0 rated thermoplastic
- Operating temperature range: -40°C to +105°C
- Available in panel or chassis mount and free-hanging configurations
- Quick connect/disconnect capability with thread assist, positive detent coupling
- Built-in pin and socket protection
- Polarized for proper mating of connector halves
- Special connector configurations offer special solder and posted contacts, special receptacles with or without threaded inserts
- Full complement of optional accessories
- Recognized under the Component Program of Underwriters Laboratories Inc. for 250 VAC, rms or 250 VDC, Service‡; Series 1 and Series 3 (600 V); Series 4 (600 V) and Series 2, Series 6 (250 V) File No. E28476

‡Select connectors are recognized for 600 volts service.

- Certified by Canadian Standards Association, File No. LR 7189
- Produced under a Quality Management System certified to ISO 9001

  A copy of the certificate is available upon request.
- Certain products meet VDE Standard 062

Six connector series for different interconnection requirements:

- Series 1—Standard density, signal and low-current applications using durable Multimate contacts (.062 [1.57] pin diameter)
- Series 2—High density applications using Size 20 DM and 20 DF contacts (.040 [1.02] pin diameter)
- Series 3—Low density, power applications with Type XII contacts capable of carrying up to 35 amperes of current
- Series 4—Combination of standard and power density application with Type III+ and Type XII contacts
- Series 5—Power density application with Size 8 screw machined and precision formed contacts
- Series 6—Combination of standard and power density application with Type III+ and Size 8 contacts

MIL-C-5015 Style Circular Plastic Connectors (CPC)

Product Facts

- Intermateable with Metal-Shell sizes 20-14 and 18-10, MIL-C-5015 Style connectors
- High impact resistant plastic housing made of UL 94V-0 rated material
- Lightweight
- Lower cost than standard MIL-C-5015 connectors
- Industry accepted Type III+ pin and socket contacts, available on reels in strip form for high volume, low cost, automatic machine terminations, or in loose piece form for low volume, prototype or maintenance and repair
- Improved alignment (U.S. Standard MIL-C-5015 Connectors) prevents mismating with other housing insert arrangements
- Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476
- Certified by Canadian Standards Association, File No. LR 7189

Miniature CPC Connectors

Product Facts

- Compact, high contact density, environmentally sealed connectors
- Uses existing Mini-Universal MATE-N-LOK stamped and formed pin and socket contacts
- Two shell sizes—available in 1 to 4 and 5 to 9 position configurations

Need more information?

Call Technical Support.

They are staffed with specialists well versed in Tyco Electronics products. They can provide:

- Technical Support
- Catalogs
- Technical Documents
- Product Samples
- Authorized Tyco Electronics Distributor Locations

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Restriction on the use of Hazardous Substances (RoHS)

At Tyco Electronics, 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 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. 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've got the answers at **www.tycoelectronics.com/leadfree**

RoHS Customer Support Center

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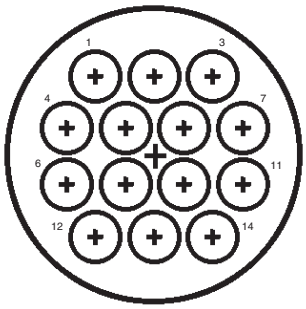
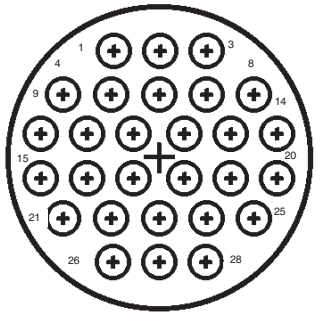
Connector Series and Types



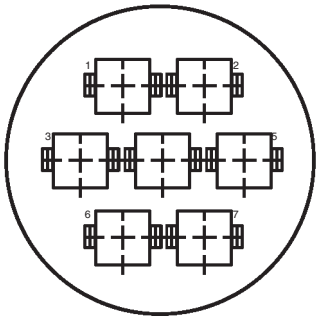
Series 1—Size 16 Contacts

Series 1 connectors permit the use of multiple combinations of signal and coaxial circuits in the same housing by accepting durable Multimate contacts. These pin and socket contacts include Type III+ and subminiature coaxial contacts, interchangeable in the same Multimate contact cavity. Type III+ contacts (.062 [1.57] pin diameter) are capable of carrying a maximum of 13 amperes when crimped in wire. Type III solder contacts and posted contacts for pc board applications are also available. Many connector arrangements offer both standard and reverse sex contact loading—**from 4 thru 37 positions.**



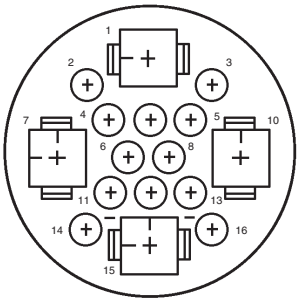
Series 2—Size 20 Contacts

Series 2 connectors accept Size 20 DF (precision formed) and Size 20 DM (screw-machined) pin and socket contacts with a .040 [1.02] pin diameter, Size 20 DF contacts are available in crimp and solder versions, as well as a posted version for wrap-type and pc board applications. Maximum current carrying capability is 7.5 amperes. Many connector arrangements offer both standard and reverse sex contact loading—**from 8 thru 63 positions.**



Series 3—Power Contacts

Series 3 connectors accept Type XII power contacts which can carry up to 25 amps per contact. These contacts will accommodate a wire size range of 16 to 10 AWG [1.4 to 5 mm^2]. Two connector sizes are available in both standard and reverse sex connector arrangements **3 and 7 positions.**



Series 4—Combination Size 16 and Power Contacts

Series 4 connectors accept Size 16 Multimate and Type XII power contacts, combining the signal and coaxial circuit capabilities of Series 1 connectors with the power circuit capabilities of Series 3 connectors. Available in two connector sizes offering power mixing combinations totaling **16 and 22 positions.**

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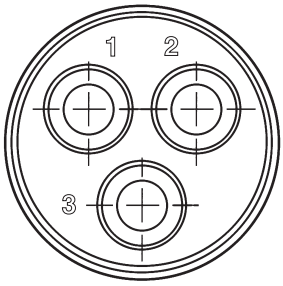
Connector Series and Types (Continued)

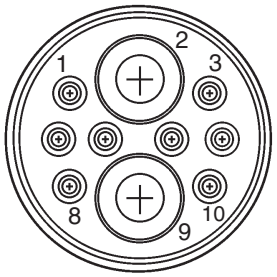


Series 5—Power Contacts .125 POWERBAND

Series 5 connectors combine the revolutionary performance of the new AMP POWERBAND Contact, high current contact in configurations similar to the Series 3 connectors. AMP POWERBAND contacts offer the electrical performance of the best Mil Spec Size 8 screw-machined contacts with the economy and productivity of strip-fed, precision formed contacts.

Series 5 connectors are environmentally sealable to meet IEC IP 65 and IP 67 specifications.

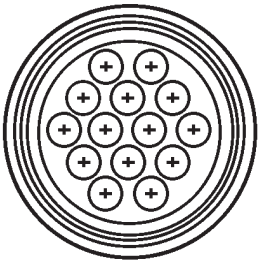
Rated at 600 VAC or VDC, 45 amperes maximum in a single contact, the connectors are available in free-hanging and panel-mount applications—**one connector configuration containing three .125 POWERBAND contacts.**



Series 6—Combination, Size 16 and .125 POWERBAND Contacts

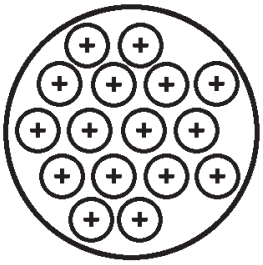
Series 6 combines the high current and environmental sealing capability of Series 5, POWERBAND contacts, and the reliability of signal carrying, low current Type III+ contacts.

This combination of power and signal contacts is offered in **one connector configuration containing two .125 POWERBAND contacts and eight Type III+ signal pin and socket contacts.**



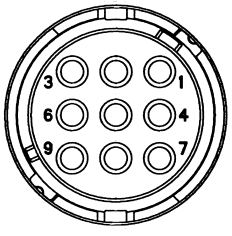
MIL-C-5015 Style—Size 16 Contacts

This new addition to the AMP Circular Plastic Connector Line is specifically designed to be **intermateable with Metal-Shell size 20-14 and 18-10, MIL-C-5015 Style connector systems.** The high impact resistant plastic housing offers the advantages of light weight and lower cost than existing metal-shell connectors. In addition the connector design prevents mismating when used with other insert arrangements. As part of the AMP Multimate family of connectors, the MIL-C-5015 style connector offers the economies of crimp Type III+ pin and socket contacts in reel-mounted, strip-form for high volume automatic machine termination, as well as in loose piece-form for low volume, prototype or maintenance and repair.



Metal-Shell, Circular Plastic Connectors

Metal-Shell CPC connectors consist of a black thermoplastic insert in a nickel-plated, zinc alloy shell. These connectors are currently available in **shell sizes 14, 22 and 28, and in two basic configurations consisting of plugs and square flange receptacles.**



Miniature CPC Connectors

These compact connectors accept existing Mini-Universal MATE-N-LOK pin and socket contacts, 30-18 AWG [.05-.8 mm^2].

Two shell sizes (8 or 11) are available, accommodating **from 1 to 4 and 5 to 9 positions**.

Featuring high contact density and IP67 sealing, these durable connectors are well suited for many wire-to-wire, wire-to-board, and wire-to-panel applications.

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Performance Characteristics — CPC and Metal-Shell CPC Connectors

More information on the performance of AMP CPC and metal-shell CPC connectors is available by requesting the following AMP Product Specifications:

108-10024—
CPC Connectors
108-10037—
Type XII Contacts
108-10020—
Size 20 DM and 20 DF Contacts
108-10040—
Metal-Shell CPC Connectors
108-10042—
Type III+ Contacts
108-1579—
Sealed CPC Connectors with Removeable Contacts

Test Description	Procedure	Requirements
Maintenance Aging	Contacts removed and reinserted 10 times using applicable tools	No damage to contacts or housings. Contact retention maintained
Contact Retention	Axial load applied to contact to displace to the rear of the connector	Contacts remain in place when subjected to a minimum 10 lb. load*
Dielectric Withstanding Voltage (MIL-STD-1344, Method 3001)	Connectors subjected to 1500 volts rms at sea level	No breakdown or flashover
Thermal Shock	Connectors subjected to five cycles of temperature change (-55°C and +125°C)	No damage
Vibration (MIL-STD-202, Method 204, Test Condition B)	Connectors vibrated (wired and mated). Contacts wired in series with 100 milliamperes flowing during the test	No damage or loosening of parts. No interruption of electrical continuity longer than 10 microseconds
Physical Shock (MIL-STD-202, Method 213A, Test Condition A)	Connectors shocked 50 G (wired and mated). Contacts wired in series with 100 milliamperes flowing during the test	No damage or loosening of parts. No interruption of electrical continuity longer than 10 microseconds
Durability	Connectors mated and unmated 25 times with tin plated contacts and 500 times with gold plated contacts	No wear through damage to plating
Corrosion (Salt Spray) (MIL-STD-202, Method 101, Test Condition B)	Mated connectors subjected to 5% salt spray for 48 hours	No damage
Protection Against Solids	a. Test wire is pushed into mated connectors b. Mated connectors subjected to circulating talcum powder	a. Must not touch live parts b. No dust deposits observed on mating surfaces
Protection Against Water	Water is projected through jets against mated connector from any direction and then temporarily immersed in water	No water deposits shall be observed on mating surfaces of contacts or housings
Temperature Life	Mated connectors subjected to a temperature of +125°C for 200 hours	No damage
Insulation Resistance (MIL-STD-1344, Method 3003)	Measurement made between adjacent contacts with connector mated	5000 megohms minimum ambient temperature
Humidity (MIL-STD-202, Method 103, Test Condition B)	Mated connectors subjected to 10 days moisture test	Minimum insulation resistance of 100 megohms

*For size 16 contacts. Size 8 contacts 25 lb. load, min.

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Levels of Protection for Electric Operating Material According to IEC 60529 and IEC 60947, Appendix C

Environmentally Protected Circular Plastic Connectors, for Mated CPC Connectors Utilizing Peripheral Seals and either Wire Entry Seals (for Discrete Wire Applications) or Heat Shrink Boots (for Jacketed Cable Applications). Available are Various Sizes, Series 1, 5 and 6.

Internal Protection (IP) Definition:

- **Per IEC 60947, Appendix C**—Pertains to low voltage switchgear and control gear.
- **Per IEC 60529**—Pertains to degrees of protection provided by enclosures (IP code).

Sample Designation:

(Where x is a numeral value), i.e. IP 65

IP Codes

IP

Index Letter

X_1

Degree of Protection against ingress of solid foreign objects

X_2

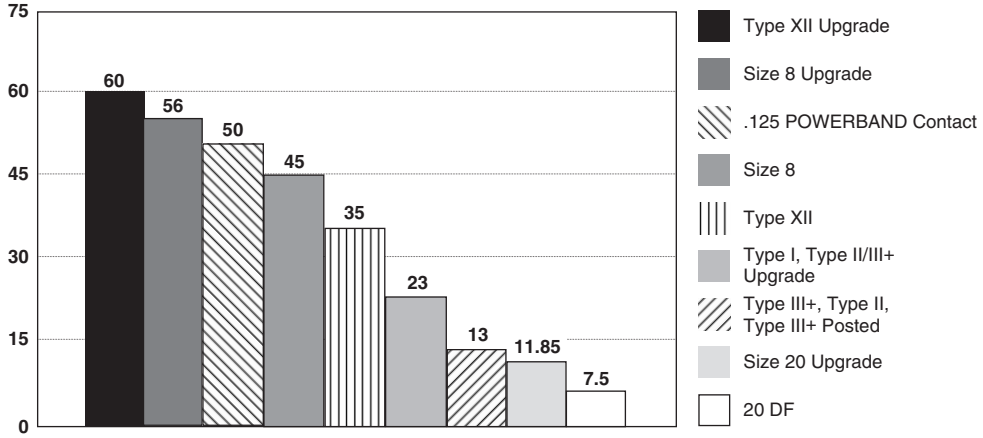
Degree of Protection against ingress of water

Degree of Protection, X_1	Protection against ingress of solid foreign objects	Degree of Protection, X_2	Protection against ingress of water
	No Protection	0	No Protection
1	Protection against objects >50mm diameter—including inadvertently touched by hands	1	Vertical Dripping—Protection against vertical drops of water
2	Protection against objects >12.5mm—including fingers	2	Dripping <15°—Protection against dripping water when the enclosure is tilted 15° from vertical
3	Protection against objects >2.5mm diameter including tools	3	Spraying at an angle up to 60° from vertical
4	Protection against objects >1.0mm diameter—including grains	4	Splashing—Protection against water splashed from any direction
5	Protection against ingress of solid foreign bodies	5	Jetting—Protection against water stream out of a nozzle, from any direction
6	Protection against ingress of dust	6	Powerful Jetting—Protection against temporary flooding due to powerful jet streams out of a nozzle from any direction
		7	Temporary immersion—Protection against temporary immersion

Current Carrying Capabilities

The total current capacity of each contact in a given connector is dependent upon the heat rise resulting from the combination of electrical loads of the contacts in the connector arrangement and the maximum ambient temperature in which the connector will be operating. Caution must be taken so that this combination of conditions does not cause the internal temperature of the connector to exceed the maximum operating temperature of the housing material. Several variables which must be considered when determining this maximum current capability for your application are:

CONTACT CURRENT GUIDE Maximum Current (Amperes) for Largest Wire Size



- **Wire Size**—Larger wire will carry more current since it has less internal resistance to current flow and generates less heat. The wire also conducts heat away from the connector.
- **Connector Size**—In general, with more circuits in a connector, less current per contact can be carried.
- **Current Load Distribution**—Spreading those lines with greater current loads throughout the connector, particularly around the outer perimeter, will enhance heat dissipation.
- **Ambient Temperature**—With higher ambient temperatures, less current can be carried.

Current Rating Verification
Can a contact rated at 10 amps carry 10 amps?

Maybe yes, but probably not. The reason lies in the test conditions used to rate the contact. If these conditions do not adequately reflect the application conditions, the actual allowable current levels may be lower than specified levels. For example, many manufacturers, including Tyco Electronics, test a single contact in air. This gives an accurate measure of the basic current-carrying capacity of the contact. Use the contact alone in air and it can certainly carry 10 ampere. Use it in a multi-position connector surrounded by other current-carrying contacts or in high ambient temperatures, and the contact should carry less current.

Similarly, as the contact ages and stress relaxation, environmental cycling, and other degradation factors take their toll, the contact's current-carrying capacity decreases. A prudent design must set current levels for such end-of-design-life (EODL) conditions. Practical current-carrying capacity is not an absolute, but an application-dependent condition.

New Method Simplifies Ratings

To help the designer set the appropriate current level, Tyco Electronics has developed a method of specifying current-carrying capacity. This method takes into account the various application factors that influence current rating.

The method can be summarized as follows:

- The contact is aged to EODL conditions by durability cycling, thermal cycling, and environmental exposure.
- The contact's resistance stability is verified.
- The current necessary to produce the specified temperature rise is measured. This T-rise is usually 30°C.
- A rating factor is determined to allow derating of multiple contacts in the same housing and for different conductor sizes.

Temperature

One other factor influencing current levels is the maximum operating temperature, for example, 105°C. If the application has a high ambient temperature (over 75°C) the contact's T-rise is limited by the maximum operating temperature. For example, an application temperature of 90°C limits the contact T-rise to 15°C. Since current produces heat (the I^2R law), the current must be lowered to limit the T-rise.

A contact's T-rise depends not only on its I^2R Joule heating, but also on its ability to dissipate the heat. Consider a contact in a multi-contact housing. Joule heating in multiple contacts will raise the local ambient temperature. Since the contact will not be able to dissipate its own heat as well by convection, the maximum T-rise will be realized at a lower current level. Consequently, the allowable current level must be lower to maintain an acceptable T-rise.

For a given connector, the current level will be set by the loading density. A connector containing 50% current-carrying contacts will permit higher currents (per contact) than a connector will at 75% loading. The loading percentage assumes an even distribution of contacts within the housing. If all 10 contacts are grouped together in one section of a 20-position connector, the loading density may approach 100%.

The Importance of EODL

As stated, T-rise in a contact depends on both resistance and current. As it ages, a contact's resistance will increase. The contact designer will specify a maximum resistance for the contact, this level is the end-of-design-life resistance. Before the contact is tested for current, Tyco Electronics subjects it to a sequence of tests that exercises the major failure mechanisms and thereby simulates EODL conditions. Conditioning includes mating cycling, industrial mixed-flowing gases, humidity and temperature cycling, and vibration to sequentially introduce wear, corrosion, stress relaxation, and mechanical disturbance.

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Presentation — An Example*

Current Rating

The presentation of current-carrying capacity in AMP product specifications includes two parts:

- First, a base curve showing current levels versus T-rise for a single circuit and the largest wire size (See figure 1). This represents the maximum current capacity of the contact. The curve is usually flat up to 75°C ambient and then drops off. Up to 75°C, the 30°C T-rise limits the amount of current, and above 75°C the current must be reduced to keep the combination of ambient temperature and T-rise from exceeding the maximum operating temperature of 105°C.
- Next are rating factors, a table of multipliers to account for connector loading and for smaller wire sizes (See figure 2). The designer first determines the base current for the ambient conditions of the application; then multiplies this base current by the rating factors to find the current level for the application's loading factor and wire size.

Practical Values

The current-rating method gives designers practical values applicable to their applications. While the specified current levels for a contact may be lower than for other testing methods, they are more practical and simplify the system design process.

"Spec-manship" is replaced by a realistic assessment of the current-carrying capacity of a contact under varying conditions of temperature, connector loading, and wire size.

Specific current-carrying data based on EOL and % loading is available from Tyco Electronics. Please contact your local Tyco Electronics Sales Engineer or call Tyco Electronics.

Connector/Contact Acceptability

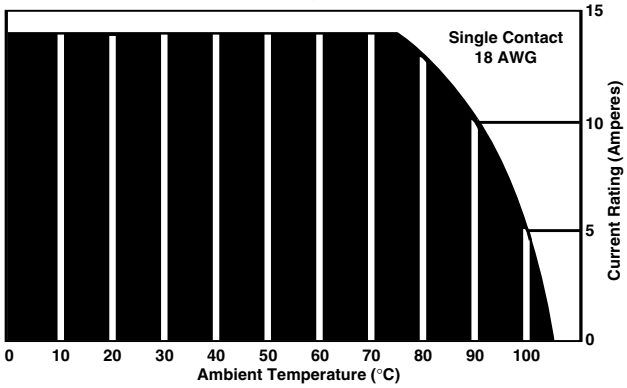
As previously stated, choosing the correct connector/contact combination is fundamental to the successful function of all connectors. The Selector Chart shown at right, is designed to simplify your choice of connectors and their acceptable contacts. Once you have selected the wire size, current-carrying capacity need, number of positions required, and the type of contacts needed in your choice of connector, refer to this matrix for a quick look at exactly what is acceptable in a given connector type.

***Note:** Data is *not* typical of a specific CPC connector configuration. For specific current rating information based on % connector loading, contact Tyco Electronics.

To demonstrate the method of specifying current, consider the following application conditions; an ambient temperature of 65°C, a 50% loading of contacts in the housing, and 20 AWG [0.6mm²] wire.

- From Figure 1, the base current rating is 14 ampere with 18 AWG [0.8mm²] wire.
- Figure 2, the rating factor for 50% loading and 20 AWG [0.6mm²] wire is 0.68.
- The specific rating for this application is the product of the base rating and the rating factor:
  14 x 0.68 = 9.5 ampere
- Each of the contacts can carry 9.5 ampere.
- However, if the ambient temperature is 80°C the allowable T-rise becomes 25°C. The base current must be lowered to 12.8 ampere so that the 105°C maximum operating temperature is not exceeded. The current rating then becomes:
  12.8 x 0.68 = 8.7 ampere.

Figure 1



Graph shows the relationship between base current, ambient temperature, and contact T-rise.

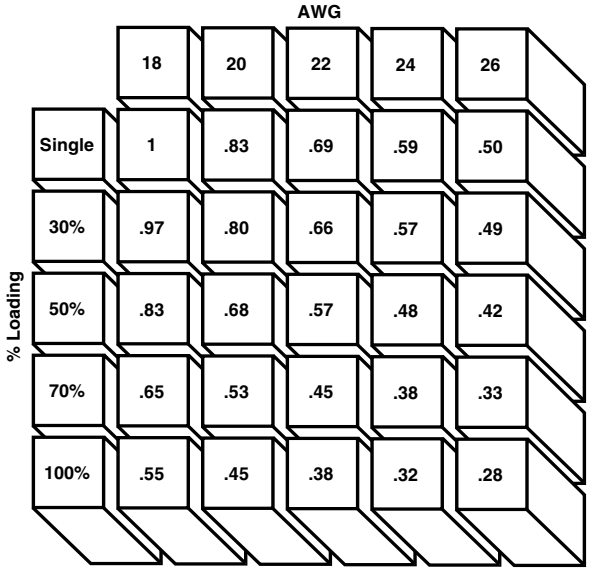


Figure 2

Rating factors allow the base current to be adjusted for various connector loading and wire sizes.

Contact Selector Chart

Connector Type	20 DF	Type I	Type II	Type III+	Posted Type III+	Type XII	Sub-Mini Coax	POWERBAND Contacts
CPC Series 1			✔	✔	✔		✔	
CPC Series 2	✔							
CPC Series 3						✔		
CPC Series 4			✔	✔		✔	✔	
CPC Series 5								✔
CPC Series 6		✔	✔	✔				✔
CPC 5015				✔				
CMC Series 1			✔	✔	✔		✔	
CMC Series 2	✔							
CMC Series 3						✔		
CMC Series 4			✔	✔		✔	✔	

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UK: 44-208-420-8341

Circular Plastic Connectors, Size 1

CPC Connectors, Series 1 for Cable or Panel Mount

(Accepts Type III+, High-Current Power, Type II and Subminiature Coax Contacts)

Listed part numbers are for connectors only; **contacts must be ordered separately.**

Material

Housing—Thermoplastic, 94V-0 rated, black

Related Product Data

Contacts—Pages 17-23
Contact Arrangement—Page 24
Component Dimensions—Page 25*
Accessories—Pages 38-42, 52-54
Performance Characteristics—Page 6
Application Tooling—Pages 76-79
Technical Documents—Page 80

Replacement Coupling Rings

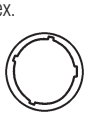
Shell Size	Part No.
11	213811-1
13	213813-1
17	213810-1
23	213812-1

Keying

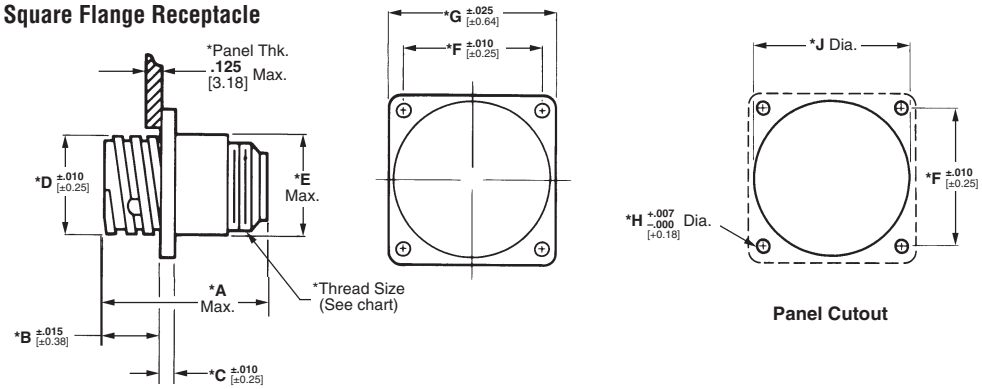
Molded-in keying in two configurations:

A—Standard Configuration: 5 Keys

B—Optional Configuration: 4 Keys to prevent mismating of standard and reverse sex.

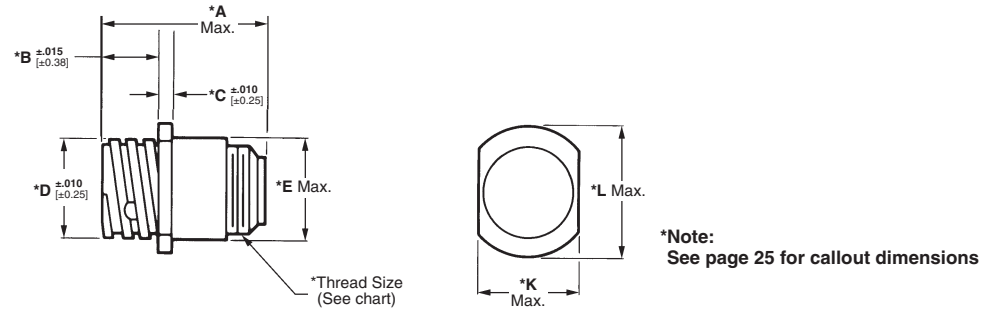


Square Flange Receptacle



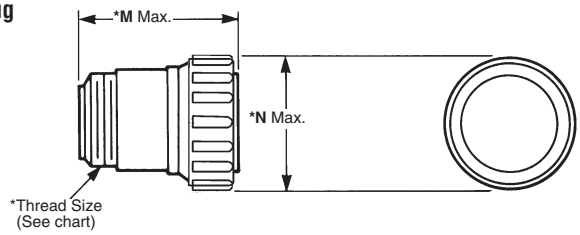
Panel Cutout

Free-Hanging Receptacle



***Note:**
See page 25 for callout dimensions

Plug



Standard Sex Connectors (Receptacles accept pin contacts, Plugs accept socket contacts)

Arrangement: Shell Size	Arrangement: No. of Positions	Keying	Square Flange Receptacle: With Threaded Inserts[1]	Square Flange Receptacle: With Mounting Holes	Free-Hanging Receptacle	Plug
11	4	A	208130-1	206061-1	206153-1	206060-1
13	9	A	208131-1	206705-1	206705-2	206708-1
17	16	A	206036-8	206036-1	206036-3	206037-1
		B	—	213862-1	—	213849-1
23	24	A	211839-1	206838-1	206838-2	206837-1
		B	—	213866-1	—	213851-1
23	37	A	787610-1	206151-1	206151-2	206150-1
		B	—	213860-1	—	213848-1

[1]Four 4-40 threaded inserts per receptacle.

Reverse Sex Connectors (Receptacles accept socket contacts, Plugs accept pin contacts)

Arrangement: Shell Size	Arrangement: No. of Positions	Keying	Square Flange Receptacle: With Threaded Inserts[1]	Square Flange Receptacle: With Mounting Holes	Free-Hanging Receptacle	Plug
11	4	A	211102-1	206430-1	206430-2	206429-1
17	14	A	211103-1	206043-1	206043-3	206044-1
		B	—	796437-2	—	796449-1
23	37	A	206306-5	206306-1	206306-2	206305-1
		B	—	213864-1	—	213850-1

[1]Four 4-40 threaded inserts per receptacle.
Key Style "A" is the Standard 5 Locating Key arrangement. Key Style "B" is the 4 Locating Key arrangement.

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UK: 44-208-420-8341

Note: All part numbers are RoHS Compliant.

Circular Plastic Connectors, Series 1, VDE Tested

CPC Connectors, Series 1, for Cable or Panel Mount

(Accepts Type III+, High-Current Power, Type II and Subminiature Coax Contacts)

- Designed to meet requirements of VDE as shown in DIN Specification 57627
- Recognized under the Component Program of Underwriters Laboratories Inc. for 600 VAC and 600 VDC service, File No. E28476
- Certified by Canadian Standards Association, File No. LR 7189

Listed part numbers are for connectors only; **contacts must be ordered separately.**

Material

Housing—Thermoplastic, 94V-0 rated, black

Related Product Data

Contacts—Pages 17-23
Contact Arrangement—Page 24
Component Dimensions—Page 25*
Accessories—Pages 38-42, 52-54
Performance Characteristics—Page 6
Application Tooling—Pages 76-79
Technical Documents—Page 80

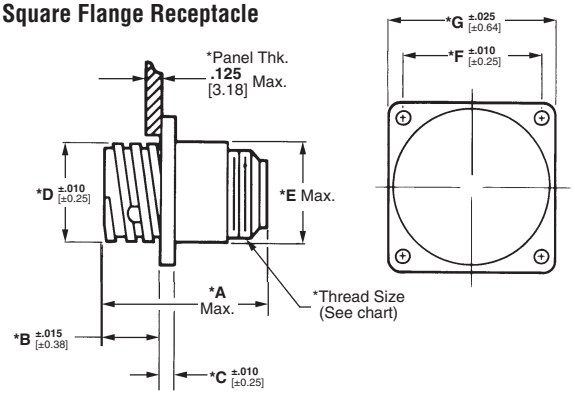
Replacement Coupling Rings

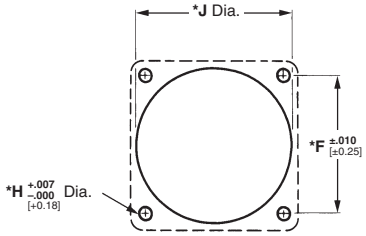
Shell Size	Part No.
13	213813-1
17	213810-1
23	213812-1

Keying

A—Standard Configuration: 5 Keys
B—Optional Configuration: 4 Keys

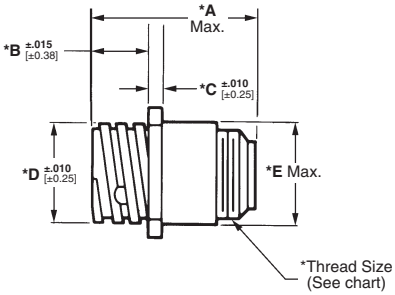
Square Flange Receptacle

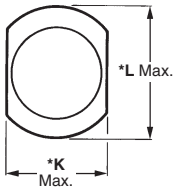




Panel Cutout

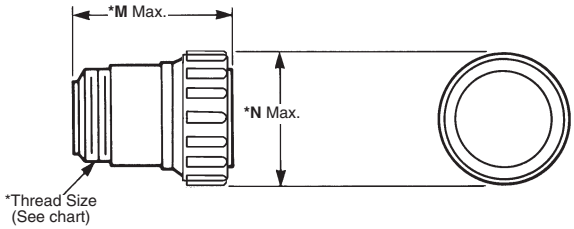
Free-Hanging Receptacle





***Note:**
See page 25 for callout dimensions

Plug



Standard Sex Connectors (Receptacles accept pin contacts, Plugs accept socket contacts)

Arrangement: Shell Size	Arrangement: No. of Positions	Keying	Square Flange Receptacle: With Threaded Inserts[1]	Square Flange Receptacle: With Mounting Holes	Plug
13-7		A	211401-4	211401-1	211399-1
17-9		A	211767-2	211767-1	211766-1
23-19		A	211771-2	211771-1	211770-2
		B	—	213870-1	213853-1

[1]Four 4-40 threaded inserts per receptacle.

Reverse Sex Connectors (Receptacles accept socket contacts, Plugs accept pin contacts)

Arrangement: Shell Size	Arrangement: No. of Positions	Keying	Square Flange Receptacle: With Threaded Inserts[1]	Square Flange Receptacle: With Mounting Holes	Free-Hanging Receptacle	Plug
13-7		A	211398-4	211398-1	211398-2	211400-1
17-9		A	—	211769-1	211769-3	211768-1
		B	—	796439-2	—	796450-1
23-19		A	—	211773-1	—	211772-1
		B	—	213868-1	—	213852-1

[1]Four 4-40 threaded inserts per receptacle.
Key Style “A” is the Standard 5 Locating Key arrangement. Key Style “B” is the 4 Locating Key arrangement.

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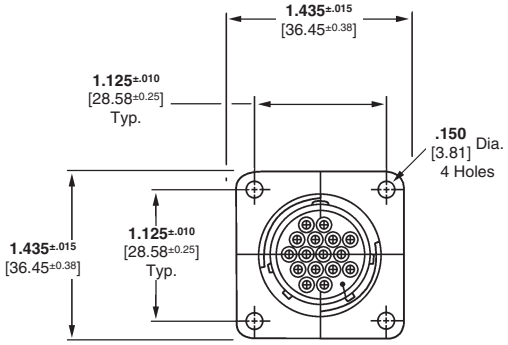
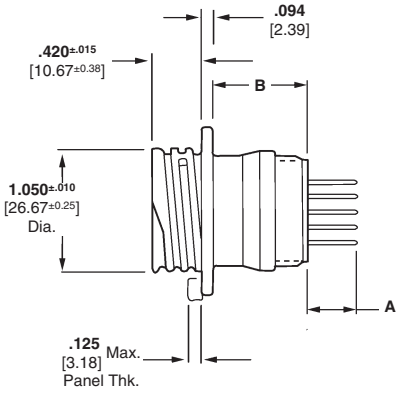
Circular Plastic Connectors, Series 1

Square Flange Receptacles, Printed Circuit Board Mount

with .025 [0.64] sq. solder tails





Material and Finish

Housing—Thermoplastic, 94V-0 rated, black

Contacts—
A—Duplex plated gold flash on entire contact with .000030 [0.00076] min. gold on contact engagement area, tin on the termination area
C—Plated tin on the entire contact, tin on the termination area

Related Product Data

Contact Arrangement—Page 24
Performance Characteristics—Page 6
Technical Documents—Page 80

Keying

Molded-in keying in two configurations:

A—Standard Configuration: 5 Keys

B—Optional Configuration: 4 Keys to prevent mismating of standard and reverse sex.

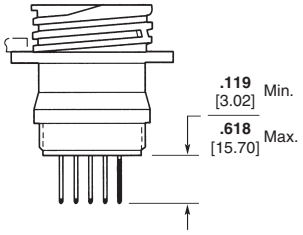
Other Available Posted Contacts

Tyco Electronics can make available contacts with various solder tail lengths for loading into the standard or reverse sex, square flange receptacles for applications requiring custom solder tail lengths.

Standard Sex (Posted Pin Contacts)

Arrangement No.	Receptacle Assemblies		Keying Style	Dimensions		Contact Finish Code	Peripheral Seal
	Mounting Holes	4-40 Threaded Inserts		A	B		
11-4	—	207825-9	A	**.119** 3.02	**.816** 20.73	A	N
13-7	—	1-796433-1	A	**.220** 5.59	**.816** 20.73	A	N
13-9	208223-9	—	A	**.220** 5.59	**.816** 20.73	A	N
	—	1-208223-0	A	**.220** 5.59	**.816** 20.73	A	N
17-16	—	1-207303-4	A	**.220** 5.59	**.816** 20.73	A / C	N
	1-207303-5	—					
	1-207303-3	—	A	**.220** 5.59	**.816** 20.73	A	N
	213855-4	213855-3	B				
23-19	213782-4	—	A	**.429** 10.90	**.679** 17.24	A	N
	213859-2	—	B	**.618** 15.70	**.674** 17.12	A	N
23-24	—	213588-2	A	**.220** 5.59	**.654** 16.61	C	N
	213798-3	—	A	**.618** 15.70	**.679** 17.24	A	N
	213780-2	—	A	**.220** 5.59	**.654** 16.61	A	N
	213857-2	—	B	**.429** 10.90	**.679** 17.24	A	N
23-37	1-206934-1	—	A	**.220** 5.59	**.654** 16.61	A	N
	206934-5	—	A	**.119** 3.02	**.654** 16.61	A	N / Y
	—	1-206934-7					
	208132-2	—	A	**.429** 10.90	**.654** 16.61	C / A / A	N
	1-206934-8	—	A				
	213854-3	—	B				
	1-206934-9	—	A	**.618** 15.70	**.654** 16.61	A	N

Note: Posts are .017 [0.43] offset from centerline of contacts. All posts must be oriented in the same plane for proper contact/post location.



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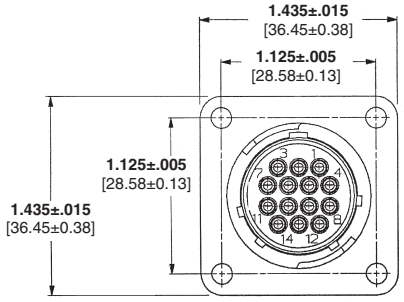
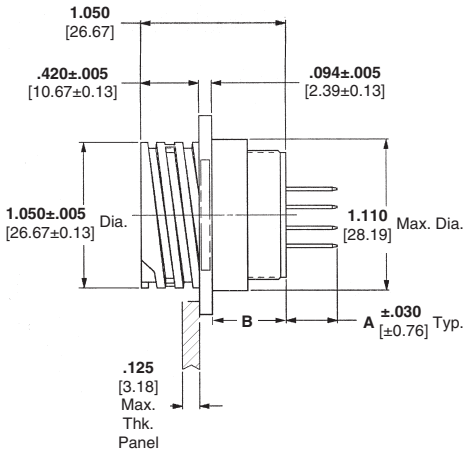
Circular Plastic Connectors, Series 1 (Continued)

Square Flange Receptacles, Printed Circuit Board Mount

with .025 [0.64] sq. solder tails





Material and Finish

Housing—Thermoplastic, 94V-0 rated, black

Contacts—

A—Duplex plated gold flash on entire contact with .000030 [0.00076] min. gold on contact engagement area, tin on the termination area

C—Plated tin on the entire contact, tin on the termination area

Related Product Data

Contact Arrangement—Page 24

Performance Characteristics—Page 6

Technical Documents—Page 80

Keying—Page 12

Reverse Sex (Posted Socket Contacts)

Arrangement No.	Receptacle Assemblies		Keying Style	Dimensions		Contact Finish Code	Peripheral Seal
	Mounting Holes	4-40 Threaded Inserts		A	B		
11-4	208283-4	—	A	**.159** 4.04	**.536** 13.61	A	N
	1-788130-1	—	A	**.704** 17.88	**.541** 13.74	C	N
17-9	1-213826-1	—	A	**.220** 5.59	**.536** 13.61	C	Y
17-14	213729-9	213729-6	A	**.368** 9.35	**.536** 13.61	A	N
	1-213825-7	—	A	**.220** 5.59	**.536** 13.61	C	Y
	—	213729-8	A	**.159** 4.04	**.536** 13.61	C	N
23-19	213858-3	—	B	**.645** 16.38	**.394** 10.00	A	N
	213781-9	—	A	**.557** 14.15	**.374** 9.50	C	N
	213827-8	—	A	**.368** 9.35	**.374** 9.50	C	Y
23-37	2-208224-1	—	A	**.557** 14.15	**.374** 9.50	A	N
	213856-4	—	B				
	1-208224-2	—	A	**.368** 9.35	**.374** 9.50	C	N
	1-213828-6	—	A	**.368** 9.35	**.374** 9.50	C	Y
	207890-2	—	A	**.159** 4.04	**.374** 9.50	A	N

Note: Posts are .017 [0.43] offset from centerline of contacts. All posts must be oriented in the same plane for proper contact/post location.

Special CPC Connectors, Square Flange Receptacles, Printed Circuit Board Mount With Round Posted Contacts (Size 16), Contact Arrangement 17-16

Material and Finish

Housing—Thermoplastic, 94V-0 rated, heat-stabilized, fire-resistant, self-extinguishing, black

Contacts—Brass

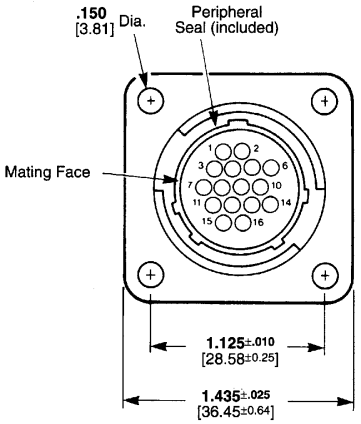
Plating—

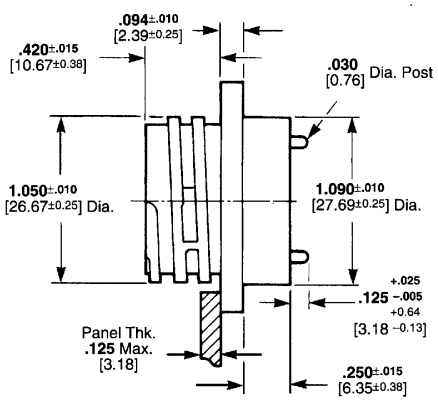
Connector Part No. 207292-1—Plated tin over .000050 [0.00127] min. nickel on entire contact

Connector Part No. 207292-2—Plated .000030 [0.00076] min. gold over .000050 [0.00127] min. nickel on entire contact

Notes: 1. Connector can be used for pressure bulkhead feed-thru (sealed) applications.

2. Receptacle is **Standard Sex**, supplied preloaded with 16 special round posted pin contacts, .030 [0.76] diameter.





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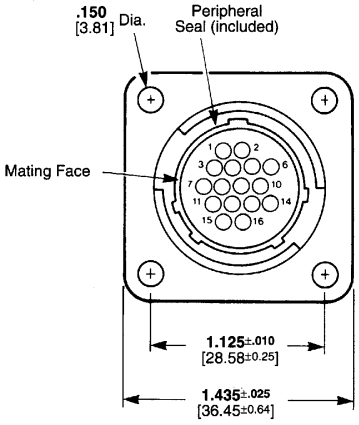
Japan: 81-44-844-8013
UK: 44-208-420-8341

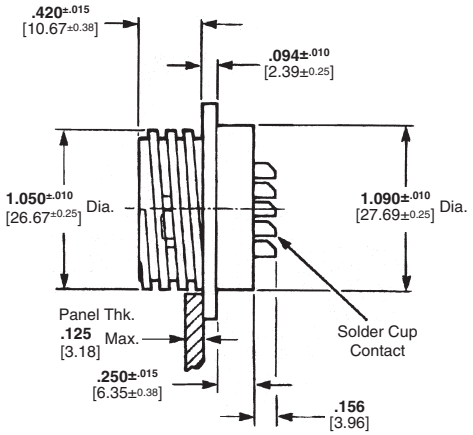
Circular Plastic Connectors, Series 1 (Continued)

Special CPC Connectors, Square Flange Receptacles, With Solder Type Contacts (Size 16), Contact Arrangement 17-16

Material and Finish

Housing—Thermoplastic, 94V-0 rated, heat-stabilized, fire-resistant, self-extinguishing, black
Contacts—Brass
Plating—
Connector Part No. 206404-1—Plated .000030 [0.00076] min. gold over .000030 [0.00076] min. nickel on entire contact
Connector Part No. 206404-2—Plated tin over .000100 [0.00254] min. copper on entire contact





Notes: 1. Connector can be used for pressure bulkhead feed-thru (sealed) applications.
2. Receptacle is standard sex, supplied preloaded with 16 special solder cup pin contacts.

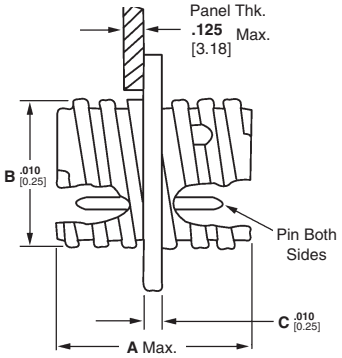
Special CPC Connectors, Feed-Thru

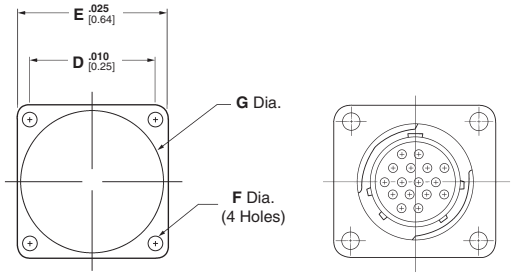
Pressure Rating up to 30 psi

Material and Finish

Housing—Thermoplastic, 94V-0 rated, black
Contacts—Copper alloy, gold over nickel plated

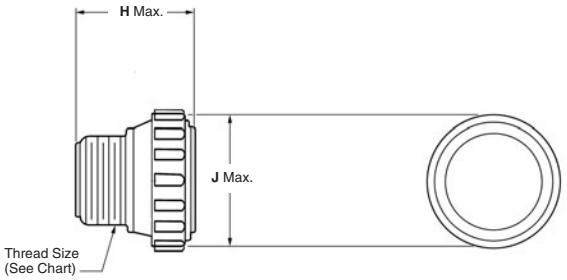
Receptacle, Feed-Thru





Plug

Panel Cutout



Part Numbers

Arrangement	Standard Numbering Plug	Reverse Numbering Plug	Feed-Thru Receptacle
11-4	206060-1	206516-1	206518-2
17-16	206037-1	206554-1	206552-1

Dimensions

Arrangement	Dimensions									Thread Size
	A	B	C	D	E	F	G	H	J	
11-4	**1.209** 30.71	**.687** 17.45	**.094** 2.39	**.844** 21.44	**1.125** 28.58	**.125** 3.18	**.840** 21.34	**1.080** 27.43	**.975** 24.77	5/8-24 UNEF-2A
17-16	**1.209** 30.71	**1.050** 26.67	**.094** 2.39	**1.125** 28.58	**1.435** 36.45	**.150** 3.81	**1.210** 30.73	**1.080** 27.43	**1.349** 34.26	15/16-20 UNEF-2A

Note: Feed-Thru Receptacles are **fully loaded** with Size 16, feed-thru pin contacts. Order Size 16 crimp, snap-in socket contacts for plugs separately.

Catalog 82021
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C. America: 57-1-254-4444

South America: 55-11-2103-6000
Hong Kong: 852-2735-1628
Japan: 81-44-844-8013
UK: 44-208-420-8341

Circular Plastic Connectors, Series 1 (Continued)

Square Flange Receptacles, Right-Angle, Posted

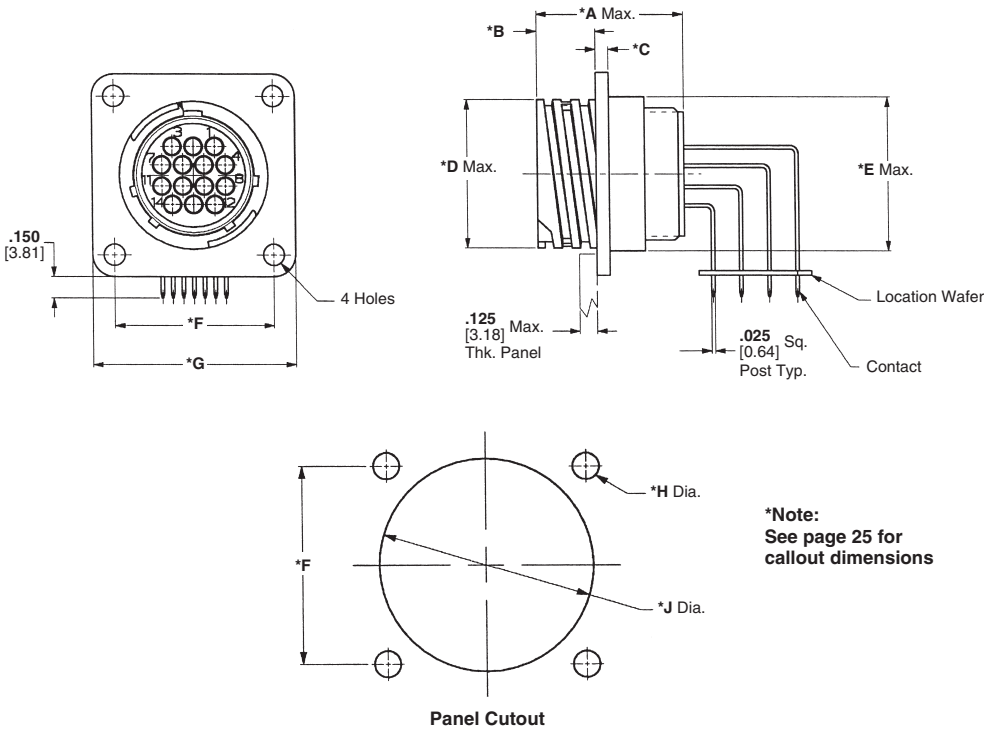
with **.025 [0.64] sq.** solder tails

Material and Finish

Housing—Thermoplastic, 94V-0 rated, black
Location Wafer—Phenolic, black
Contact Posts—.000100 [0.00254] min. tin over .000100 [0.00254] min. copper
Contact Body—
A—.000100 [0.00254] min. tin over .000050 [0.00127] min. nickel
B—.000030 [0.000762] min. gold for a length of .200 [5.08] min. from mating end, with remainder gold flash, both over .000050 [0.00127] min. nickel

Related Product Data

Contact Arrangements—Page 24
Component Dimensions—Page 25*
Performance Characteristics—Page 6
Keying—Standard Configuration: 5 Keys
Technical Documents—Page 80



Panel Cutout

***Note:**
See page 25 for callout dimensions

Standard Sex (Posted Pin Contacts)

Arrangement No.	Receptacle Assemblies		Contact Body Finish Code	Mating Plug Part No.
	Mounting Holes	4-40 Threaded Inserts		
11-4	1-796403-1	1-796403-2	B	206060-1
13-7	1-796435-1	1-796435-2	B	211399-1
13-9	1-796375-1	1-796375-2	B	206708-1
17-9	1-796497-1	—	B	211766-1
17-16	1-796404-1	—	B	206037-1
23-19	1-796405-1	—	B	211770-2
23-24	1-796387-1	—	A	206837-1
	1-796387-2	—	B	
23-37	1-796406-1	—	B	206150-1

Reverse Sex (Posted Socket Contacts)

Arrangement No.	Receptacle Assemblies		Contact Body Finish Code	Mating Plug Part No.
	Mounting Holes	4-40 Threaded Inserts		
11-4	1-796407-1	—	B	206429-1
13-7	1-796500-1	—	B	211400-1
17-9	1-796501-1	—	B	211768-1
17-14 (shown)	796348-3	—	A	206044-1
	796348-2	—	B	
23-19	1-796502-1	—	B	211772-1
23-37	1-796409-1	—	B	206305-1

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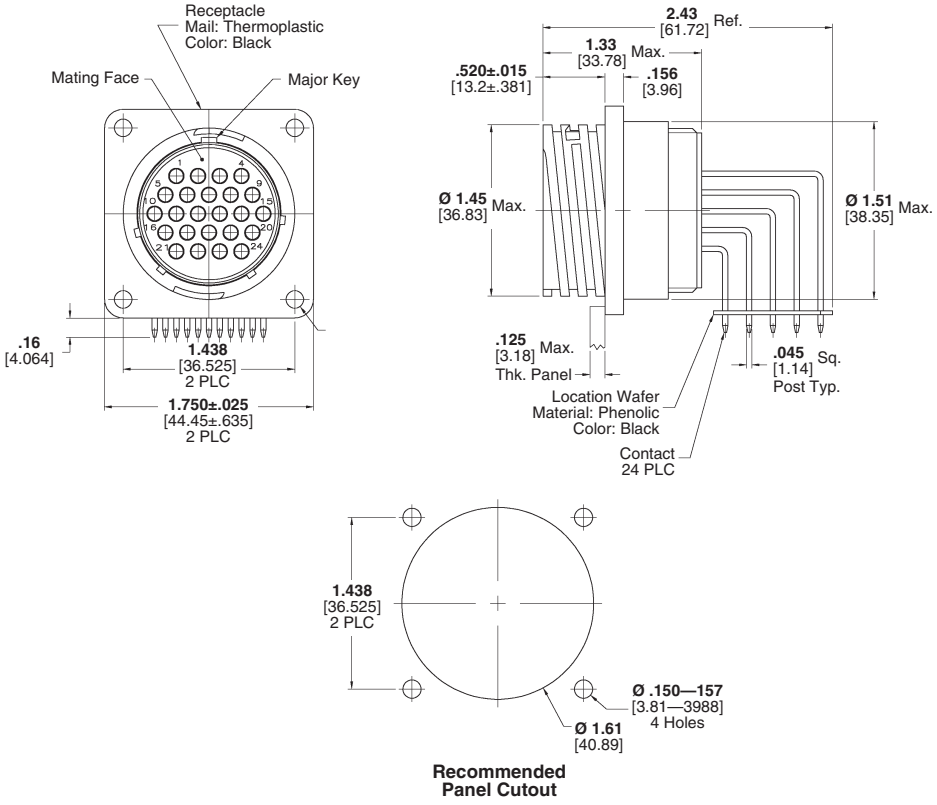
Japan: 81-44-844-8013
UK: 44-208-420-8341

Circular Plastic Connectors, Series 1 (Continued)

Square Flange Receptacles, Right-Angle, Posted

with **.045 [1.14] sq.** solder tails.
For Higher Current Applications



Material and Finish

Housing—Thermoplastic, 94V-0 rated, black
Location Wafer—Phenolic, black
Contact Posts—.000100 [0.00254] min. tin over .000100 [0.00254] min. copper
Contact Body—
A—.000100 [0.00254] min. tin over .000050 [0.00127] min. nickel
B—.000030 [0.000762] min. gold for a length of .200 [5.08] min. from mating end, with remainder gold flash, both over .000050 [0.00127] min. nickel

Technical Documents—Page 80

Standard Sex (Posted Pin Contacts)

Arrangement No.	Receptacle Assemblies Mounting Holes	Contact Body Finish Code	Mating Plug Part No.
13-7	1776903-1	B	211399-1
17-16	1776904-1	B	206037-1
23-24	1776905-1	B	206837-1
23-37	1776906-1	B	206150-1

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Hong Kong: 852-2735-1628
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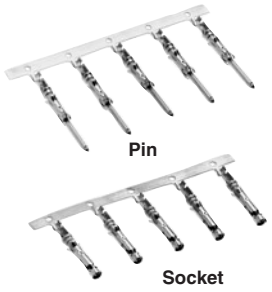
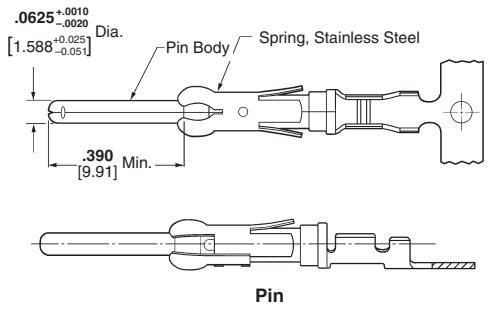
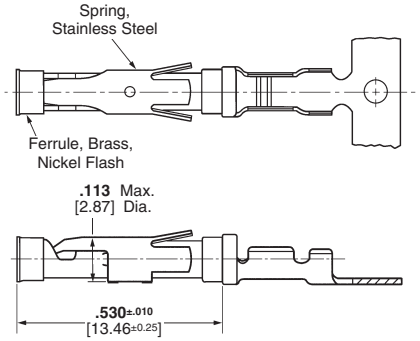
UK: 44-208-420-8341

Signal Contacts

Type III+, Crimp, Snap-In







Material and Finish — See chart.
Contact Body—Brass or phosphor bronze
Retention Spring—Stainless steel

Application Tooling—Pages 76-79
Technical Documents
114-10004 Application Specification
108-10042 Product Specification

Contact Size 16—Pin Diameter .062 [1.57] (Test Current, 13 Ampere)‡

‡Single contact, free-air test current is not to be construed as contact rating current. Use only for testing. Refer to contact current carrying capability information on page 8.

Wire Size Range AWG	Wire Size Range mm²	Ins. Dia. Range	Contact Finish	Strip Form Contact No. Pin	Strip Form Contact No. Socket	Loose Piece Contact No. Pin	Loose Piece Contact No. Socket	Tooling Part No. Loose Piece Hand Tool	Tooling Part No. Strip Form Applicators
30-28	0.05-0.09	**.015-.030** 0.38-0.76	Gold/Nickel[2]	788085-3	788088-2	—	—	90716-1	567867-1*** or 567947-1*** or 680602-□***
			Sel. Gold/Nickel[3]	788085-1	788088-1	788085-4	788088-3		
30-26	0.05-0.15	**.040-.060**[1] 1.02-1.52	Bright Tin	1-66425-2	1-66424-1	—	—	91515-1[6]	466598-□***
			Gold/Nickel[2]	66425-7	66424-7	66429-3	66428-3		
			Sel. Gold/Nickel[3]	66425-8	66424-8	66429-4	66428-4		
		.014-.030[1] 0.36-0.76	Gold/Nickel[2]	66393-7	66394-7	—	—	90225-2[6]	466585-3***
			Sel. Gold/Nickel[3]	66393-8	66394-8	66406-4	66405-4		
26-24	0.12-0.2	**.035-.055**[1] 0.89-1.40	Bright Tin	1-66106-5	1-66108-5	1-66107-1	1-66109-7	91515-1[6] or 58495-1*	466321-□*** or 466908-2***
			Gold/Nickel[2]	66106-7	66108-7	66107-3	66109-3		
			Sel. Gold/Nickel[3]	66106-8	66108-8	66107-4	66109-4		
			Sel. Gold/Nickel[4]	—	66108-1	—	66109-1		
24-20	0.2-0.6	**.040-.080**[1] 1.02-2.03	Bright Tin	2-66102-5	3-66104-0	1-66103-8	1-66105-9	91515-1[6] or 58495-1*	466323-□*** or 466907-2***
			Gold/Nickel[2]	66102-8	66104-8	66103-3	66105-3		
			Sel. Gold/Nickel[3]	66102-9 2-66102-2	66104-9 2-66104-3	66103-4 1-66103-2	66105-4 1-66105-3		
			Sel. Gold/Nickel[4]	—	66104-1	—	66105-1		
		.060-.120[5] 1.52-3.05	Bright Tin	1-66564-2	1-66563-1	66566-7	66565-7	91542-1[6]	466383-4*** or 466979-1*** or 567363-□***
			Sel. Gold/Nickel[3]	66564-8	66563-8	66566-4	66565-4		
		.080-.100[1] 2.03-2.54	Bright Tin	1-66332-4	1-66331-4	1-66400-0	1-66399-0	91523-1[6] or 90225-2[6]	466324-□*** or 466942-1***
			Gold/Nickel[2]	66332-7	66331-7	66400-3	66399-3		
			Sel. Gold/Nickel[3]	66332-8	66331-8	66400-4	66399-4		
			Sel. Gold/Nickel[4]	—	66331-2	—	66399-2		
18-16	0.8-1.4	**.080-.100**[1] 2.03-2.54	Bright Tin	1-66098-9[S] 1-66098-8	1-66100-9	1-66099-5	1-66101-9	91505-1[6] or 91523-1[6] or 58495-1*	466325-□*** or 466906-1***
			Gold/Nickel[2]	66098-8	66100-8	66099-3	66101-3		
			Sel. Gold/Nickel[3]	66098-9	66100-9	66099-4	66101-4		
			Sel. Gold/Nickel[4]	66098-6	—	66099-1	—		
18-14	0.8-2.0	**.080-.100**[1] 2.03-2.54	Bright Tin	1-66359-4 1-66359-5	1-66358-6 1-66358-8	1-66361-2 66361-7	1-66360-2 66360-7	91519-1[6]	466326-□*** or 466923-2***
			Gold/Nickel[2]	66359-9	66358-9	66361-3	66360-3		
			Sel. Gold/Nickel[3]	1-66359-0 1-66359-2	1-66358-0 1-66358-3	66361-4 66361-8	66360-4 66360-8		
			Sel. Gold/Nickel[4]	—	66358-1	—	66360-1		
		.110-.150[5] 2.79-3.81	Bright Tin	66597-8	66598-9 1-66598-0	66602-8	66601-9	91521-1[6]	466958-1*** or 567364-□***
			Sel. Gold/Nickel[3]	66597-2	66598-2	66602-2	66601-2		

[1]Overall insulation crimp diameter, including crimp barrel, must not exceed .125 [3.18].
[2].000015 [0.00038] gold in the mating area over .000050 [0.00127] min. nickel.
[3].000030 [0.00076] gold in the mating area, with gold flash on remainder, over .000050 [0.00127] min. nickel.
[4].000030 [0.00076] gold in the mating area, with gold gradient on remainder, over .000050 [0.00127] min. nickel.
[5]**Contacts can ONLY be used in: Metrimate; CPC Series 1 (Arr. 23-24), Series 4 (Arr. 23-13M, 23-16M, 23-22M), and VDE connectors.**
[6]To use with the 626 Pneumatic Tool: remove crimping head from Straight Action Hand Tool (SAHT), order SAHT Adapter **Part No. 217201-1**, Adapter Holder **Part No. 356304-1** (with ratchet) or **189928-1** (without), and Power Unit **Part No. 189721-1** (hand actuated) or **189722-1** (foot actuated).
[S]Standard reeling of strip form contacts.
*Commercial PRO-CRIMPER II hand tool for field repair only. **Note:** Die Set can be adapted for use with 626 Pneumatic Tool System. **Insertion Tool Part No. 91002-1** (for insulation diameters .070 [1.78] or less), **No. 200893-2** (for insulation diameters .090 [2.29] max.). **Extraction Tool Part No. 305183.** (Instruction Sheet 408-1216)
***Call Technical Support for Machine Applicator Part Numbers.

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South America: 55-11-2103-6000
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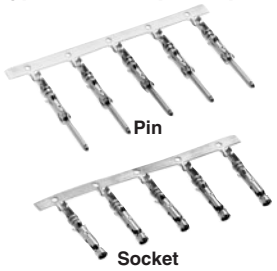
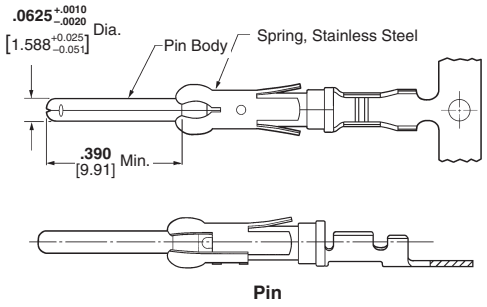
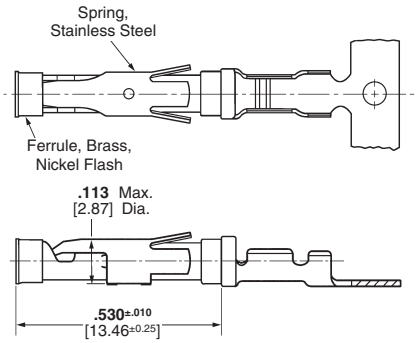
Japan: 81-44-844-8013
UK: 44-208-420-8341

Signal Contacts (Continued)

Enhanced High Current Type III+, Crimp, Snap-In







Material and Finish — See chart.
Contact Body—Copper Nickel Alloy
Retention Spring—Stainless steel

Related Product Data
Application Tooling — Pages 76-79
Technical Documents
114-10004 Application Specification
108-10024-2 Product Specification

Contact Size 16—Pin Diameter .062 [1.57]

Wire Size Range AWG	Wire Size Range mm²	Ins. Dia. Range	Contact Finish	Strip Form Contact No. Pin	Strip Form Contact No. Socket	Loose Piece Contact No. Pin	Loose Piece Contact No. Socket	Tooling Part No. Loose Piece Hand Tool	Tooling Part No. Strip Form Applicators
18-14	0.8-2.0	**.080-.100**[1] 2.03-2.54	Gold	1-66359-6	1-66358-9	1-66361-4	1-66360-4	91519-1[3]	466326-□*** or 466923-2***
			Tin	1-66359-9	2-66358-1	1-66361-6	1-66360-6		
		.110-.150[2] 2.79-3.81	Gold	1-66597-0	1-66598-1	66602-9	1-66601-0	91521-1[3]	466958-1*** or 567364-□***
			Tin	1-66597-1	1-66598-2	1-66602-0	1-66601-2		

[1] Overall insulation crimp diameter, including crimp barrel, must not exceed .125 [3.18].
[2] Contacts can ONLY be used in CPC, Series 1 (Arr. 23-24), Series 4 (Arr. 23-13M, 23-16M, 23-22M), and VDE connectors.
[3] To use with the 626 Pneumatic Tool System: remove the crimping head from the Straight Action Hand Tool (SAHT) Assembly, order SAHT Adapter **Part No. 217201-1**, Adapter Holder **Part No. 356304-1** (with ratchet) or **189928-1** (without), and Power Unit **Part No. 189721-1** (hand actuated) or **189722-1** (foot actuated).
*** Call Technical Support for Automatic Machine Applicator Part Numbers.

Ratings

Voltage: 250 Volts AC/DC
600 Volts AC/DC, Series I, VDE tested and select loaded only
Base Current: Type III+ contacts: 17 amperes, 30˚C temperature rise with single contact on 14 AWG wire
Enhanced High Current Type III+ contacts: **25 amperes**, 30˚C temperature rise with single contact on 14 AWG wire
Temperature: -55˚C to +105˚C
VDE 0627: XA/630/4KV/2 - Series I, VDE tested only

Multiplication Rating Factor (F)

Type III+ Contacts (Note: 1 = 17 amperes)

Shell Size	Percent Connector Loading: Single Circuit, Wire Size 30 AWG	Single Circuit, Wire Size 14 AWG	≅ 50%, Wire Size 30 AWG	≅ 50%, Wire Size 14 AWG	100%, Wire Size 30 AWG	100%, Wire Size 14 AWG
11-4	.291	1	.212	.905	.140	.684
13-9	.278	.995	.175	.750	.134	.567
17-16	.270	.990	.146	.625	.127	.472
23-24	.281	.985	.138	.550	.120	.416
23-37	.275	.985	.131	.497	.114	.376

Enhanced High Current Type III+ Contacts (14 AWG wire only - Note: 1 = 25 amperes)

Shell Size	Percent Connector Loading: Single Circuit, 14 AWG	≅ 50%, 14 AWG	100%, 14 AWG
11-4	.880	.840	.640
13-9	.880	.640	.480
17-16	.880	.520	.400
23-24	.880	.520	.400
23-37	.880	.440	.320

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Signal Contacts (Continued)

Type III+ (Precision Formed, Crimp)

Contact Size—16
Pin Diameter—.062 [1.57]

Material and Finish

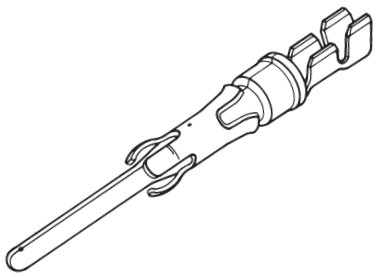
Contact Body—Copper alloy, plated tin or gold
Spring—Stainless steel

Grounding Pin

(make first - break last)

Related Product Data

Performance Characteristics—Page 6
Application Tooling—Pages 76-79
Technical Documents—Page 80



Wire Size Range mm²	Wire Size Range AWG	Ins. Dia. Range[1]	Contact Finish	Grounding Pin Part No. Strip Form	Grounding Pin Part No. Loose Piece	Strip Form Applicator Part No.	Loose Piece Hand Tool Part No.
0.12-0.2	26-24	**.035-.055** 0.89-1.4	Tin	164159-3	164162-1	—	91515-1[5] or 58495-1*
			Sel. Gold/Nickel[4]	164159-4	164162-2		
0.2-0.6	24-20	**.045-.070** 1.14-1.78	Bright Tin	164160-3	164163-1	466323-□*** or 466907-2***	91515-1[5] or 91505-1[5] or 58495-1*
			Sel. Gold/Nickel[4]	164160-4	164163-2		
0.8-1.4	18-16	**.078-.098** 1.98-2.49	Tin	164161-3	164164-1	466741-□*** or 680114-3***	91523-1[5] or 91505-1[5] or 58495-1*
			Sel. Gold/Nickel[4]	164161-4	164164-2		

[1]Overall insulation crimp diameter, including crimp barrel, must not exceed .125 [3.18].
[4]Gold flash over .000030 [0.00076] min. nickel on entire contact, with .000030 [0.00076] gold in contact area.
[5]To use with the 626 Pneumatic Tool System: remove the crimping head from the Straight Action Hand Tool (SAHT) Assembly, order SAHT Adapter **Part No. 217201-1**, Adapter Holder **Part No. 356304-1** (with ratchet) or **189928-1** (without), and Power Unit **Part No. 189721-1** (hand actuated) or **189722-1** (foot actuated).
*Commercial PRO-CRIMPER II hand tool for field repair only. **Note:** Die Set can be adapted for use with the 626 Pneumatic Tool System.
***Call Technical Support for Automatic Machine Applicator Part Numbers.
Extraction Tool Part No. 539972-1.

High Current Power Contact—Size 16

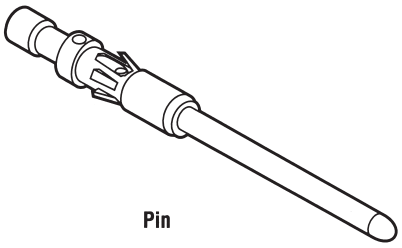
The features of the High Current Size 16 contact have been designed to retrofit into the existing AMP Connectors such as CPC (Circular Plastic Connector), CMC (Circular Metal Connector), G Series, M Series, Metrimate Square Grid and Drawer Connector housings. An initial T-Rise test in free air has shown a 23 amp capability with a 30° T-Rise. The contact may be crimped onto 14 AWG wire with an AMP hand tool **Part No. 601967-1**. Use turret TH502 **(1-601967-6)** for the pin and turret TH501 **(1-601967-5)** for the socket.

Material

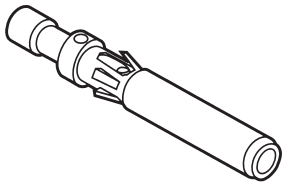
Body—Copper alloy
Louvertac Band—Beryllium copper
Retention Spring—Stainless steel

Finish

Body—Silver
Louvertac Band—Gold



Pin



Socket

Wire Range mm²	Wire Range AWG	Contact Part Nos. Pin Loose Piece	Pin Tape Mounted	Socket Loose Piece	Socket Tape Mounted	Crimping Tool Tool	Turret for Pins	Turret for Sockets
0.8-1.4	18-16	796964-1	796964-2	796966-1	796966-2	601967-1	1-601967-5	1-601967-5
2	14	193844-1	193844-2	193846-1	193846-2	601967-1	1-601967-6	1-601967-5

Extraction Tool Part No. 305183

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Hong Kong: 852-2735-1628
Japan: 81-44-844-8013
UK: 44-208-420-8341

Signal Contacts (Continued)

Type III+ (Precision Formed, Solder)

Contact Size—16
Pin Diameter—.062 [1.57]

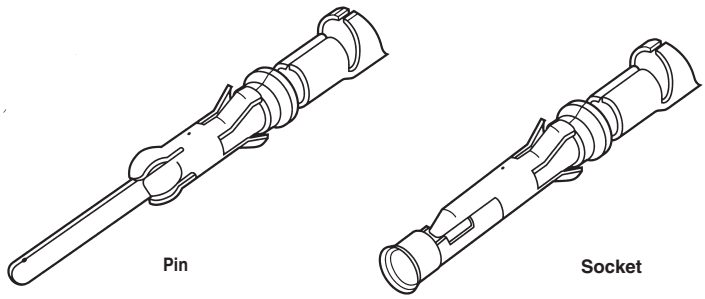
Material and Finish

Contact Body—Copper alloy, plated tin or gold
Spring—Stainless steel

Related Product Data

Performance Characteristics—Page 6
Technical Documents—Page 80

Solder-Type
(with Preformed Wire Barrel/Insulation Support)

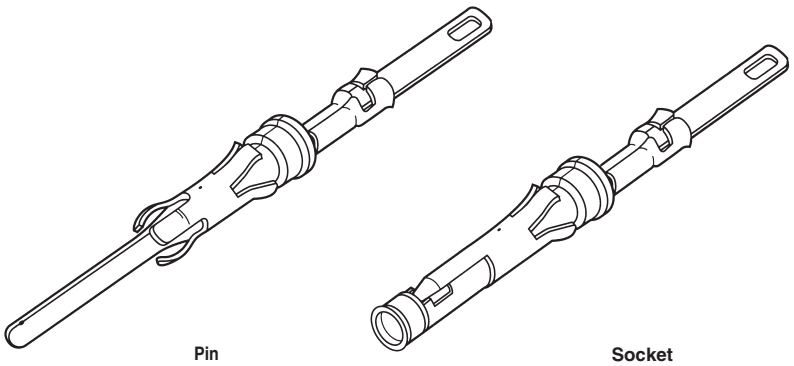


Pin Socket

Pin Socket

Solder-Type

Solder-Tab



Pin Socket

Pin Socket

Solder-Tab

Contact Size 16—Pin Diameter .062 [1.57] (Test Current, 13 Ampere)‡

Wire Size Range		Contact Finish	Loose Piece Contact No.	
AWG	mm²		Pin	Socket
26-20	0.12-0.6	Gold/Nickel[1]	66182-1	66183-1
18-16	0.8-1.4	Gold/Nickel[1]	66180-1	66181-1
Solder Tab[4]		Duplex[2]	202236-7	202237-7
		Bright Tin	202236-5	202237-5

[1].000030 [0.00076] gold in mating area over .000030 [0.00076] min. nickel.
[2]Duplex plated .000030 [0.00076] gold in mating area over .000030 [0.00076] min. nickel on contact body; bright tin on solder tab.
[3]Bright tin on entire contact.
[4]Designed for up to 14 AWG; but, not to exceed current limitation of contact.
Note: These contacts can be used in Multimate contact cavities of all connector housings.
‡Single contact, free-air test current is not to be construed as contact rating current. Use only for testing. Refer to contact current carrying capability information on page 8.
Extraction Tool Part No. 305183

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UK: 44-208-420-8341

Signal Contacts (Continued)

Type II, Screw Machined, Crimp

Material

Contact Body—Brass
Retention Spring—Stainless steel

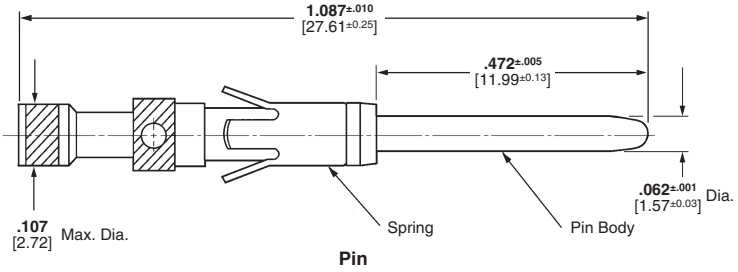
Finish

Contact Body—.000030 [0.00076] gold over .000050 [0.00127] nickel. Gold thickness controlled on socket O.D.
Retention Spring—Stainless steel

Related Product Data

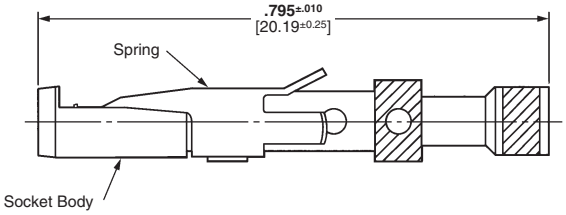
Application Tooling—Pages 76-79

Pin



Pin

Socket



Socket

Contact Size 16—Pin Diameter .062 [1.57] (Test Current, 13 Ampere)‡

Wire Size Range AWG	Wire Size Range mm²	Ins. Dia. Range[1]	Tape Mounted Contact No.[2] Pin	Tape Mounted Contact No.[2] Socket	Loose Piece Contact No. Pin	Loose Piece Contact No. Socket	Contact Color Code	Tooling Part No. Tape Mounted: Dies for AMP-TAPETRONIC Machine 69875	Tooling Part No. Loose Piece: Die Set for 626 Pneumatic Tool System	Tooling Part No. Loose Piece: Hand Tool
28-24	0.08-0.20	**.035-.055** 0.89-1.40	201611-4	—	201611-1[4]	201613-1[5]	Red/Red	90249-2	90230-1[7]	91538-1 or 601967-1
		.048-.065 1.22-1.65	—	—	201334-1[4]	201332-1[5]	Red/Red			
		.095-.110 2.41-2.79	—	—	202410-1[4]	202411-1[5]	Green		—	601967-1
24-20	0.2-0.6	**.040-.062** 1.02-1.57	201578-4	—	201578-1[4]	201580-1[5]	Yellow/Red	90249-2	90230-1[7]	91538-1 or 58541-1*
		.055-.088 1.40-2.16	201330-6	201328-9	201330-1[4]	201328-1[5]	Yellow/Red			or 601967-1
18 (Two)	0.9-0.9 (Two)	No. Ins. Support	—	—	202725-1[4]	202726-1[4]	Blue	—	90231-2[7]	91539-1 or 601967-1
18-16	0.8-1.4	**.080-.105** 2.03-2.67	—	—	202507-1[4]	202508-1[5]	—	—	—	90136-1 or 601967-1
		No Ins. Support	200336-6	200333-8	200336-1[4]	200333-1[4]	Blue/Blue	90250-1	90231-2[7]	91539-1
			—	—	204219-1[5,6]	—	Blue/Blue	—	—	58541-1* or 601967-1
14	2	No Ins. Support	212618-2[3]	201568-3	201570-1[4]	201568-1[5]	Violet/Blue	90250-1	90231-2[7]	91539-1
			201570-2	—	212618-1[3,6,†]	—	—	—	—	58541-1* or 601967-1

[1]Overall insulation crimp diameter, including crimp barrel, must not exceed .125 [3.18].
[2]For AMP-TAPETRONIC Machine No. 69875, order contacts by Tape Mounted Contact No., plus packaging code "IM REEL" (5000 parts per reel).
[3]Grounding pin is used to provide a make-first/break-last condition when mating and unmating connector halves.
[4]Use turret TH502 (**1-601967-6**) with hand tool **601967-1**.
[5]Use turret TH501 (**1-601967-5**) with hand tool **601967-1**.
[6]Pin length is .630±.005 [16.002±.127] on these two pins.
[7]Die Set requires "C" Head Adapter **Part No. 318161-1**; Adapter Holder **Part No. 356304-1** (with ratchet) or **189928-1** (without); and Power Unit **Part No. 189721-2** (hand actuated) or **189722-2** (foot actuated).
*Commercial PRO-CRIMPER II Hand Tool for field repair use only. **Note:** Die Set can be adapted for use with the 626 Pneumatic Tool System.
†Does not use Hand Tool 91539-1 or 601967-1.
‡Single contact, free-air test current is not to be construed as contact rating current. Use only for testing. Refer to contact current carrying capability information on page 8.
Insertion Tool Part No. 200893-2 (for insulation diameters .070 [1.78] or less).
Extraction Tool Part No. 305183.

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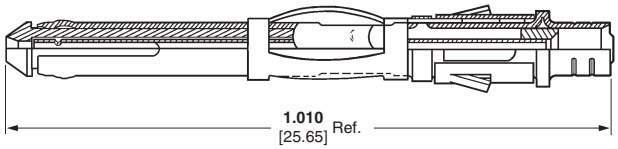
UK: 44-208-420-8341

Coaxial Contacts

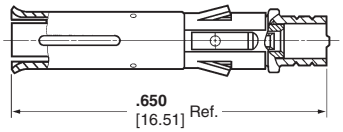
Subminiature Coax, Size 16 Precision Formed, Crimp

Pin

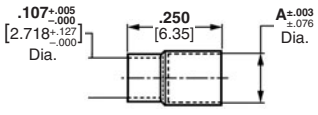
Socket



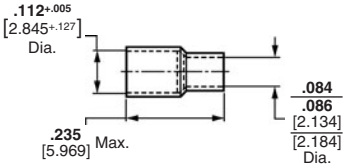
Pin



Socket



Ferrule
Part No. 5-225088-1—A .120 [3.05] Dia.
225088-3—A .123 [3.12] Dia.



Ferrule
Part No. 1-332057-0

Material

Outer Shell—Brass per MIL-C-50
Center Conductor—Beryllium copper per QQ-C-533 (Pin); Brass per QQ-B-626 (Socket)
Inner Dielectric—Polypropylene
Retention Spring—Stainless steel per QQ-S-766
Ferrule—Copper per QQ-C-576

Finish

Outer Shell, Center Conductor—See charts
Ferrule†—Bright tin per MIL-T-10727

Related Product Data

Application Tooling—Pages 76-79

Selection Chart for Coaxial Cable

Cable Size (RG/U)	Contact Finish	Loose Piece Contact No.		Ferrule Part No.	Tooling Part No.	
		Pin	Socket		Die Sets for Hand Tool 69710-1 or 626 Pneumatic Tool System	Hand Tool or Die Set*
178, 196	Gold/Nickel Gold/Copper[1]	226537-2	51565-2	1-332057-0†	69690-2[7]	69656-2
	Gold/Nickel Gold/Copper[2]	—	51565-5			
196 (Double Braid)	Gold/Nickel Gold/Copper[1]	226537-2	51565-2	5-225088-1†	—	69656-9
	Gold/Nickel Gold/Copper[2]	—	51565-5			
174, 188, 316	Gold/Nickel Gold/Copper[1]	226537-1	51565-1	1-332056-0	69690[7]	91911-3*
	Gold/Nickel Gold/Copper[2]	226537-4	51565-4			
174 (Double Braid)	Gold/Nickel Gold/Copper[1]	226537-1	51565-1	5-225088-3	—	69656-7
	Gold/Nickel Gold/Copper[2]	226537-4	51565-4			
179, 187	Gold/Nickel Gold/Copper[1]	226537-1	51565-1	1-332056-0	69690-1[7]	91911-4*
	Gold/Nickel Gold/Copper[2]	226537-4	51565-4			
187 (Double Braid)	Gold/Nickel Gold/Copper[1]	226537-1	51565-1	5-225088-1†	—	69656-8
	Gold/Nickel Gold/Copper[2]	226537-4	51565-4			
161	Gold/Nickel Gold/Copper[1]	226537-1	51565-1	1-332056-0	—	—
	Gold/Nickel Gold/Copper[2]	226537-4	51565-4			

[1].000030 [0.00076] gold over .000050 [0.00127] nickel—outer shell and socket center conductor; .000030 [0.00076] gold over .000100 [0.00254] copper—pin center conductor.
[2].000050 [0.00127] gold over .000050 [0.00127] nickel—outer shell and socket center conductor; .000050 [0.00127] gold over .000100 [0.00254] copper—pin center conductor.
[7]Die Set requires "C" Head Adapter **Part No. 318161-1**; Adapter Holder **Part No. 356304-1** (with ratchet) or **189928-1** (without); and Power Unit **Part No. 189721-2** (hand actuated) or **189722-2** (foot actuated).
†Does not use Hand Tool 91539-1 or 601967-1.
*Used with PRO-CRIMPER II Hand Tool Frame **Part No. 354940-1**.
Extraction Tool Part No. 305183

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Coaxial Contacts (Continued)

Subminiature Coax, Size 16 Precision Formed, Crimp (Continued)

Finish

Ferrule†—Bright tin per MIL-T-10727

Related Product Data

Application Tooling—Pages 76-79

Selection Chart for Twisted Pair and Shielded Wire

Wire Size AWG	Wire Size mm²	Contact Finish	Loose Piece Contact No. Pin	Loose Piece Contact No. Socket	Ferrule Part No.	Tooling Part No. Die Sets for Hand Tool 69710-1 or 626 Pneumatic Tool System	Tooling Part No. Hand Tool or Die Set*
30	0.05 (Twisted Pair, Solid)	Gold/Nickel Gold/Copper[1]	226537-3	51565-3	1-332057-0†	69690-2[7]	69656-2
		Gold/Nickel Gold/Copper[2]	226537-6	51565-6			
28	0.08-0.09 (Twisted Pair, Solid)	Gold/Nickel Gold/Copper[1]	226537-3	51565-3	1-332057-0†	69690[7]	91911-3*
		Gold/Nickel Gold/Copper[2]	226537-6	51565-6			
28	0.08-0.09 (Twisted Pair, Stranded 7 Str., .0050 [0.13] Dia.)	Gold/Nickel Gold/Copper[1]	226537-3	51565-3	1-332057-0†	69690-1[7] or 69690-2[7]	91911-4* or 69656-2
		Gold/Nickel Gold/Copper[2]	226537-6	51565-6			
26	0.12-0.15 (Twisted Pair, Solid or Stranded 7 Str., .0063 [0.16] Dia.)	Gold/Nickel Gold/Copper[1]	226537-3	51565-3	1-332057-0†	69690[7]	91911-3*
		Gold/Nickel Gold/Copper[2]	226537-6	51565-6			
26	0.12-0.15 (Shielded, .075 [1.91] Max. O.D.)	Gold/Nickel Gold/Copper[1]	226537-1	51565-1	1-332057-0†	69690-3[7]	69656-3
		Gold/Nickel Gold/Copper[2]	226537-4	51565-4			

[1].000030 [0.00076] gold over .000050 [0.00127] nickel—outer shell and socket center conductor; .000030 [0.00076] gold over .000100 [0.00254] copper—pin center conductor.
[2].000050 [0.00127] gold over .000050 [0.00127] nickel—outer shell and socket center conductor; .000050 [0.00127] gold over .000100 [0.00254] copper—pin center conductor.
[7]Die Set requires "C" Head Adapter **Part No. 318161-1**; Adapter Holder **Part No. 356304-1** (with ratchet) or **189928-1** (without); and Power Unit **Part No. 189721-2** (hand actuated) or **189722-2** (foot actuated).
*Used with PRO-CRIMPER II Hand Tool Frame **Part No. 354940-1**.
Note: A ferrule is required for each pin and socket.
Extraction Tool Part No. 305183.

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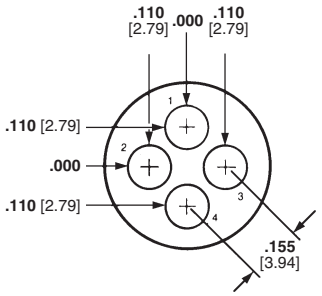
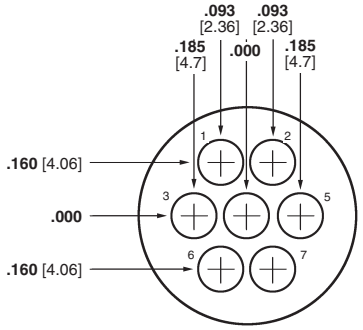
Contact Arrangements, Series 1

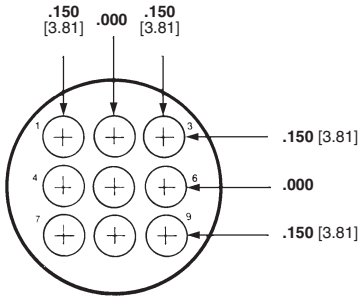
Shell Sizes 11 and 13



Arrangement 11-4
Max. Wire Ins. Dia. = .100 [2.54]

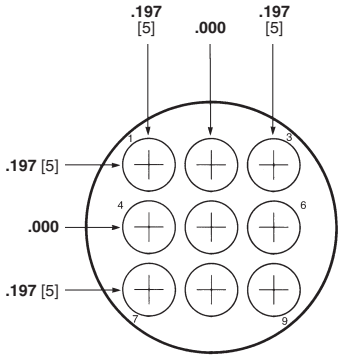


Arrangement 13-7
Max. Wire Ins. Dia. = .100 [2.54]

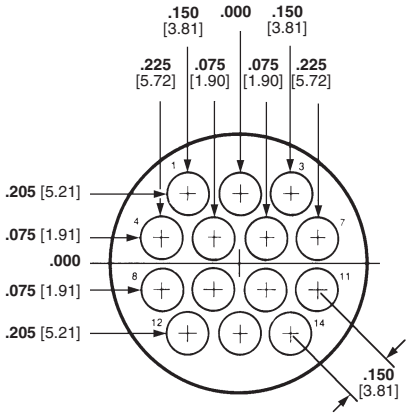


Arrangement 13-9
Max. Wire Ins. Dia. = .100 [2.54]

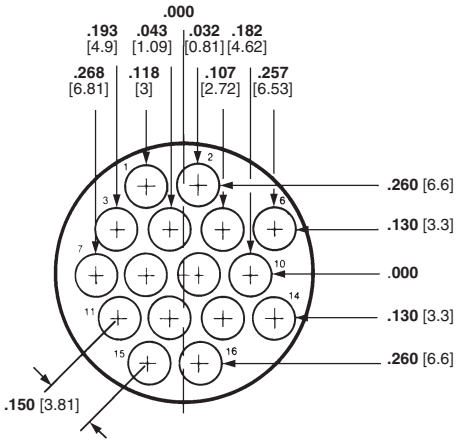
Shell Size 17



Arrangement 17-9
Max. Wire Ins. Dia. = .150 [3.81]

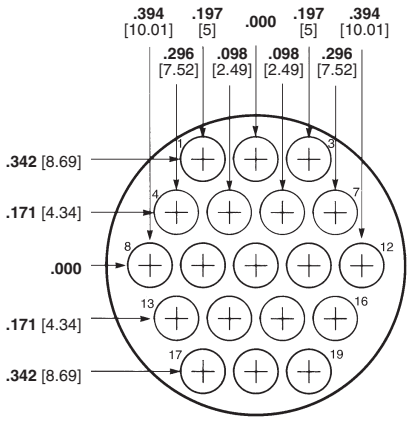


Arrangement 17-14
Max. Wire Ins. Dia. = .100 [2.54]

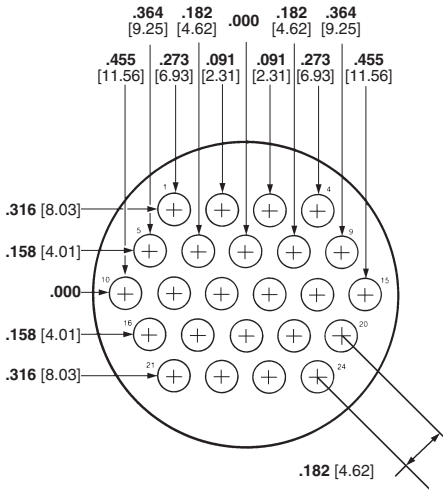


Arrangement 17-16
Max. Wire Ins. Dia. = .100 [2.54]

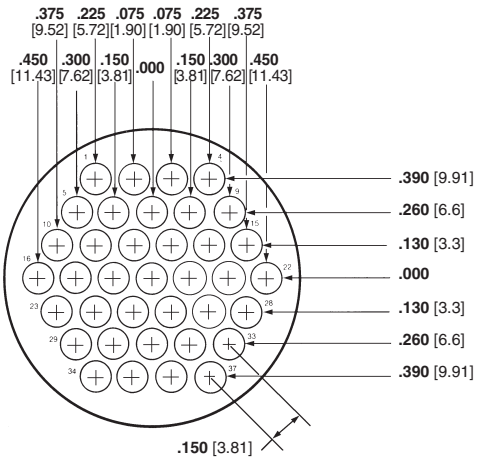
Shell Size 23



Arrangement 23-19
Max. Wire Ins. Dia. = .150 [3.81]



Arrangement 23-24
Max. Wire Ins. Dia. = .150 [3.81]



Arrangement 23-37
Max. Wire Ins. Dia. = .100 [2.54]

Note: Contact arrangements shown are for pin mating face (plug or receptacle). Socket mating face is mirror image.

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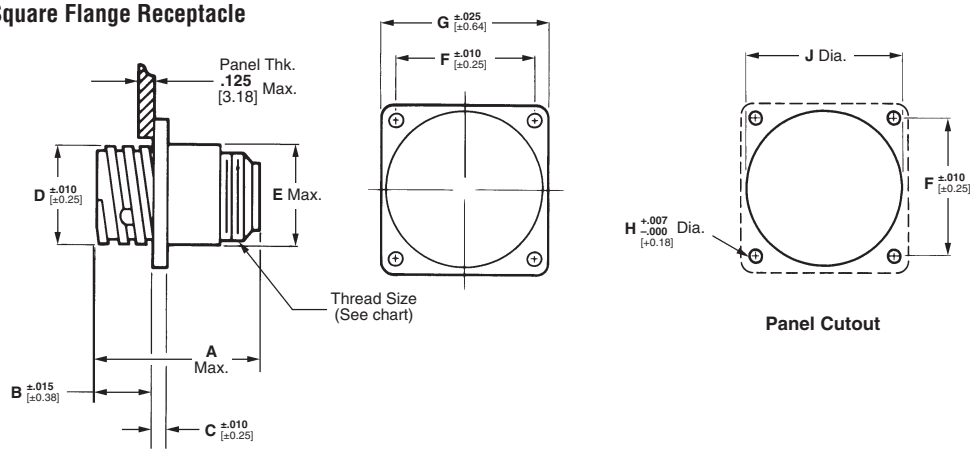
Hong Kong: 852-2735-1628
Japan: 81-44-844-8013
UK: 44-208-420-8341

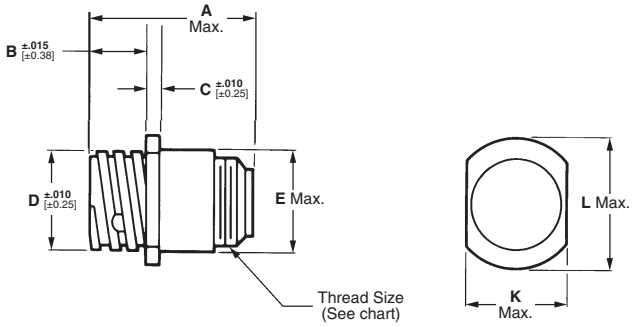
Component Dimensions, Series 1

Square Flange Receptacle

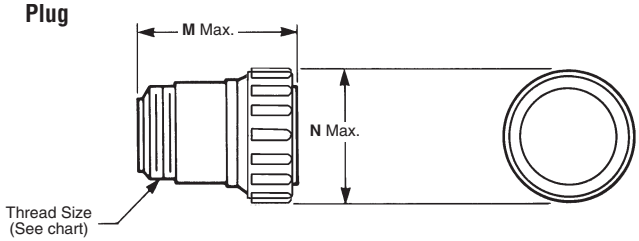


Panel Cutout

Free-Hanging Receptacle



Plug



Shell Size	Sex	Dimensions													Thread Size
		A	B	C	D	E	F	G	H	J	K	L	M	N	
11	Rev.	**1.070** 27.18	**.420** 10.67	**.094** 2.39	**.687** 17.45	**.740** 18.8	**.844** 21.44	**1.125** 28.58	**.125** 3.18	**.840** 21.34	**.817** 20.75	**.935** 23.75	**1.365** 34.67	**.975** 24.77	5/8-24 UNEF-2A
	Std.	**1.350** 34.29											**1.080** 27.43		
13	Std.	**1.350** 34.29	**.420** 10.67	**.094** 2.39	**.812** 20.62	**.879** 22.33	**.969** 24.61	**1.281** 32.54	**.125** 3.18	**.979** 24.87	**.874** 22.2	**1.072** 27.23	**1.080** 27.43	**1.105** 28.07	3/4-20 UNEF-2A
17	Rev.	**1.070** 27.18	**.420** 10.67	**.094** 2.39	**1.050** 26.67	**1.110** 28.19	**1.125** 28.58	**1.435** 36.45	**.150** 3.81	**1.210** 30.73	**1.161** 29.49	**1.310** 33.27	**1.365** 34.67	**1.349** 34.26	15/16-20 UNEF-2A
	Std.	**1.350** 34.29											**1.080** 27.43		
23	Rev.	**1.070** 27.18	**.520** 13.21	**.156** 3.96	**1.438** 36.53	**1.510** 38.35	**1.438** 36.53	**1.750** 44.45	**.150** 3.81	**1.610** 40.89	**1.505** 38.23	**1.733** 44.02	**1.365** 34.67	**1.788** 45.42	1-3/8-18 UNEF-2A
	Std.	**1.350** 34.29											**1.080** 27.43		

Catalog 82021
Revised 7-07

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Hong Kong: 852-2735-1628
Japan: 81-44-844-8013
UK: 44-208-420-8341

Circular Plastic Connectors, Series 2

CPC Connectors, Series 2 for Cable or Panel Mount

(Accepts Size 20 DM or DF Crimp, Snap-In Contacts)

Listed part numbers are for connectors only; **contacts must be ordered separately.**

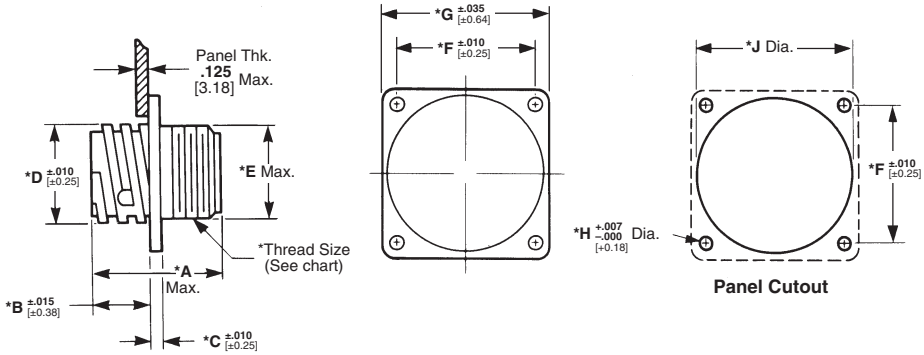
Material

Housing—Thermoplastic, 94V-0 rated, black

Related Product Data

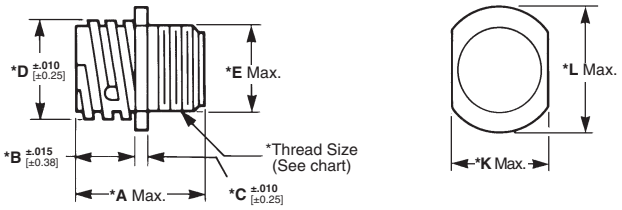
Contacts—Pages 29-30
Contact Arrangement—Page 31
Component Dimensions—Page 32*
Accessories—Pages 38-42
Performance Characteristics—Page 6
Application Tooling—Pages 76-79
Technical Documents—Page 80

Square Flange Receptacle

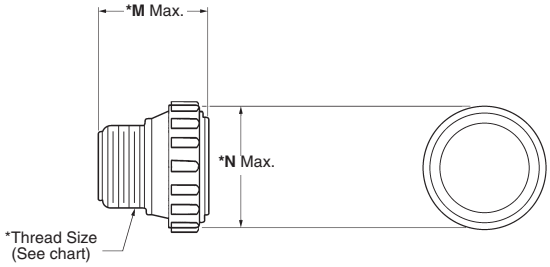


***Note:**
See page 32 for callout dimensions

Free-Hanging Receptacle



Plug



Standard Sex Connectors

(Receptacles accept Size 20 DM or DF pin contacts, Plugs accept Size 20 DM or DF socket contacts)

Arrangement	Square Flange Receptacle		Free-Hanging Receptacle	Plug
	With Mounting Holes	With Threaded Inserts[1]		
11-8	205841-1	205841-3	205841-2	205838-1
11-9	206486-1	206852-8	206486-2	206485-1
17-28	205840-3	205840-4	206152-1	205839-3
23-63	205843-1	—	205843-2	205842-1

[1]Four 4-40 threaded inserts per receptacle.

Reverse Sex Connectors

(Receptacles accept Size 20 DM or DF socket contacts, Plugs accept Size 20 DM or DF pin contacts)

Arrangement	Square Flange Receptacle		Free-Hanging Receptacle	Plug
	With Mounting Holes	With Threaded Inserts[1]		
11-8	206433-1	206433-3	206433-2	206434-1
17-28	206038-1	206038-4	206038-2	206039-1
23-57	206438-1	—	206438-2	206437-1

[1]Four 4-40 threaded inserts per receptacle.

Note: For Standard and Reverse Sex Connectors the maximum wire insulation diameter is .068 [1.73].

Replacement Coupling Rings

Shell Size	Part No.
11	213811-1
17	213810-1
23	213812-1

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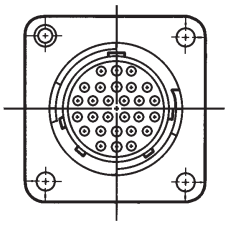
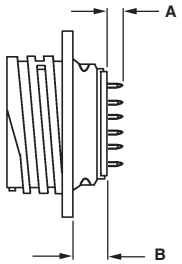
UK: 44-208-420-8341

Circular Plastic Connectors, Series 2 (Continued)

Receptacles, Printed Circuit Board Mount

with .025 [0.64] sq. solder tails





Material and Finish

Housing—Thermoplastic, 94V-0 rated, black

Contacts—
A—Duplex plated gold flash on entire contact with .000030 [0.00076] min. gold on contact engagement area, tin on the termination area, all over .000050 [0.00127] min. nickel underplating
B—Plated gold flash on the entire contact, tin on the termination area

Related Product Data

Contact Arrangement—Page 31
Performance Characteristics—Page 6
Technical Documents—Page 80
Accessories—Pages 38-42

Standard Sex (Posted Pin Contacts)

Arrangement		Receptacle Assemblies		Dimensions		Contact Finish Code
Shell Size	No. of Positions	Mounting Holes	4-40 Threaded Inserts[1]	A	B	
11-9		1-206852-2	—	**.125** 3.18	**.230** 5.84	A
		1-206852-1	—	**.352** 8.94	**.230** 5.84	A
17-28		1-207369-1	—	**.125** 3.18	**.230** 5.84	A
		1-207369-3	—	**.352** 8.94	**.230** 5.84	A
23-63		1-206455-2	—	**.227** 5.77	**.338** 8.59	A
		1-206455-1	—	**.449** 11.40	**.338** 8.59	A

[1]Four 4-40 threaded inserts per receptacle.

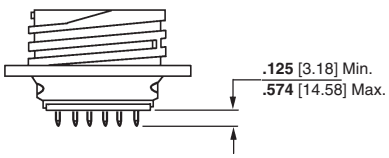
Reverse Sex (Posted Socket Contacts)

Arrangement		Receptacle Assemblies		Dimensions		Contact Finish Code
Shell Size	No. of Positions	Mounting Holes	4-40 Threaded Inserts[1]	A	B	
11-8		1-208657-1	—	**.352** 8.94	**.285** 7.24	A
		—	1-208657-0	**.574** 14.58	**.230** 7.24	A
17-28		1-207216-6	—	**.125** 3.18	**.230** 5.84	B
		1-207216-7	—	**.352** 8.94	**.230** 5.84	A
23-57		1-796329-1	—	**.232** 5.89	**.333** 8.46	A

[1]Four 4-40 threaded inserts per receptacle.

Other Available Posted Contacts

Tyco Electronics can make available contacts with various solder tail lengths for loading into the standard or reverse sex, square flange receptacles for applications requiring custom solder tail lengths.



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Hong Kong: 852-2735-1628
Japan: 81-44-844-8013
UK: 44-208-420-8341

Note: All part numbers are RoHS Compliant.

Circular Plastic Connectors, Series 2 (Continued)

Special CPC Connectors, Series 2

(Pressure rated up to 30 psi)

Listed plug connector part numbers are for connectors only; **contacts must be ordered separately.**

Material

Housing—Thermoplastic, 94V-0 rated, black

Feed-Thru Contacts—Copper alloy, plated gold over nickel

Related Product Data

Socket Contacts (for Plugs)—Pages 29-30

Contact Arrangement—Page 31

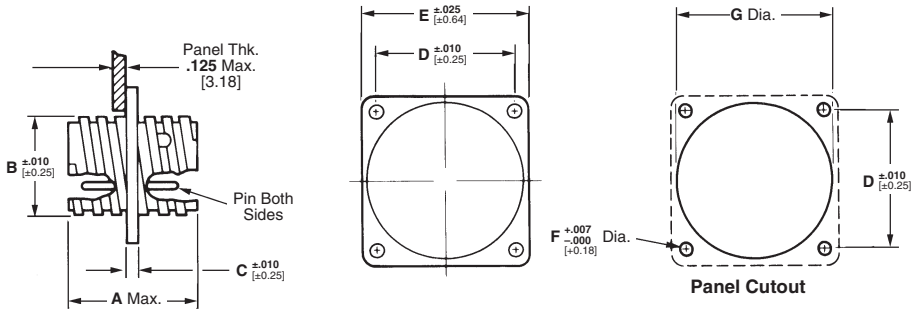
Performance Characteristics—Page 6

Accessories—Pages 38-42

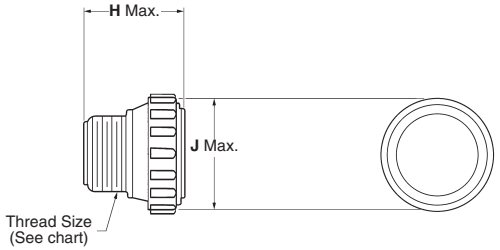
Technical Documents—Page 80

Square Flange Feed-Thru Receptacles

(with Permanently Sealed .040 [1.02] Dia. Solid Pins)



Plug



Arrangement No.	Dimensions									Thread Size
	A	B	C	D	E	F	G	H	J	
11-8	**1.035** 26.29	**.688** 17.48	**.188** 4.78	**.844** 21.44	**1.125** 28.58	**.125** 3.18	**.840** 21.34	**.800** 20.32	**.975** 24.77	5/8-24 UNEF-2A
17-28	**1.040** 26.42	**1.050** 26.67	**.188** 4.78	**1.125** 28.58	**1.435** 36.45	**.150** 3.81	**1.210** 30.73	**.800** 20.32	**1.349** 34.26	15/16-20 UNEF-2A

Part Numbers

Arrangement No.	Standard Numbering Plug	Reverse Numbering Plug	Square Flange Feed-Thru Receptacle
11-8	205838-1	206460-1	206458-1
17-28	206125-1	206126-1	206127-1

Note: One plug must have standard numbering of cavities, and the other plug must have reverse numbering of cavities.

Catalog 82021
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Hong Kong: 852-2735-1628
Japan: 81-44-844-8013
UK: 44-208-420-8341

Signal Contacts

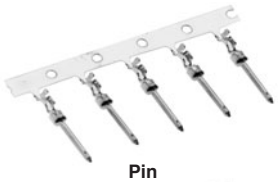
Size 20 DF, Precision Formed, Crimp Contacts

Contact Size—20

Pin Diameter—.040 [1.02]

***Test Current**—7.5 ampere
(Single contact, free-air test current; not to be construed as contact rating current. Use only for testing.)

***Note:** Total current capacity of each contact in any given connector is dependent on the heat rise resulting from the combination of electrical loads of all contacts in the connector arrangement and the maximum ambient temperature in which the connector will be operating. **See page 8.**



Pin

Socket

Material

Pin Body—Brass

Socket—Phosphor bronze

Contact Finish

A—Select gold flash over nickel on entire contact, with additional .000030 [0.00076] gold on mating end

B—Duplex plated .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 plated gold flash on mating end, tin on termination end, with entire contact nickel underplated

Related Product Data

Application Tooling—Pages 76-79

Technical Documents—Page 80

Product Specification—108-40005

Insertion/Extraction Tool
Part No. 91285-1
Instruction Sheet—408-9404

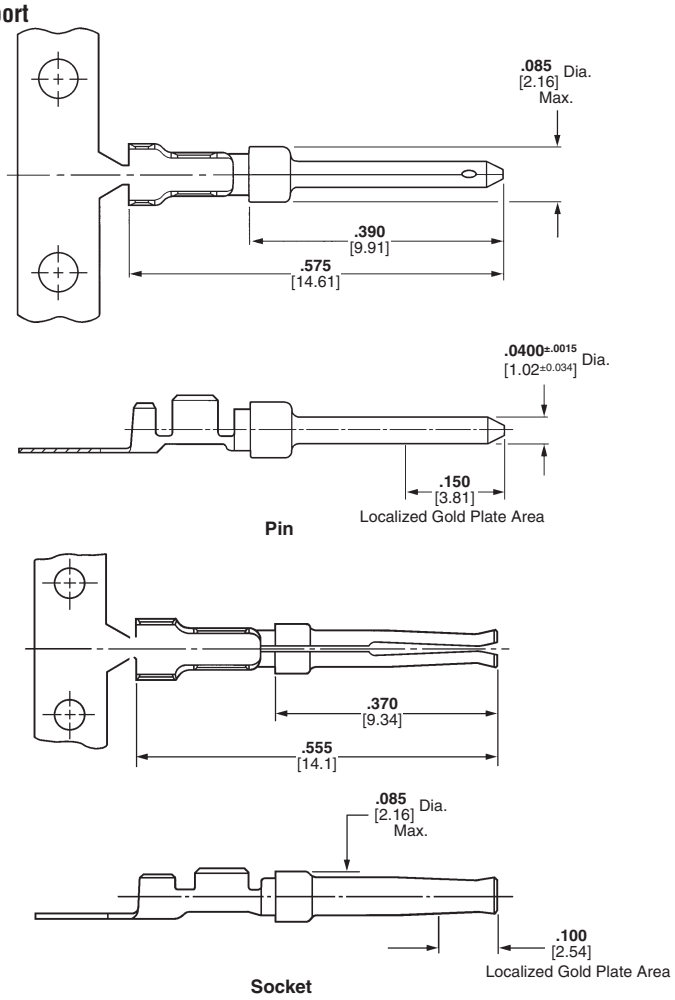
This tool includes interchangeable tips to Insert/Extract:

Size 22, 28-22 AWG [0.08-0.03 mm²] Crimp Contacts

Size 20, 28-20 AWG [0.08-0.6 mm²] Crimp and Solder Cup Contacts

Size 20, Posted Contacts

With Insulation Support



Wire Size Range	Ins. Dia. Max.	Contact Code Finish	Contact Part Nos.				Tooling		Color Code (Loose Piece)
			Pin		Socket				
			Strip Form	Loose Piece	Strip Form	Loose Piece	Strip Form Applicator††	Hand Tool	
28-24 AWG [0.08-0.2 mm²]	.040 1.02	A	66507-3	66507-9	66505-3	66505-9	466423-□†† or 466901-1†† or 1016015-1††	91503-1[5]	Blue Dot
		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	5-66505-9			
	.060 1.52	A	66682-2	66682-4	66683-2	66683-4	466758-2†† or 466963-1†† or 567804-1††	91549-1[5]	Black Dot
		B	5066682-9	—	1-5066683-0	—			
		D	5066682-6	—	5066683-7	—			
26-22 AWG [0.12-0.4 mm²]	.050 1.27	A	745254-2	745254-6	745253-2	745253-6	466968-1†† or 567036-□†† or 567849-1††	91525-1[5]	Yellow Dot
		B	1658544-2	1658544-1	1658543-2	1658543-1			
		C	745254-3	745254-7	745253-3	745253-7			
		D	1658544-3	1-745254-6	1658543-3	1-745253-6			
24-20 AWG [0.2-0.6 mm²]	.060 1.52	A	66506-3	66506-9	66504-3	66504-9	466422-□†† or 466900-1†† or 567801-1†† or 1016002-1††	91503-1[5]	Red Dot
		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			

[5]To use with the 626 Pneumatic Tool System: remove the crimping head from the Straight Action Hand Tool (SAHT) Assembly, order SAHT Adapter **Part No 217201-1**, Adapter Holder **Part No. 356304-1** (with ratchet) or **189928-1** (without), and Power Unit **Part No. 189721-1** (hand actuated) or **189722-1** (foot actuated).

††For complete information on AMP Strip Form Applicators for fully automatic and semiautomatic machines, contact Technical Support.

Note: Commercial PRO-CRIMPER III Maintenance and Repair Hand Tool for Wire Size 28-24 AWG [0.08-0.2 mm²] (Ins. Dia. Max. .040 [1.02]), and Wire Size 24-20 AWG [0.2-0.6 mm²] (Ins. Dia. Max. .060 [1.52])—**Part No. 58448-2.**

Note: Die Set **Part No. 58448-3** can be adapted for use with the 626 Pneumatic Tool System.

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UK: 44-208-420-8341

Signal Contacts (Continued)

Size 20 DM, Screw-Machined, Crimp Contacts

Pin Diameter—.040 [1.02]

Test Current*—7.5 amperes (Single contact, free-air test current; not to be construed as contact rating current. Use only for testing.)

Material and Finish

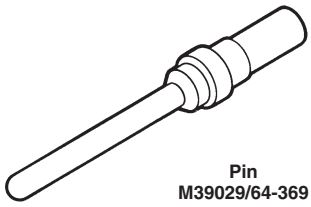
Pin Body—Copper alloy per QQ-B-626

Socket Body—Beryllium copper per QQ-C-530

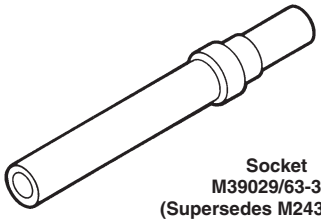
Socket Sleeve—Passivated stainless steel per QQ-S-766

Plating pin and socket body—.000050-.000100 [0.00127-0.00254] min. gold over .000100-.000150 [0.00254-0.00381] min. copper

Gold plating per MIL-G-45204
Copper plating per MIL-C-14550



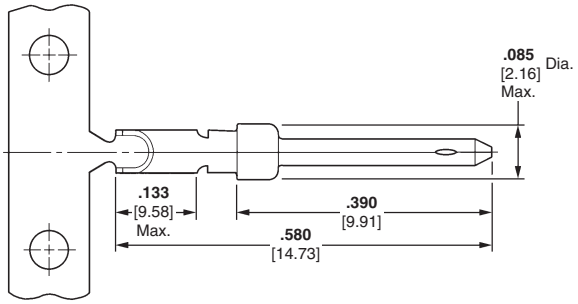
Pin
M39029/64-369
(Supersedes M24308/11-1)

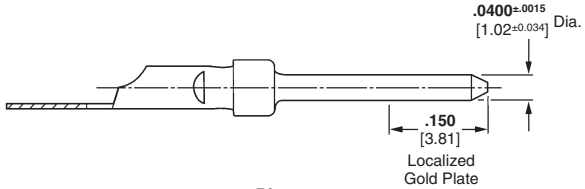


Socket
M39029/63-368
(Supersedes M24308/10-1)

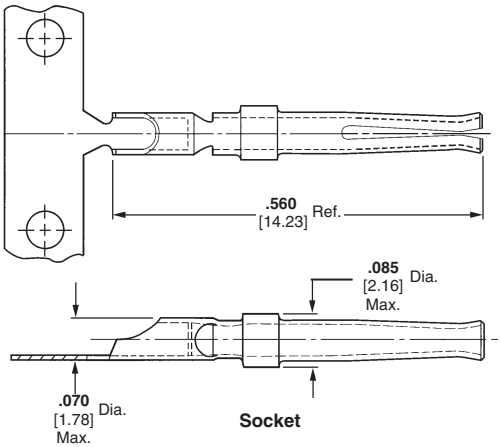
Wire Size Range[1] AWG	mm²	Ins. Dia. (Max.)	Contact Configuration	Tape Mounted Contacts[2] Part No.	Loose Piece Contacts Military No. (M39029/)	Loose Piece Contacts Part No.	Hand Tool Nos. Military (M22520/)	Hand Tool Nos. Part No.	Positioner Nos. Military (M22520/)	Positioner Nos. Part No.
24-20	0.2-0.6	**.068** 1.73	Pin	205089-2	64-369	205089-1	02-01	601966-1	2-08	601966-5
			Socket	205090-2	63-368	205090-1				

[1]Overall insulation crimp diameter, including crimp barrel, must not exceed .125 [3.18].
[2].000015 [0.00038] gold in the mating area over .000050 [0.00127] nickel.





Pin



Socket

Type 20 DF, Solder Contacts

Pin Diameter—.040 [1.02]

Test Current*—7.5 amperes (Single contact, free-air test current; not to be construed as contact rating current. Use only for testing.)

Material and Finish

Pin—Brass, plated gold flash over nickel on entire contact with additional .000030 [0.00076] min. gold on mating end

Socket—Phosphor bronze, plated gold flash over nickel on entire contact with additional .000030 [0.00076] min. gold on mating end

***Note:** Total current capacity of each contact in a given connector is dependent on the heat rise resulting from the combination of electrical loads of all contacts in the connector arrangement and the maximum ambient temperature in which the connector will be operating. See page 8.

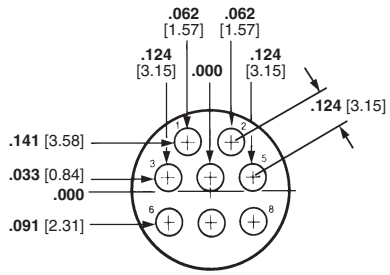
Strip Form Contact No.		Loose Piece Contact No.	
Pin	Socket	Pin	Socket
66570-2	66569-2	66570-3	66569-3

Note: Contacts to be soldered to wire before being inserted into housing, 18 AWG [0.8 - 0.9 mm²] max. wire size.

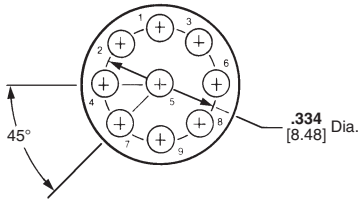
Contact Arrangements, Series 2

Note: Contact arrangements shown are of pin mating face (plug or receptacle). Socket mating face is mirror image.

Shell Size 11

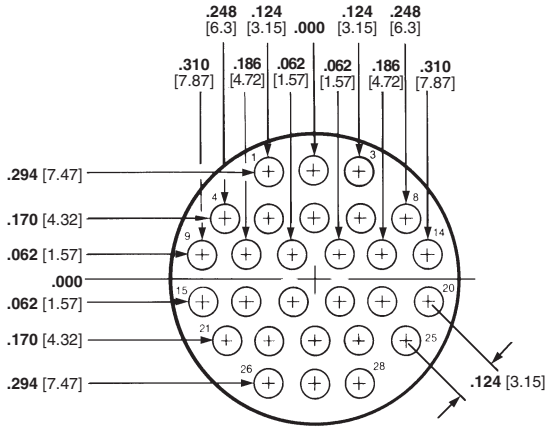


Arrangement 11-8
Max. Wire Ins. Dia. = .068 [1.73]



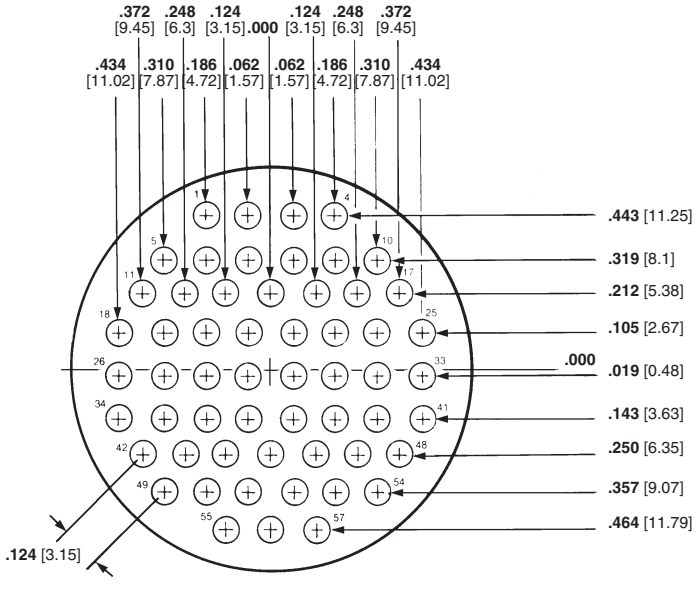
Arrangement 11-9
Max. Wire Ins. Dia. = .068 [1.73]

Shell Size 17

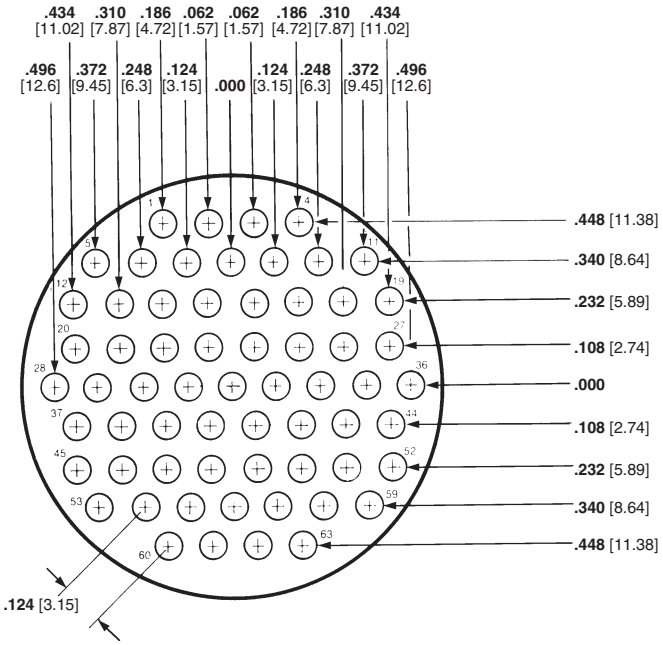


Arrangement 17-28
Max. Wire Ins. Dia. = .068 [1.73]

Shell Size 23



Arrangement 23-57
Max. Wire Ins. Dia. = .068 [1.73]



Arrangement 23-63
Max. Wire Ins. Dia. = .068 [1.73]

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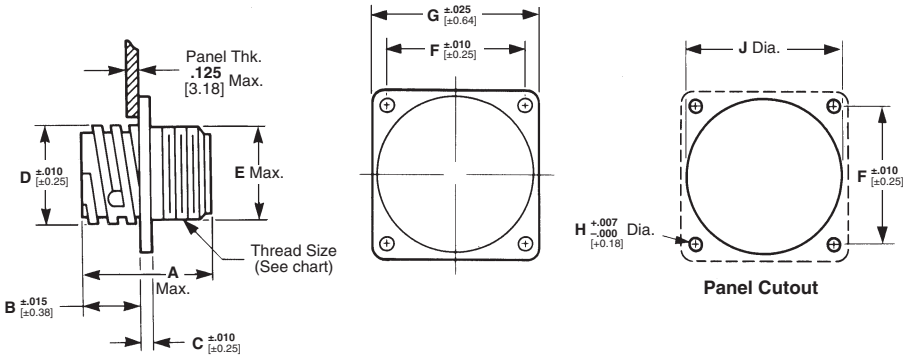
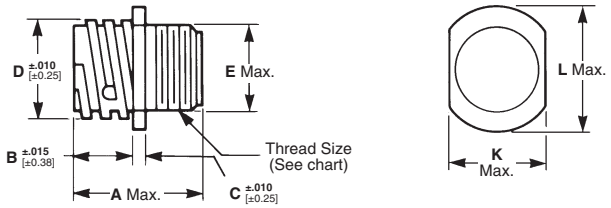
Component Dimensions, Series 2

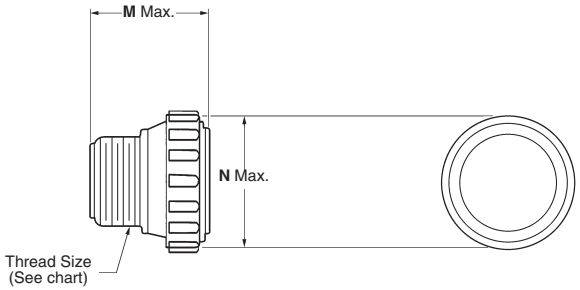
Square Flange Receptacle



Free-Hanging Receptacle



Plug



Arrangement No.	Dimensions													Thread Size
	A	B	C	D	E	F	G	H	J	K	L	M	N	
11-8	**.809**	**.420**	**.094**	**.688**	**.630**	**.844**	**1.125**	**.125**	**.840**	**.817**	**.935**	**.800**	**.975**	5/8-24
11-9	20.55	10.67	2.39	17.48	16	21.44	28.58	3.18	21.34	20.75	23.75	20.32	24.77	UNEF-2A
17-28	**.809**	**.420**	**.094**	**1.050**	**.943**	**1.125**	**1.435**	**.150**	**1.210**	**1.161**	**1.310**	**.800**	**1.349**	15/16-20
	20.55	10.67	2.39	26.67	23.95	28.58	36.45	3.81	30.73	29.49	33.27	20.32	34.26	UNEF-2A
23-57	**.924**	**.420**	**.156**	**1.438**	**1.515**	**1.438**	**1.750**	**.150**	**1.610**	**1.500**	**1.733**	**.915**	**1.788**	1-3/8-18
23-63	23.47	10.67	3.96	36.53	38.48	36.53	44.45	3.81	40.89	38.1	44.02	23.24	45.42	UNEF-2A

Note: All dimensions apply to both standard and reverse sex connectors.

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Japan: 81-44-844-8013
UK: 44-208-420-8341

Note: All part numbers are RoHS Compliant.

Circular Plastic Connectors, Series 3

CPC Connectors, Series 3

Listed part numbers are for connectors only; **contacts must be ordered separately.**

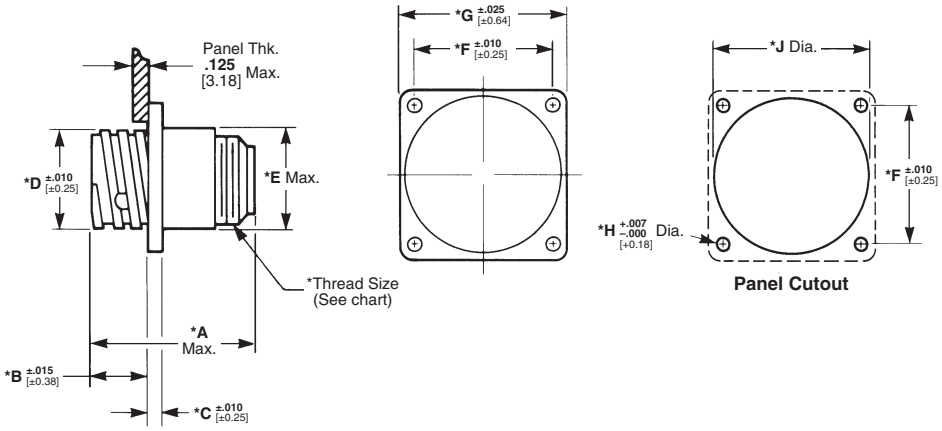
Material

Housing—Thermoplastic, 94V-0 rated, black

Related Product Data

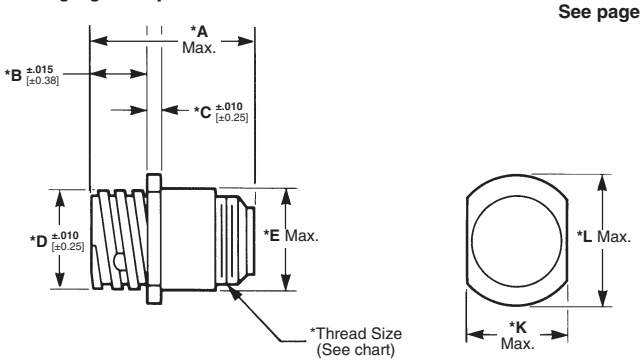
Contacts—Page 34–35
Contact Arrangement—Page 35
Component Dimensions—Page 36*
Accessories—Pages 38-42
Performance Characteristics—Page 6
Application Tooling—Pages 76-79
Technical Documents—Page 80

Square Flange Receptacle

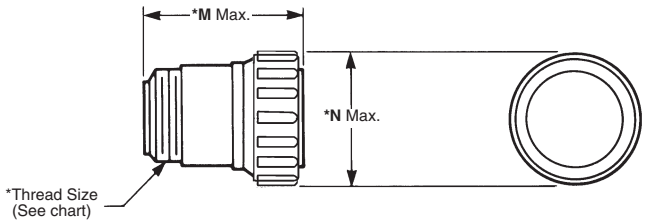


Free-Hanging Receptacle

***Note:**
See page 36 for Callout Dimensions



Plug



Standard Sex Connectors

(Receptacles accept Type XII Male/pin contacts, Plugs accept Type XII Female/socket contacts)

Arrangement	Square Flange Receptacle		Free-Hanging Receptacle	Plug
	With Mounting Holes	With Threaded Inserts[1]		
17-3	206036-2	213581-1	206207-1	206037-2
23-7	206137-1	206137-5	206137-2	206136-1

[1]Four 4-40 threaded inserts per receptacle.

Reverse Sex Connectors

(Receptacles accept Type XII Female/socket contacts, Plugs accepts Type XII Male/pin contacts)

Arrangement	Square Flange Receptacle		Free-Hanging Receptacle	Plug
	With Mounting Holes	With Threaded Inserts[1]		
17-3	206425-1	206425-5	206425-2	206426-1
23-7	206227-1	206227-6	206227-2	206226-1

[1]Four 4-40 threaded inserts per receptacle.
Note: Maximum wire insulation diameter is .220 [5.59].

Replacement Coupling Rings

Shell Size	Part No.
17	213810-1
23	213812-1

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UK: 44-208-420-8341

Note: All part numbers are RoHS Compliant.

Power Contacts, Series 3

Type XII, Precision Formed, Crimp

Material

Copper

Finish

A—Tin
B—.000030 [0.00076] selective gold over .000030 [0.00076] nickel
C—.000100 [0.00254] silver plated contacts with lubricant added

Test Current Rating

Silver or Gold—35 amperes ‡
Tin—15 amperes ‡

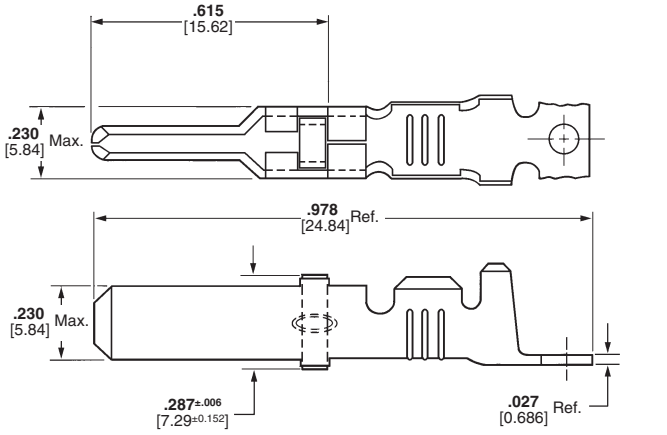
‡Single contact, free-air test current; not to be construed as contact rating current. Use only for testing. Refer to contact current carrying capability information, page 8.

Related Product Data

Application Tooling—Pages 76-79
Technical Documents—Page 80

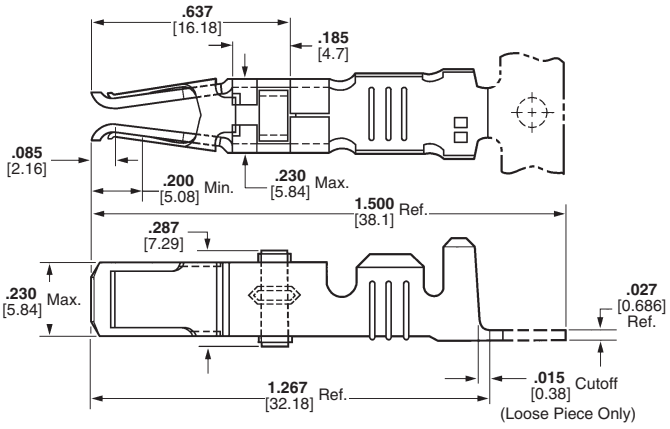
Extraction Tool Part No. 91019-3

Male



Male

Female



Female

Wire Size Range[1] AWG	Wire Size Range[1] mm²	Ins. Dia. Range	Contact Finish	Strip Form Contact Part Nos. Standard*** Male	Standard*** Female	Heavy Duty Miniature*** Male	Heavy Duty Miniature*** Female	Loose Piece Contact Part Nos. Male	Loose Piece Contact Part Nos. Female	Tooling: Heavy Duty Miniature Applicator	Tooling: Die Set for Hand Tool 69710-1 or 626 Pneumatic Tool System
16 and 14-12	1.25-1.4 and 2-3	**.135-.160** 3.43-4.06	A	66255-1	66740-7	66255-5	1-66740-2	66261-1	66740-8	567455-□***	90145-2[3,7] and 90145-1[4,7]
				66256-1[2]	—	66256-5[2]	—	66262-1[2]	—		
			B	66255-2	66740-5	66255-6	1-66740-1	66261-2	66740-6		
				66256-2[2]	—	66256-4[2]	—	66262-2[2]	—		
			C[5]	66255-7	66740-1	66255-8	66740-9	66261-4	66740-2		
				66256-6[2]	—	66256-7[2]	—	66262-4[2]	—		
10	5-6	**.190-.220** 4.83-5.59	A	66253-1	66741-7	66253-5	1-66741-2	66259-1	66741-8	567021-□***	90140-1[7]
				66254-1[2]	—	—	—	66260-1[2]	—		
			B	66253-2	66741-5	66253-6	1-66741-1	66259-2	66741-6		
				66254-2[2]	—	—	—	66260-2[2]	—		
			C[5]	66253-4	66741-1	66253-8	66741-9	66259-4	66741-2		
				66254-4[2]	—	—	—	66260-4[2]	—		

[1]Wire strip length—.281 [7.14].
[2]Ground contact.
[3]Die insert **Part No. 90145-2** is for crimping 16 AWG [1.25-1.4 mm²] wire.
[4]Die insert **Part No. 90145-1** is for crimping 14-12 AWG [2-3 mm²] wire.
[5]Recommended for high current/vibration applications where fretting corrosion is a problem.
[7]Die Set requires "C" Head Adapter **Part No. 318161-1**; Adapter Holder **Part No. 356304-1** (with ratchet) or **189928-1** (without); and Power Unit **Part No. 189721-2** (hand actuated) or **189722-2** (foot actuated).
Extraction Tool No. 91019-3.
***Call Technical Support for Automatic Machine Applicator Part Numbers.

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Power Contacts, Series 3 (Continued)

High Current Type XII Crimp Contacts

The Multimate features of the High Current Type XII contact have been designed to fit into the existing AMP Connectors such as CPC (Circular Plastic Connector), CMC (Circular Plastic Metal-Shell Connector), G Series, M Series, and CMPC (Circular Multipin Connector) housings. An initial T-Rise test in free air has shown a 60 amp capability with a 30° T-Rise with 8 gage wires. The contact may be crimped onto 8 AWG wire with a Daniels Hand Tool M310 or AMP P/N 356114-1 and Positioner TP1068 or AMP P/N 356119-1.

Current-Carrying Capacity

The graph shows current-carrying capacity versus temperature rise for a fully energized 3 position CPC plug P/N 206037-2 and receptacle P/N 206036-2. These initial representative amperage ratings were conducted with 8 AWG wires that were 3 feet long.

High Current Type XII Socket
Part No. 193990-2

High Current Type XII Pin
Part No. 193991-4

Material

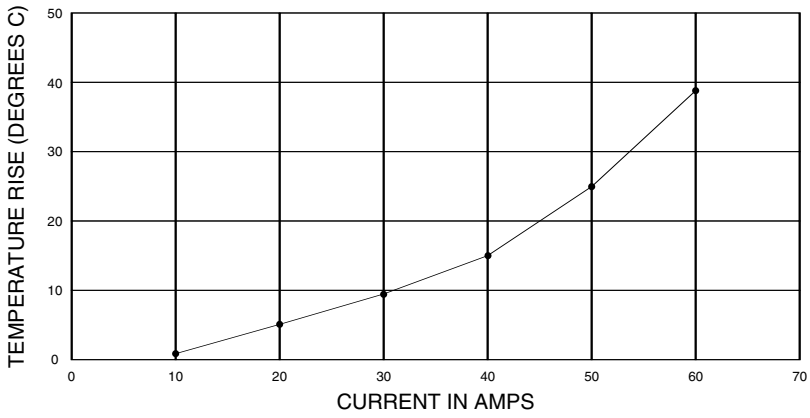
Body — Copper Alloy
Louvertac Band — Beryllium Copper
Retention Spring — Stainless Steel

Finish

Body — Silver
Louvertac Band — Gold

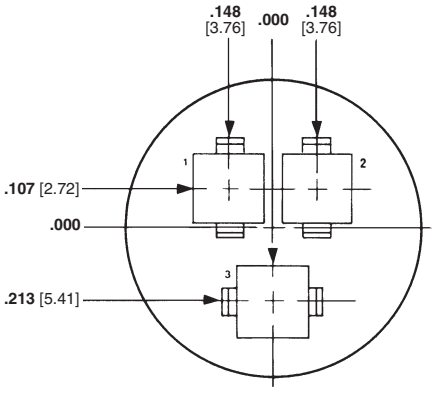
Extraction Tool Part No. 224155-1

Current Rating for 30°C Temperature Rise
100% Energized
3 Circuit Connector (Wire-to-Wire)



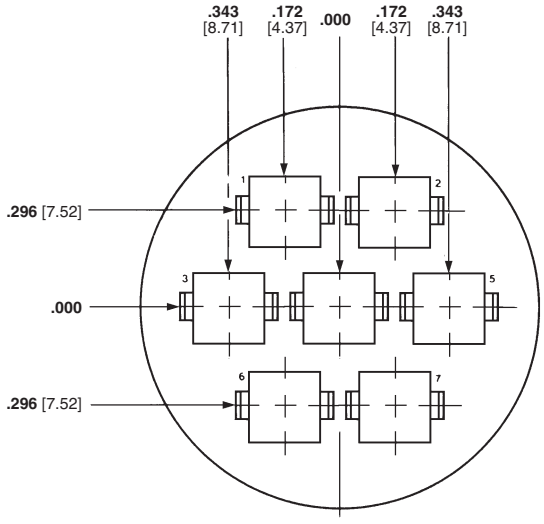
Contact Arrangements, Series 3

Shell Size 17



Arrangement 17-3
Max. Wire Ins. Dia. = .220 [5.59]

Shell Size 23



Arrangement 23-7
Max. Wire Ins. Dia. = .220 [5.59]

Note: Contact arrangements shown are of pin mating face (plug or receptacle). Socket mating face is mirror image.

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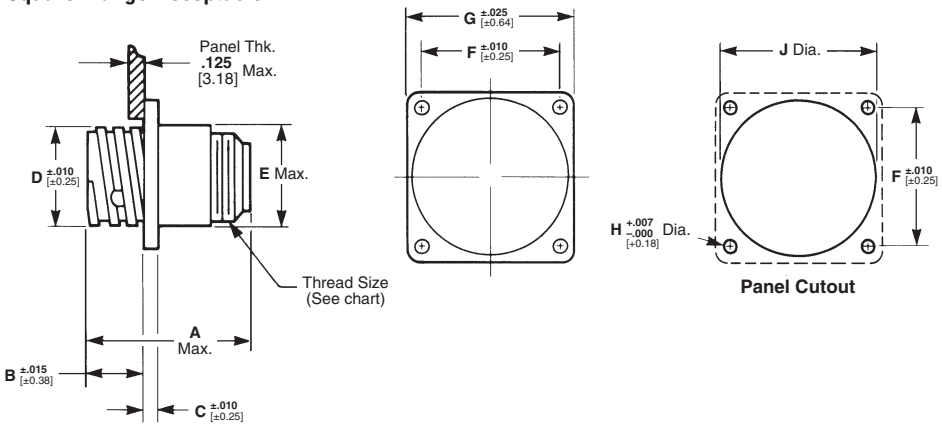
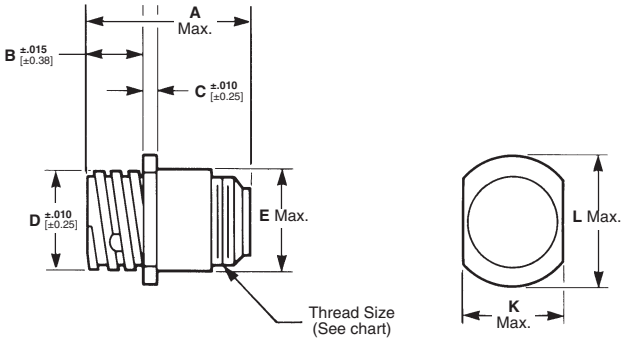
Component Dimensions, Series 3

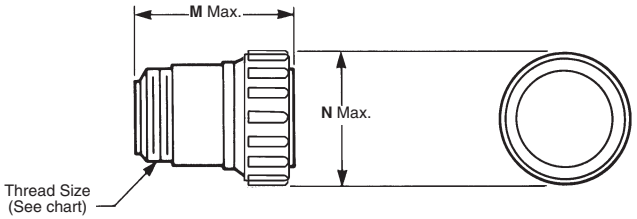
Square Flange Receptacle



Free Hanging Receptacle



Plug



Arrangement No.	Dimensions													Thread Size
	A	B	C	D	E	F	G	H	J	K	L	M	N	
17-3	**1.635** 41.53	**.420** 10.67	**.094** 2.39	**1.050** 26.67	**1.110** 28.19	**1.125** 28.58	**1.435** 36.45	**.150** 3.81	**1.210** 30.73	**1.161** 29.49	**1.310** 33.27	**1.645** 41.78	**1.349** 34.26	15/16-20 UNEF-2A
23-7	**1.635** 41.53	**.520** 13.21	**.156** 3.96	**1.438** 36.53	**1.510** 38.35	**1.438** 36.53	**1.750** 44.45	**.150** 3.81	**1.610** 40.89	**1.505** 38.23	**1.733** 44.02	**1.645** 41.78	**1.788** 45.42	1-3/8-18 UNEF-2A

Note: All dimensions apply to both standard and reverse sex.

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Japan: 81-44-844-8013
UK: 44-208-420-8341

Note: All part numbers are RoHS Compliant.

Circular Plastic Connectors, Series 4

CPC Connectors, Series 4, Standard Sex

Listed part numbers are for connectors only; **contacts must be ordered separately.**

Material

Housing—Thermoplastic, 94V-0 rated, black; 23-9M – Nylon 6/6, glass filled, black

Related Product Data

Contacts—Pages 17-21 and 34–35
Contact Arrangements—Below
Accessories—Pages 38-42
Performance Characteristics—Page 6
Application Tooling—Pages 76-79
Technical Documents—Page 80

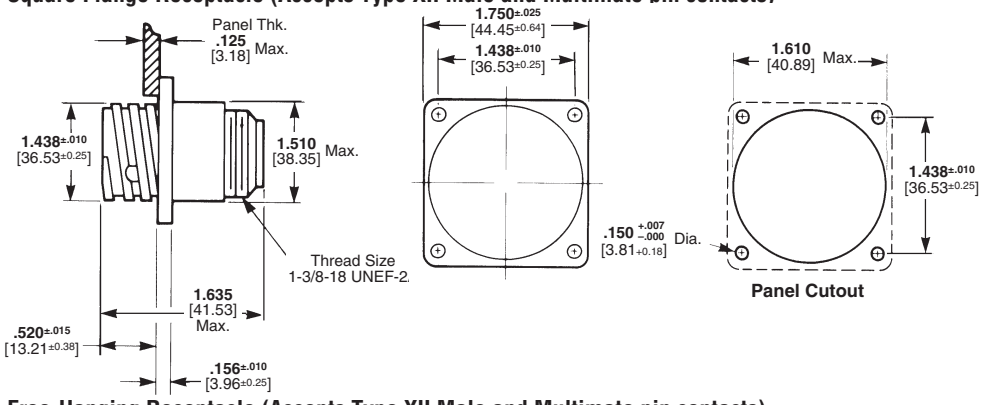
Replacement Coupling Ring

Shell Size	Part No.
23	213812-1

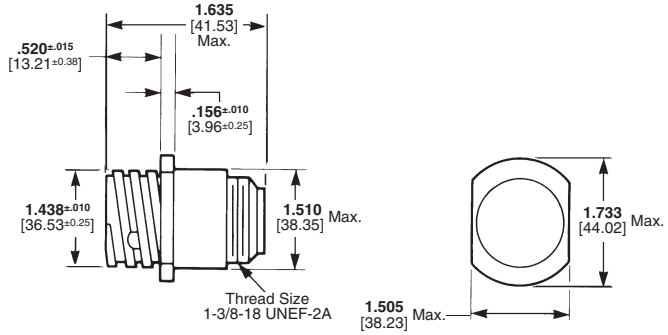
Contact Arrangements, Series 4 Shell Size 23

Note: Contact arrangements shown are of pin mating face (plug or receptacle). Socket mating face is mirror image.

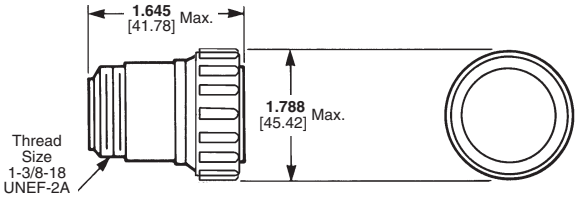
Square Flange Receptacle (Accepts Type XII Male and Multimate pin contacts)

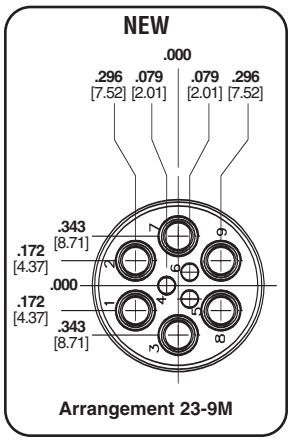


Free-Hanging Receptacle (Accepts Type XII Male and Multimate pin contacts)



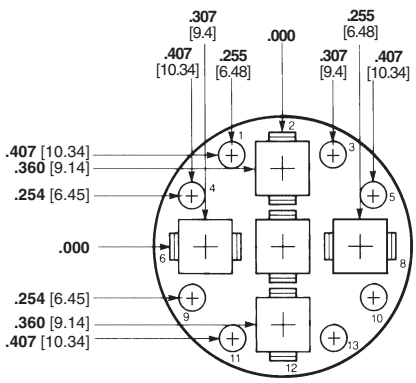
Plug (Accepts Type XII Female and Multimate socket contacts)



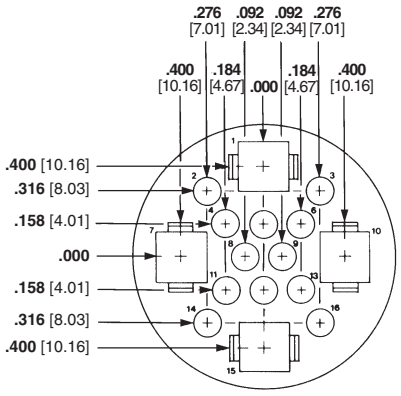


Arrangement	No. of Cavities		Square Flange Receptacle	Free-Hanging Receptacle	Plug
	Power	Multimate			
23-9M	6 (POWERBAND)	3	1776247-2[1]	—	206136-4
23-13M	5 (Type XII)	8	211825-1	211825-2	211824-1
23-16M	4 (Type XII)	12	207486-1	207486-2	207485-1
23-22M	2 (Type XII)	20	206613-1	206613-3	206612-1

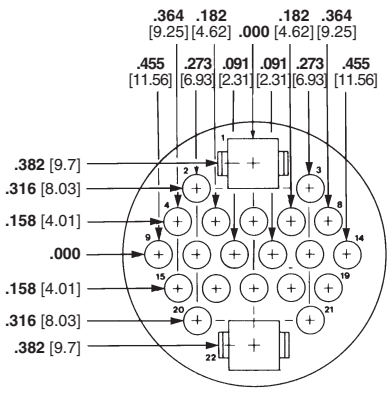
[1]Four 4-40 threaded inserts per receptacle.
Note: Maximum wire insulation diameter is .150 [3.81] for Multimate contacts; .220 [5.59] for Power contacts.



Arrangement 23-13M
Max. Wire Ins. Dia. =
.150 [3.81] for Multimate Contacts,
.220 [5.59] for Power Contacts



Arrangement 23-16M
Max. Wire Ins. Dia. =
.150 [3.81] for Multimate Contacts,
.220 [5.59] for Power Contacts



Arrangement 23-22M
Max. Wire Ins. Dia. =
.150 [3.81] for Multimate Contacts,
.220 [5.59] for Power Contacts

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UK: 44-208-420-8341

Note: All part numbers are RoHS Compliant.

CPC Connector Accessories

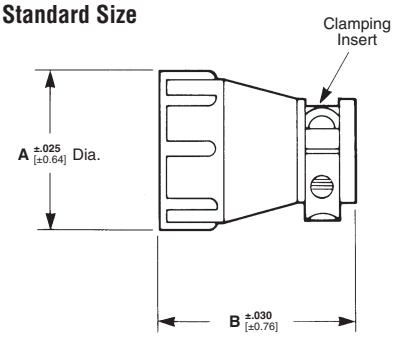
Cable Clamps

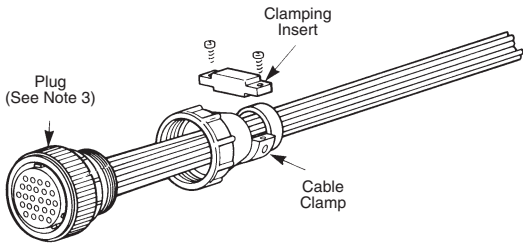
Cable clamps provide strain relief and can be used on all series receptacles and plugs.

Material

Black thermoplastic heat-stabilized, fire-resistant, self-extinguishing, UL 94V-0 rated

Standard Size



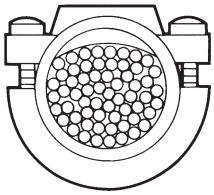


Shell Size	Dimensions A	Dimensions B	Cable O.D. (Max.)	Thread Size	Part No. Individually Packaged	Part No. Bulk Packaged*
11	**.825** 20.96	**1.250** 31.75	**.329** 8.36	5/8-24 UNEF-2B	1-206062-4	1-206062-7** (400)
13	**.950** 24.13	**1.400** 35.56	**.453** 11.51	3/4-20 UNEF-2B	206966-7	206966-9** (200)
17	**1.125** 28.58	**1.400** 35.56	**.453** 11.51	15/16-20 UNEF-2B	206070-8	1-206070-0** (200)
23	**1.600** 40.64	**1.555** 39.5	**.703** 17.86	1-3/8-18 UNEF-2B	206138-8	1-206138-0** (100)

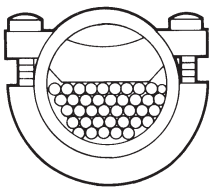
*Numbers in parentheses specify, in multiples, the minimum quantity of parts that can be ordered.
**Packaging includes two screws: shell sizes 11-17, screw length .500 [12.7]; shell size 23, screw length .625 [15.88].

Notes: 1. Clamping areas adjustable by inverting or changing clamping inserts. The quantity of inserts supplied with each assembly is as follows: for size 11 cable clamps, one insert; for all other cable clamps, two inserts.
2. Components for all cable clamps are packaged unassembled. This includes the cable clamp, two screws and the clamping inserts.

Notes: 3. Cable clamps can be threaded directly onto plugs or receptacles, or onto back-shell extenders (page 40).
4. Replacement screws are available in the following sizes: 3/8 in. [9.52]—**5019024-1,** 1/2 in. [12.7]—**5019024-2,** 5/8 in. [15.88]—**5019024-3,** 1 in. [25.4]—**5019024-4**, 3/4 in. [19.05]—**5019024-5.**
5. Cable clamp inserts not sold separately.

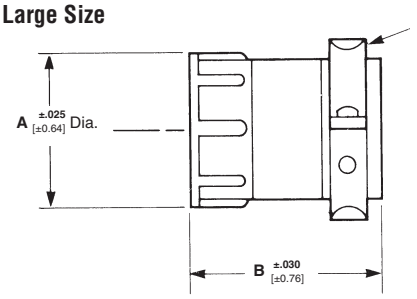


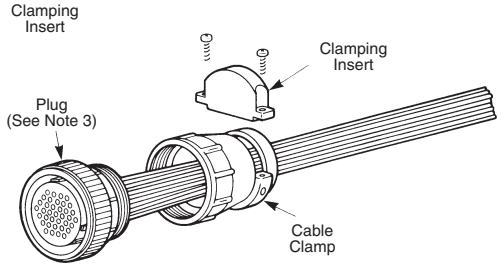
The clamping area can be adjusted by reversing the clamping insert as shown below.



For additional information concerning cable clamps, refer to Instruction Sheet 408-7582.

Large Size





Shell Size	Dimensions A	Dimensions B	Cable O.D. (Max.)	Thread Size	Part No. Individually Packaged	Part No. Bulk Packaged*
11	**.850** 21.59	**1.450** 36.83	**.453** 11.51	5/8-24 UNEF-2B	206358-5	206358-6** (200)
13	**1.131** 28.73	**1.655** 42.04	**.703** 17.86	3/4-20 UNEF-2B	207008-5	207008-6** (100)
17	**1.131** 28.73	**1.655** 42.04	**.703** 17.86	15/16-20 UNEF-2B	206322-9	1-206322-0** (100)
23	**1.600** 40.64	**1.655** 42.04	**1.125** 28.58	1-3/8-18 UNEF-2B	206512-5	206512-6** (75)

*Numbers in parentheses specify, in multiples, the minimum quantity of parts that can be ordered.
**Packaging includes two screws: shell size 11, screw length .500 [12.7]; shell sizes 13-23, screw length .625 [15.88].

Notes: 1. Clamping areas adjustable by inverting or changing clamping inserts. The quantity of inserts supplied with each assembly is as follows: for size 23 cable clamps, four inserts; for all other cable clamps, two inserts.
2. Components for all cable clamps are packaged unassembled. This includes the cable clamp, two screws and the clamping inserts.

Notes: 3. Cable clamps can be threaded directly onto plugs or receptacles, or onto back-shell extenders (page 40).
4. Replacement screws are available in the following sizes: 3/8 in. [9.52]—**5019024-1,** 1/2 in. [12.7]—**5019024-2,** 5/8 in. [15.88]—**5019024-3,** 1 in. [25.4]—**5019024-4**, 3/4 in. [19.05]—**5019024-5.**
5. Cable clamp inserts not sold separately.

CPC Connector Accessories (Continued)

Self-Centering Cable Clamp (for Shell Size 23)

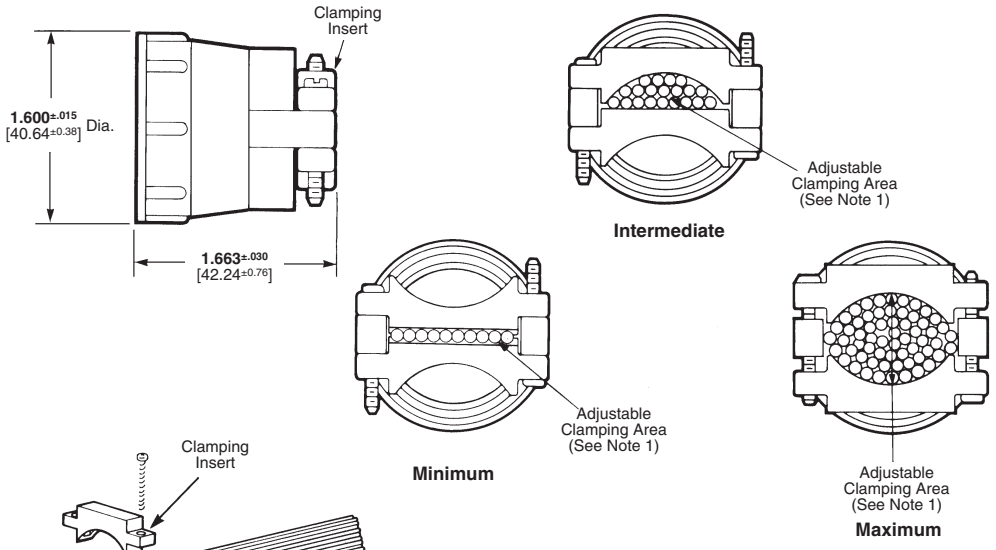
The self-centering cable clamp is used in applications where strain relief protection is required and the cable or wire bundle is large and/or stiff.

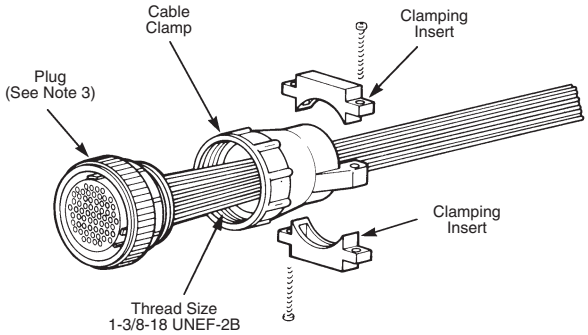
Material

Black thermoplastic, UL 94V-0 rated

Part Numbers

207774-3 (individually packaged)
207774-4 (bulk packaged)





Notes:
1. Clamping area is adjustable by inverting clamping inserts; maximum cable diameter is 1.125 [28.58].
2. Components for cable clamp are packaged unassembled. This includes the cable clamp, two screws (1.00 [25.4]) and the clamping inserts.
3. Cable clamp can be threaded directly onto plugs or receptacles, or onto back-shell extenders (page 40).

Right-Angle Cable Clamps

Right-angle cable clamps are used in tight areas where typical 180° cable clamp strain reliefs will not fit.

Material

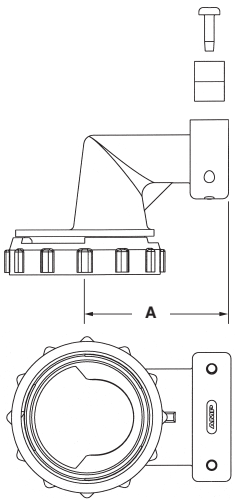
Black thermoplastic, UL 94V-0 rated

Related Product Data

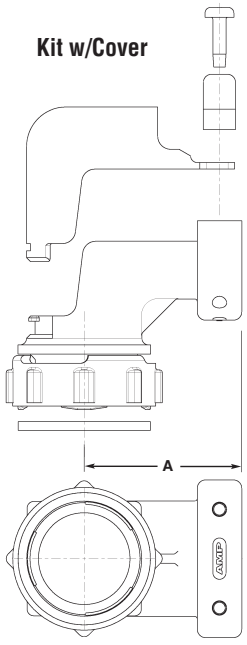
Technical Documents — page 80

Style A

Kit



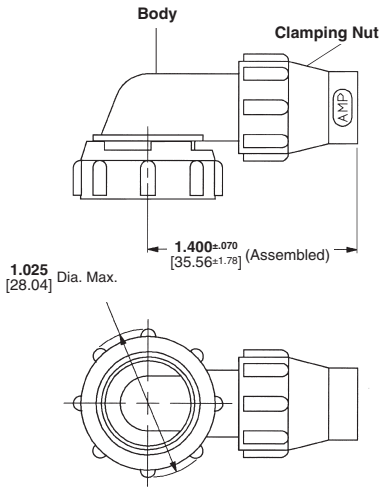
Kit w/Cover



Shell Size	Dim. A	Cable O.D. Max.	Coupling Ring Thread Size	Part Number	
				Kit	Kit w/Cover
11	**.900** [22.86]	**.329** [8.36]	5/8-24 UNEF-2B	796379-2	1546347-2
13	**1.100** [27.94]	**.453** [11.51]	3/4-20 UNEF-2B	796380-2	1546348-2
17	**1.200** [30.48]	**.453** [11.51]	15/16-20 UNEF-2B	796381-2	1546349-2
23	**1.500** [38.10]	**.703** [17.86]	1-3/8-18 UNEF-2B	796382-2	1546350-2

Style B

Part Number 213982-1 (for Shell Size 13)



Catalog 82021
Revised 7-07

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C. America: 57-1-254-4444

South America: 55-11-2103-6000
Hong Kong: 852-2735-1628
Japan: 81-44-844-8013
UK: 44-208-420-8341

Note: All part numbers are RoHS Compliant.

CPC Connector Accessories (Continued)

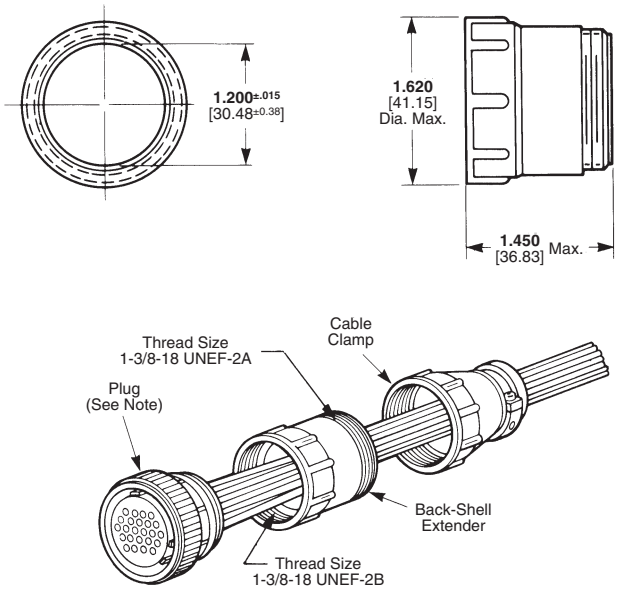
Back-Shell Extender (for Shell Size 23)

A back-shell extender is used with a cable clamp in applications where added length and/or additional wire breakout are required.

Material

Black glass-filled thermoplastic

Part No. 207055-1



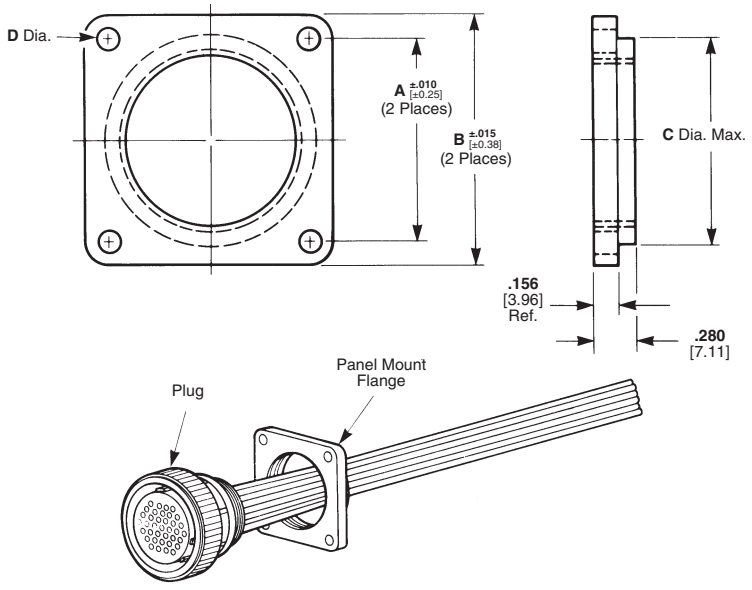
Note: Back-shell extenders can be threaded directly onto plugs or receptacles and will accept cable clamps of the appropriate size (pages 38 and 39).

Panel Mount Flanges (for Plugs only)

A panel mount flange is used in applications that require the plug half of a connector to be panel mounted.

Material

Black thermoplastic

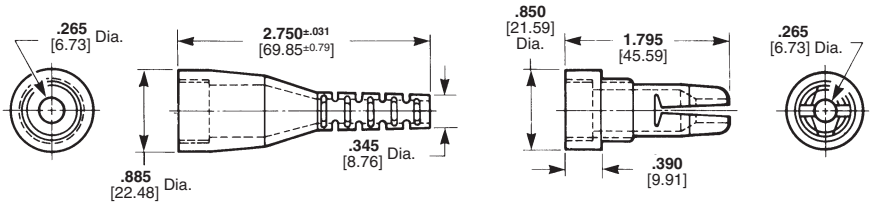


Shell Size	Dimensions				Part No.
	A	B	C	D	
11	**.844** 21.44	**1.125** 28.58	**.750** 19.05	**.125** 3.18	207299-1
13	**.969** 24.61	**1.280** 32.51	**.875** 22.22	**.125** 3.18	207299-2
17	**1.125** 28.58	**1.435** 36.45	**1.110** 28.19	**.150** 3.81	207299-3
23	**1.438** 36.53	**1.750** 44.45	**1.510** 38.35	**.150** 3.81	207299-4

CPC Connector Accessories (Continued)

Flexible Cable Boot and Internal Cable Grip (for Shell Size 11)

Flexible cable boots, with internal cable grip installed, provide strain relief capabilities for jacketed cable in applications where aesthetic appearance is essential. They can be threaded onto plugs or receptacles.



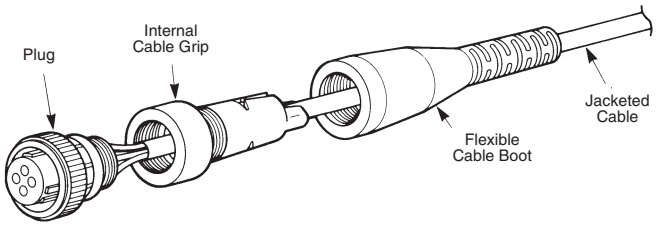
Flexible Cable Boot **Internal Cable Grip**

Material

Black thermoplastic

Cable Range

.150-.250 [3.81-6.35] Dia.

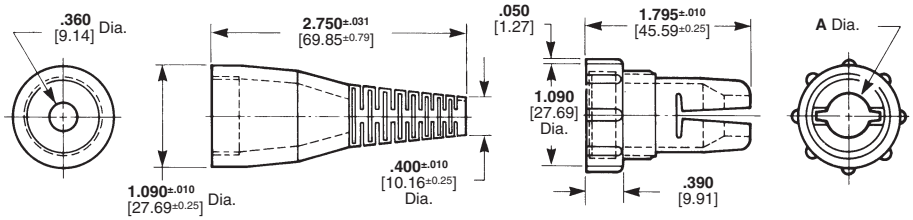


Part Numbers

207489-1 (Cable Boot)
207490-1 (Cable Grip)

Flexible Cable Boot and Internal Cable Grip (for Shell Size 17)

Flexible cable boots, with internal cable grip installed, provide strain relief capabilities for jacketed cable in applications where aesthetic appearance is essential. They can be threaded onto plugs or receptacles.



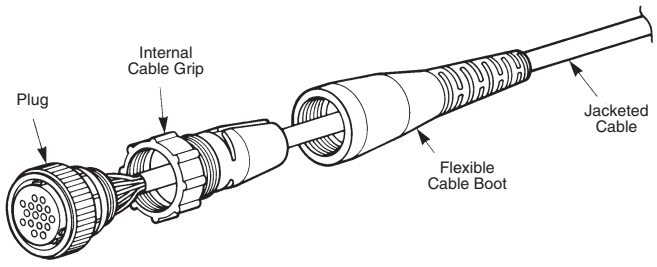
Flexible Cable Boot **Internal Cable Grip**

Material

Black thermoplastic

Part Numbers

207241-1 (Cable Boot)
207387-1 (Cable Grip)
A Dia. = .325 [8.26] for cable range of .200-.250 [5.08-6.35]
207387-2 (Cable Grip)
A Dia. = .385 [9.78] for cable range of .250-.350 [6.35-8.89]



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Japan: 81-44-844-8013
UK: 44-208-420-8341

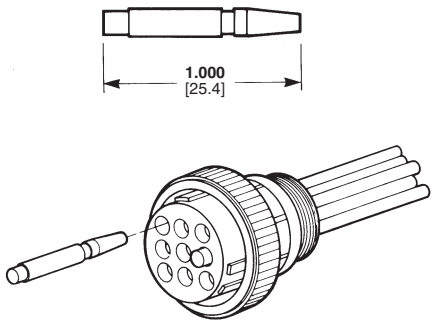
CPC Connector Accessories (Continued)

Keying Plugs

Keying plugs are used to provide keying capabilities for all connector series. Keying plugs are used in socket cavities of standard sex plugs and reverse sex receptacles, except when used with sealing caps.

Material

Nylon, natural, UL 94V-2 rated

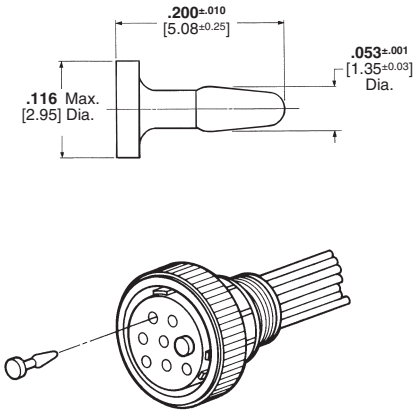


Series 1 and Series 4 Keying Plug
(for Types III+ and Subminiature COAXICON Contacts)

Part No. 200821-1

Material

Polyphenylene oxide, white, UL 94V-1 rated



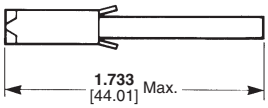
Series 2 Keying Plug
(for Size 20 DM and 20 DF Contacts)

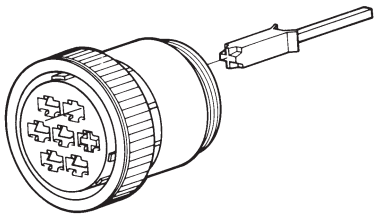
Part No. 206509-1

Material

(206508-1) Nylon, natural, UL 94V-2 rated

(207597-1) Thermoplastic, black, UL 94V-0 rated





Series 3 and Series 4 Keying Plugs
(for Type XII Contacts)

Part Nos. 206508-1 (Socket Cavities)—Shown Above
207597-1 (Pin Cavities)

One-Piece Sealed Circular Plastic Connectors

Product Facts

- **Economical environmentally sealed connector designed for industrial applications**
- **Meets major Industrial Standards**
- **High strength, impact resistant thermoplastic housing, rated UL 94V-0**
- **Contains wire entry and peripheral seals**
- **AMP POWERBAND precision formed power contact (Series 5 and 6)**
- **Type III+ precision formed signal/low current contacts (Series 1 and Series 6)**
- **Other configurations in Series 1 can be made available, contact your local Tyco Electronics Sales Engineer or Tyco Electronics, Harrisburg, PA**

The new Sealed One-Piece Circular Plastic Connectors are the latest product innovation to the sealed CPC product family. This design allows for easy assembly. The housing and the seal are attached. A newly designed wire entry seal protects the rear of the connector and a peripheral seal protects the connector interface. Simply crimp the contact onto a wire and insert the crimped wire contact through the seal and into the housing cavity. The connector loads the same as if the seal wasn't there. All connector cavities come in a sealed condition. No plugs are required if you do not use a position cavity. We have the capability to provide this product sealing to you in all the shell sizes. If you don't see your particular size configuration, contact your local Tyco Electronics Sales Engineer or call Tyco Electronics for the latest information.

Industry Standards

One-Piece Sealed CPC products meet –

- IP 67 (Temporary immersion)

Fluid Protection Against – diesel fuel, gear and engine lubricants, gasoline, anti-freeze, hydraulic fluid, water, salt sprays, etc.

Performance Characteristics meets the same performance characteristics as shown on page 6.

Operating Temperature Range—
-50°C to +125°C [-58˚F to +257˚F]

UL Voltage Rating—
Series 1 600 V (AC or DC)
Series 6 250 V (AC or DC)

.125 POWERBAND Power Contact –
45 amps, single contact rating at 30°C T-Rise

Type III+ Contacts –
13 amps, single contact rating at 30°C T-Rise

Flammability Rating—
UL 94V-0 rated

Sealing Capability—
Per IP 67

Housing Material—
High strength, impact resistant thermoplastic

Fluid Resistance—
Diesel fuel, gear and engine lubricants, gasoline, anti-freeze, hydraulic fluid, water

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South America: 55-11-2103-6000
Hong Kong: 852-2735-1628
Japan: 81-44-844-8013
UK: 44-208-420-8341

Note: All part numbers are RoHS Compliant.

One-Piece Sealed Circular Plastic Connectors, Series 1

Sealed CPC Receptacles, Special Series 1 with Pre-Installed, Bonded Peripheral Seal

Listed part numbers are for connectors only; **contacts must be ordered separately.**

Material and Finish

Housing—Thermoplastic, UL 94V-0 rated, black

Seal—Elastomer, gray

Related Product Data

Contacts—Pages 17-22

Contact Arrangement—Page 24

Component Dimensions—Size 11-4 shown; request Customer Drawings for other sizes

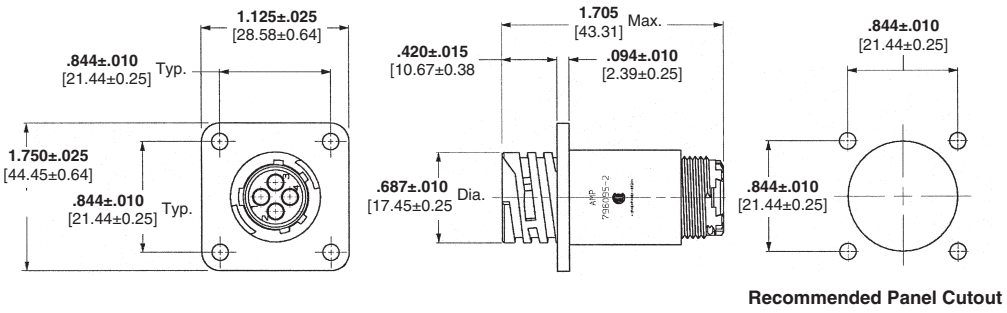
Accessories—Pages 38-42 and 51-54

Performance Characteristics—Page 6

Application Tooling—Pages 76-79

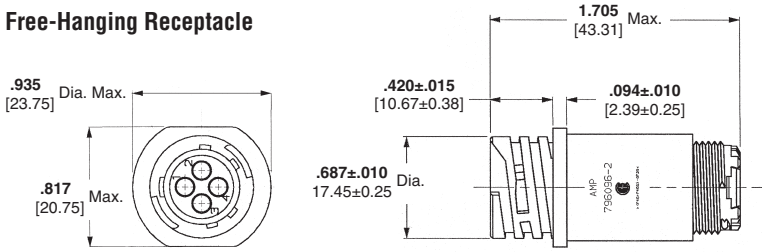
Technical Documents—Page 80

Square Flange Receptacle (Uses Flange Seal **Part No. 81665-**☐ on page 51)

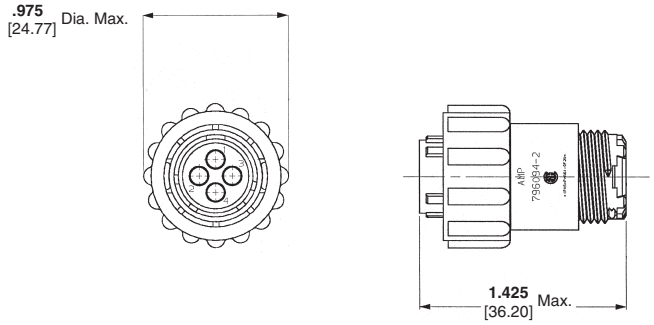


Recommended Panel Cutout

Free-Hanging Receptacle



Plug



Arrangement: Shell Size	Arrangement: No. of Positions	Sex	Square Flange Recptacle: With Mounting Holes	Square Flange Recptacle: With Threaded Inserts[1]	Free-Hanging Receptacle	Plug	Insulation Diameter
11-4		Standard	796095-2	–	796096-2	796094-2	**.065-.100** [1.65-2.54]
		Reverse	788154-2	–	788155-2	788153-2	**.065-.100** [1.65-2.54]
13-9		Standard	788158-2	–	788159-2	788157-2	**.065-.100** [1.65-2.54]
17-14		Reverse	796272-1	–	796273-1	796271-1	**.065-.100** [1.65-2.54]
17-16		Standard	796275-1	796275-3	796276-1	796274-1	**.065-.100** [1.65-2.54]
		Standard	796275-2	–	796276-2	796274-2	**.040-.080** [1.01-2.03]
23-24		Standard	796190-1	–	796291-1	796188-1	**.065-.120** [1.65-3.04]
23-37		Standard	796286-1	–	796287-1	796288-1	**.065-.100** [1.65-2.54]

[1]Four 4-40 threaded inserts per receptacle.

Assembly Accessories

Seal Protectors are recommended to aid contact insertion through the wire entry seal. They are reusable.

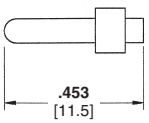
Part Number 208337-1 (Insert Pins)

Part Number 208338-1 (Insert Sockets)

Wire Entry Seal Plug

Part Number 796075-1 (6 per carrier strip)

Material—Polypropylene, natural



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UK: 44-208-420-8341

Note: All part numbers are RoHS Compliant.

One-Piece Sealed Circular Plastic Connectors, Series 5

CPC Connectors, Series 5 Sealed – Reverse Sex

Listed part numbers are for connectors only; **contacts must be ordered separately.**

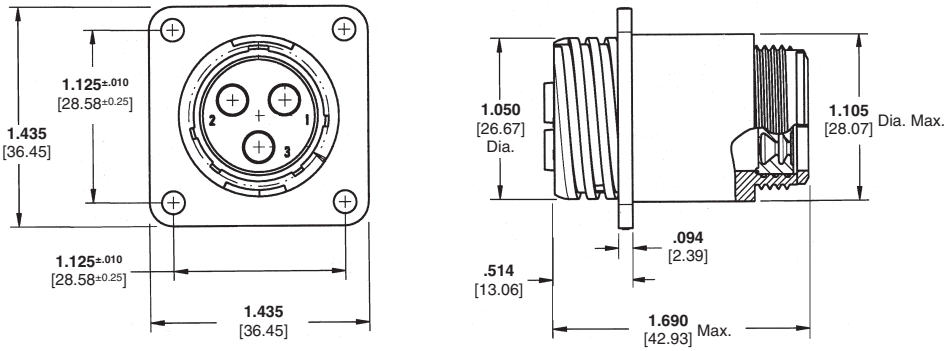
Material

Housing—Nylon, glass-filled UL rated 94V-0, black

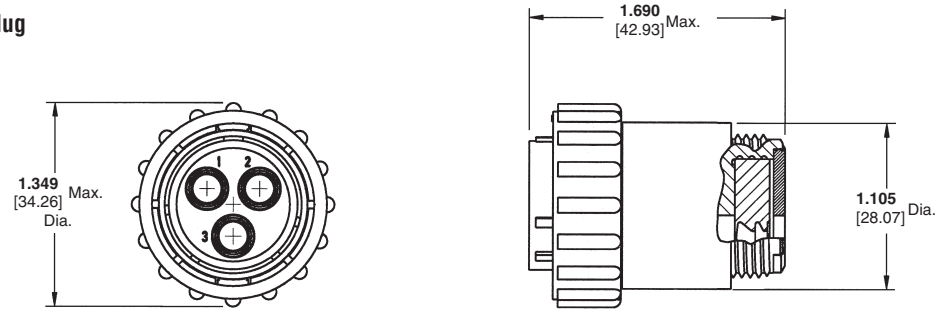
Related Product Data

Contacts—Page 47
Accessories—Page 51
Application Tooling—Pages 76-79
Technical Documents—Page 80

Square Flange Receptacle (Uses Flange Seal **Part No. 81665-2** on page 51)



Plug



Arrangement		Insulation Diameter	Square Flange Receptacle	Free-Hanging Receptacle	Plug
Shell Size	No. of Positions				
17-3		**.095-.205** [2.41-5.21]	788189-1	796112-1	788188-1
		.150-.265 [3.81-6.73]	788189-2	796112-2	788188-2

One-Piece Sealed Circular Plastic Connectors, Series 6

CPC Connectors, Series 6 Sealed

Listed part numbers are for connectors only; **contacts must be ordered separately.**

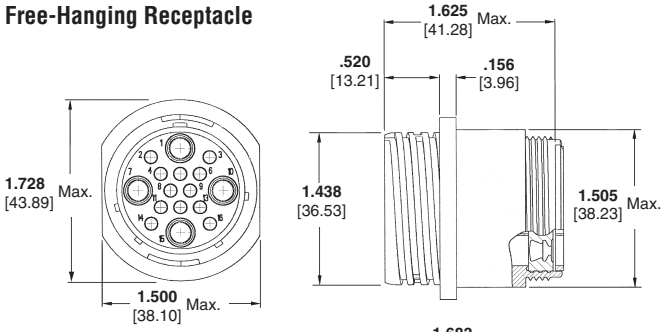
Material

Housing—Nylon, glass-filled UL rated 94V-0, black

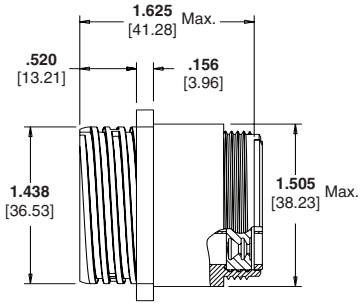
Related Product Data

Contacts—Pages 17-23 and 47
Application Tooling—Pages 76-79
Technical Documents—Page 80

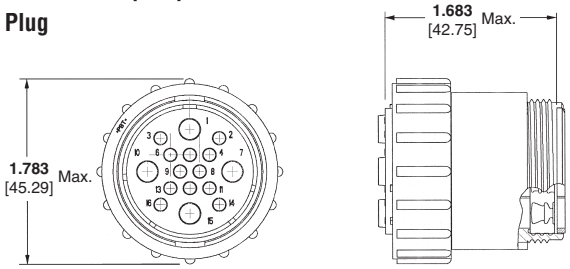
Free-Hanging Receptacle

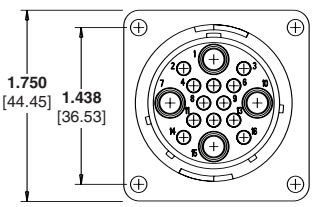


Square Flange Receptacle



Plug





Arrangement		Insulation Diameter		Sex	Square Flange Receptacle w/Mounting Holes	Free-Hanging Receptacle	Plug
Shell Size	No. of Positions	Power	Signal				
23-16		**.095-.205** [2.41-5.21]	**.065-.100** [1.65-2.54]	Standard	796466-1	796207-1	796203-1
				Reverse	—	796330-1	796332-1

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

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USA: 1-800-522-6752
Canada: 1-905-470-4425
Mexico: 52-55-1106-0800
C. America: 57-1-254-4444

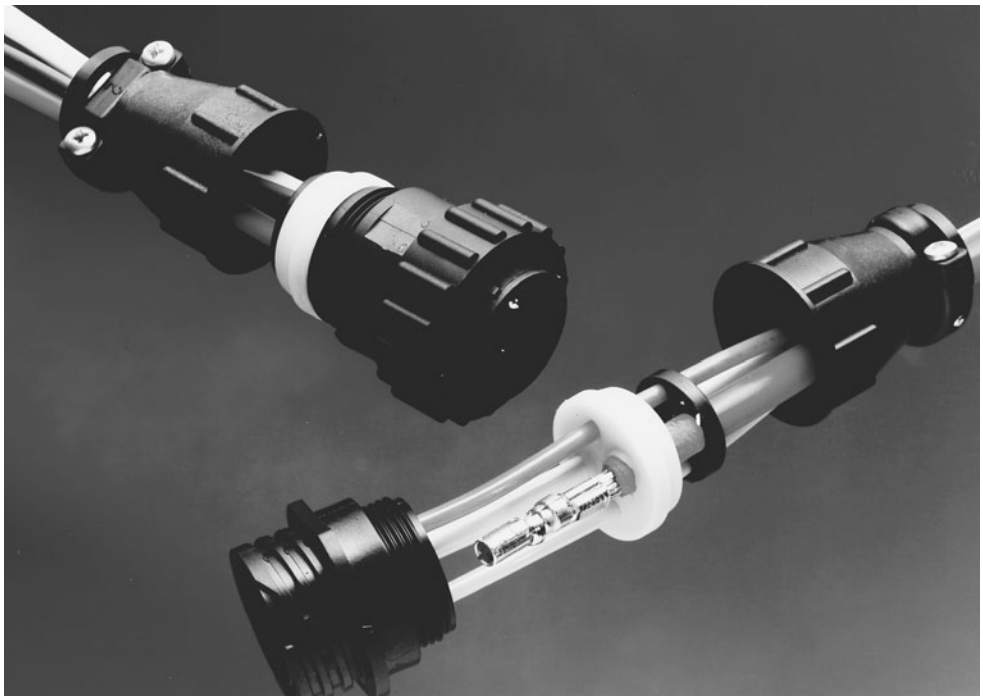
South America: 55-11-2103-6000
Hong Kong: 852-2735-1628
Japan: 81-44-844-8013
UK: 44-208-420-8341

Note: All part numbers are RoHS Compliant.

Two-Piece Sealed Circular Plastic Connectors

Product Facts

- **Economical environmentally sealed connector designed for industrial applications**
- **Meets major Industrial Standards**
- **High strength, impact resistant thermoplastic housing, rated UL 94V-0**
- **Contains wire entry, peripheral, and full interfacial seals**
- **AMP POWERBAND precision formed power contact (Series 5 and 6)**
- **Type III+ precision formed signal/low current contacts (Series 6)**
- **Other configurations in Series 1 can be made available, contact your local Tyco Electronics Sales Engineer or Tyco Electronics, Harrisburg, PA**



Technical Documents

Instruction Sheet

408-4317 Two-Piece Sealed CPC Connectors

Product Specification

108-1579 Sealed CPC Connectors with Removable Contacts

Sealed CPC connectors are the latest additions to the growing family of AMP Circular Plastic Connectors. Sealed CPC connectors were developed as part of the Series 5 and 6 product line, specifically to meet the increasing demand for an economical environmentally sealed connector.

Sealed CPC connectors are designed to meet the requirements of UL, CSA, and VDE for environmentally sealed connectors used in industrial applications.

In addition, sealed CPC connectors are designed to meet the latest SAE and ASAE requirements as outlined in the standards listed here.

Sealed CPC connectors incorporated the latest technology in thermoplastic design and use the new AMP POWERBAND precision formed high current contact.

Illustrated above are the Series 5 (power) and Series 6 (power/signal mix) sealed connector configurations. Other sizes are available in a Series 1 (signal/low current) configuration. Contact your local Tyco Electronics Sales Engineer, or call Tyco Electronics for the latest design information.

Industry Standards

Two-Piece Sealed CPC connectors meet—

- IP65

Performance Characteristics

Operating Temperature Range—
-50°C to +125°C [-58˚F to +257˚F]

UL Voltage Rating—
Series 5 600 V (AC or DC)
Series 6 250 V (AC or DC)

.125 POWERBAND Power Contact –
45 amps, single contact rating at 30°C T-Rise

Type III+ Contacts –
13 amps, single contact rating at 30°C T-Rise

Flammability Rating—
UL 94V-0 rated

Sealing Capability—
Per IP 65

Housing Material—
High strength, impact resistant thermoplastic

Fluid Resistance—
Diesel fuel, gear and engine lubricants, gasoline, anti-freeze, hydraulic fluid, water

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Japan: 81-44-844-8013
UK: 44-208-420-8341

Note: All part numbers are RoHS Compliant.

Sealed Circular Plastic Connectors

Multimate Size 16 Contacts
Precision formed signal/low current

Pin Diameter—.062 [1.57]
Test Current—13 amps max.

.125 POWERBAND Contacts
Precision formed high current

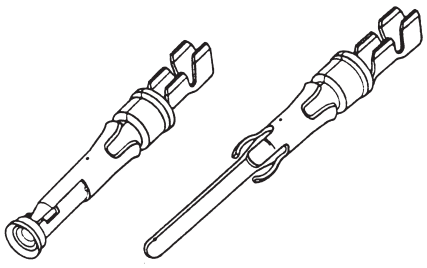
Pin Diameter—.125 [3.175]
Test Current—50 amps max.

Extraction Tool
Part Number 318813-1
(Instruction Sheet 408-4374)

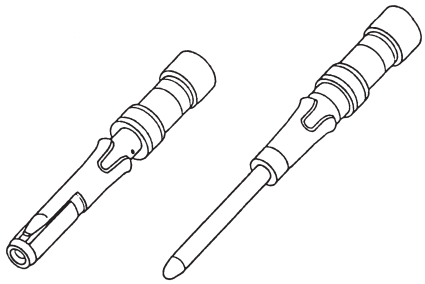
Material and Finish
Contacts—Copper with beryllium copper spring

Plating Code
A — Post plated .000200 [0.00508] min. silver in mating area with .000050 [0.00127] min. silver on remainder of contact, all over .000050 [0.00127] min. nickel
B — Post plated .000030 [0.00076] min. gold in mating area with gold flash on remainder of contact, all over .000050 [0.00127] min. nickel

Related Product Data
Application Tooling—Pages 76-79
Technical Documents—Page 80

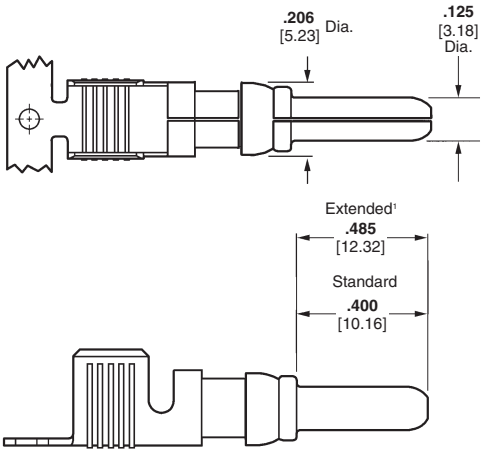


Type III+
Precision Formed Contacts

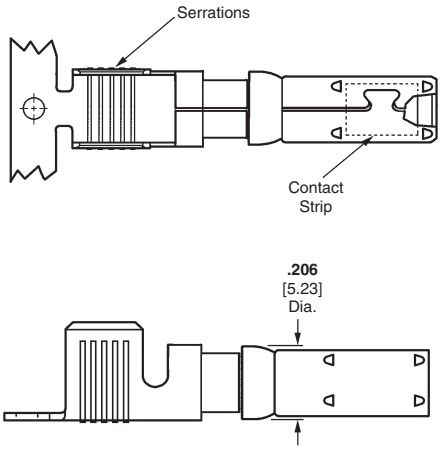


Type II
Screw-Machined Contacts

See pages 17-23 for complete product information and part numbers of Size 16 contacts applicable in Sealed CPC Connectors.



.125 POWERBAND
Pin Contact



.125 POWERBAND
Socket Contact

Wire Size AWG/mm²	Contact Finish	Pin Length	Contact Part No.				Tooling Part No.	
			Strip		Loose Piece		Heavy Duty Miniature (HDM) Applicators (for AMP-O-LECTRIC Model G Machine, Base Part No. 354500)	Die Sets for Hand Tool 69710-1 or 626 Pneumatic Tool System*
			Pin	Socket	Pin	Socket		
14-12 2-3	A	Standard	213845-1	213847-1	213845-3	213847-3	680195-3	356612-1
	B	Standard	213845-2	213847-2	213845-4	213847-4		
	A	Extended¹	213845-5	—	213845-7	—		
	B	Extended¹	213845-6	—	213845-8	—		
10-8 5-8	A	Standard	213841-1	213843-1	213841-3	213843-3	680197-3	356611-1 (8 AWG) 356611-2 (10 AWG)
	B	Standard	213841-2	213843-2	213841-4	213843-4		
	A	Extended¹	213841-5	—	213841-7	—		
	B	Extended¹	213841-6	—	213841-8	—		

¹For use in One-Piece or Two-Piece Sealed Circular Plastic Connectors (CPC), Series 5 and 6.

‡Single contact, free-air test current; not to be construed as contact rating current. Use only for testing. Refer to contact current carrying capability information, page 8.

Note: Standard Size 8, High Current Upgrade Size 8, and .125 POWERBAND contacts are **no**t intermateable.

*A typical 626 Pneumatic Tool System requires: a power unit (**Part No. 189721-2**, hand actuated or **189722-2**, foot actuated), an adapter holder (**Part No. 356304-1**, with ratchet), and "C" Head adapter **Part No. 318161-1**.

Specifically designed for AMP CPC Connectors, Series 5 and 6, the new .125 POWERBAND contact offers the performance of a MIL-Spec screw machined Size 8 contact with the economy of a stamped and formed, strip-feed contact. Strip-feed contacts offer maximum production capabilities using standard AMP bench-mount, semi-automatic termination equipment. For low volume, prototype or maintenance and repair requirements, the .125 POWERBAND contact is available in loose piece form.

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Revised 7-07

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Hong Kong: 852-2735-1628
Japan: 81-44-844-8013
UK: 44-208-420-8341

Note: All part numbers are RoHS Compliant.

Two-Piece Sealed Circular Plastic Connectors, Series 5

CPC Connectors, Series 5 Sealed – Reverse Sex

Listed part numbers are for connectors only; **contacts must be ordered separately.**

Material

Housing—Nylon, glass-filled UL rated 94V-0, black

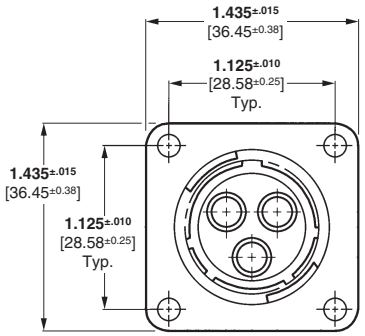
Related Product Data

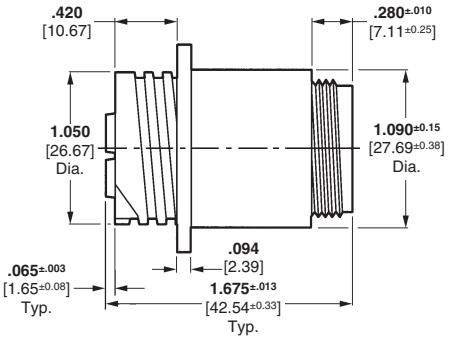
Contacts—Pages 47
Accessories—Page 51
Application Tooling—Pages 76-79
Technical Documents—Page 80

Replacement Coupling Ring

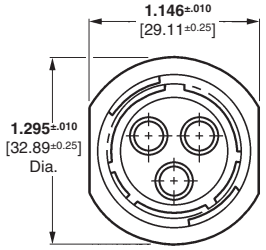
Shell Size	Part No.
17-3	213810-1

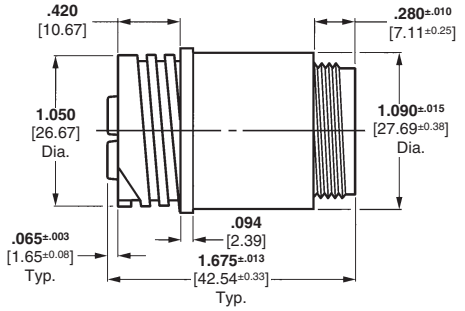
Square Flange Receptacle (Uses Flange Seal **Part No. 81665-2** on page 51)



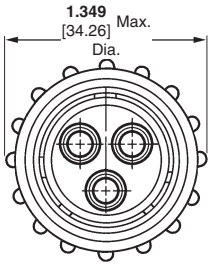


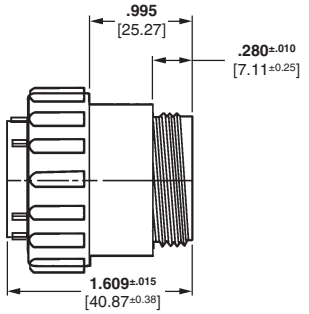
Free-Hanging Receptacle





Plug (With Full Interfacial Seal)





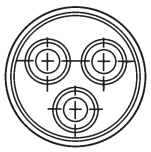
Reverse Sex (Receptacles accept socket contacts, Plugs accept pin contacts)

Arrangement	Square Flange Receptacle	Free-Hanging Receptacle	Plug
17-3 - Connector	213889-2	213890-2	213905-1
17-3 - Wire Entry Seal Kit	213899-1	213899-1	213899-1

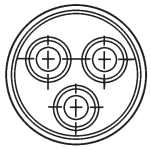
Kit includes (1) Silicon Wire Entry Seal and (1) Pressure Plate.
*Wire entry seals require cable clamp kits.

Wire Entry Seals*

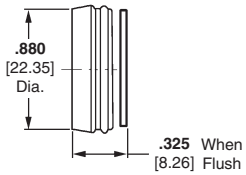
*Cable clamp kit 213902-3 required. (Similar to 206322-9. See page 38 for dimensional detail of cable clamp) or cable clamp kit 213904-3. (Similar to 206070-8. See page 38 for dimensional detail of cable clamp).



Rear View Receptacles



Rear View Plugs



Side View Plugs/Receptacles

Note: Minimum insulation diameter is .156 [3.96]; Maximum insulation diameter is .260 [6.60].

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Revised 7-07

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USA: 1-800-522-6752
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C. America: 57-1-254-4444

South America: 55-11-2103-6000
Hong Kong: 852-2735-1628
Japan: 81-44-844-8013
UK: 44-208-420-8341

Note: All part numbers are RoHS Compliant.

Two-Piece Sealed Circular Plastic Connectors, Series 6

CPC Connectors, Series 6 Sealed – Reverse Sex

Listed part numbers are for connectors only; **contacts must be ordered separately.**

Material

Housing—Nylon, glass-filled UL rated 94V-0, black

Related Product Data

Contacts—Pages 17-21 and 47
Accessories—Page 51
Application Tooling—Pages 76-79
Technical Documents—Page 80

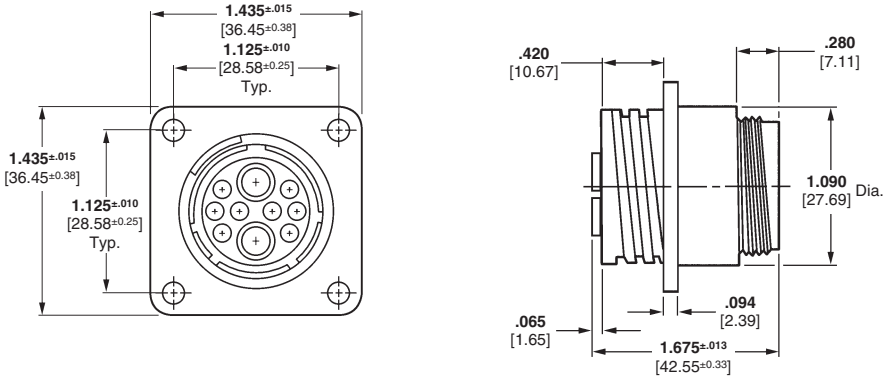
Replacement Coupling Ring

Shell Size	Part No.
17-10	213810-1

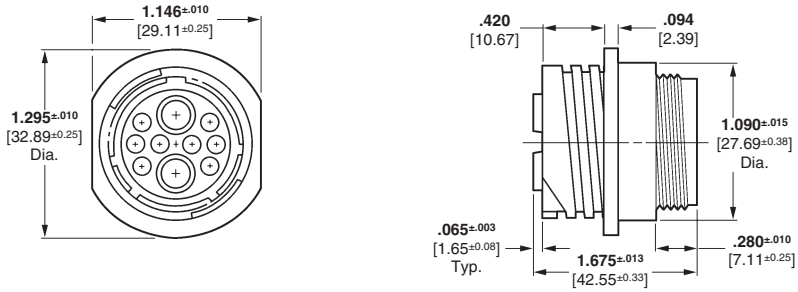
Wire Entry Seal*

*Cable clamp kit 213902-3 required. (Similar to 206322-9. See page 38 for dimensional detail of cable clamp) or cable clamp kit 213904-3. (Similar to 206070-8. See page 38 for dimensional detail of cable clamp).

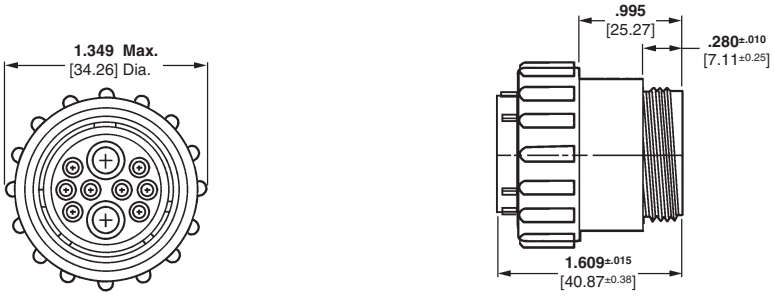
Square Flange Receptacle (Uses Flange Seal **Part No. 81665-2** on page 51)



Free-Hanging Receptacle



Plug



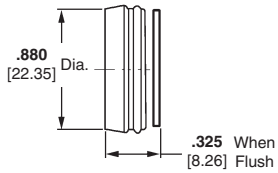
Reverse Sex (Receptacles accept socket contacts, Plugs accept pin contacts)

Arrangement	Square Flange Receptacle	Free-Hanging Receptacle	Plug
17-10 Connector	213893-2	213894-2	213906-1
17-10 Wire Entry Seal Kit	213900-1	213900-1	213900-1

Kit includes (1) Silicon Wire Entry Seal and (1) Pressure Plate.
*Wire entry seals require cable clamp kits.

Rear View Receptacles

Rear View Plugs



Side View Plugs/Receptacles

Note: Minimum insulation diameter is .156 [3.96]; maximum insulation diameter is .260 [6.60] for power contacts.
Minimum insulation diameter is .060 [1.50]; maximum insulation diameter is .130 [3.30] for signal contacts.

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Hong Kong: 852-2735-1628
Japan: 81-44-844-8013
UK: 44-208-420-8341

Note: All part numbers are RoHS Compliant.

Two-Piece Sealed Circular Plastic Connectors, Special Series 1

Sealed CPC Receptacles, Special Series 1 with Pre-Installed, Bonded Peripheral Seal

Listed part numbers are for connectors only; **contacts must be ordered separately.**

Material and Finish

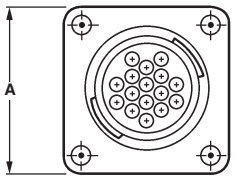
Housing—Thermoplastic, UL 94V-0 rated, black

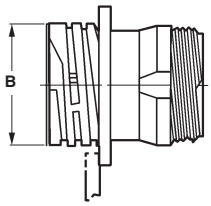
Seal—Elastomer, gray

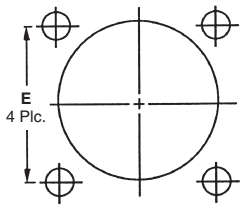
Related Product Data

Contacts—Pages 17-21
Contact Arrangement—Page 24
Accessories—Pages 38-42 and 51
Performance Characteristics—Page 6
Application Tooling—Pages 76-79
Technical Documents—Page 80

Square Flange Receptacle (Uses Flange Seal **Part No. 81665-** ☐ on page 51)

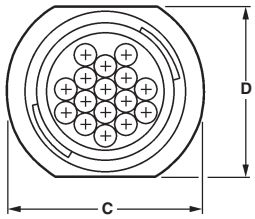


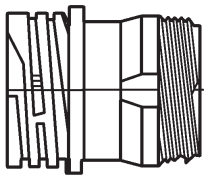




Recommended Panel Cutout

Free-Hanging Receptacle





Shell Size	Dimension E
11	**.844** 21.44
13	**.969** 24.61
17	**1.125** 28.58
23	**1.438** 36.53

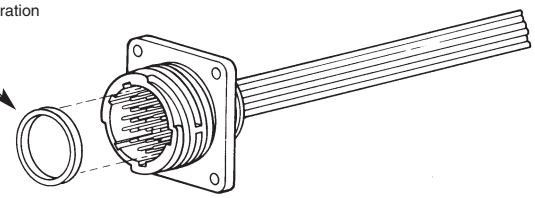
Series I Receptacles with Peripheral Seal

Arrangement		Dimensions		Sex	Square Flange Part No.		Dimensions		Free-Hanging Part No.	Mates with Plug Part No.
Shell Size	No. of Positions	A	B		With Mounting Holes	With Threaded Inserts[1]	C	D		
11-4		**1.125** 28.58	**.607** 15.42	Std.	206061-2	–	**.935** 23.75	**.817** 20.75	206153-2	206060-1
				Rev.	206430-3	–			206430-4	206429-1
13-7		**1.281** 32.54	**.812** 20.62	Std.	211401-3	–	**1.072** 27.23	**.874** 22.20	–	211399-1
13-9				Std.	206705-3	208131-2			206705-4	206708-1
17-16		**1.435** 36.45	**1.050** 26.67	Std.	206036-4	–	**1.310** 33.27	**1.161** 29.49	206036-5	206037-1
17-14				Rev.	206043-4	–			206043-5	206044-1
23-24		**1.750** 44.45	**1.438** 36.53	Std.	206838-3	–	**1.733** 44.02	**1.505** 38.23	206838-4	206837-1
23-37				Std.	206151-3	–			206151-4	206150-1
				Rev.	206306-3	–			206306-4	206305-1

[1]Four 4-40 threaded inserts per receptacle.

Notes: 1. For detailed performance data on peripheral seals, refer to Product Specification No. 108-10024.
2. Receptacles mate with Series 1 plugs found on page 10.

Seal shown outside of connector for illustration purposes only.



Receptacles with pre-installed, bonded peripheral seals are recommended for use in sealing/splash-proof applications, or where connectors will be subjected to vibration.

Catalog 82021
Revised 7-07

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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: 52-55-1106-0800
C. America: 57-1-254-4444

South America: 55-11-2103-6000
Hong Kong: 852-2735-1628
Japan: 81-44-844-8013
UK: 44-208-420-8341

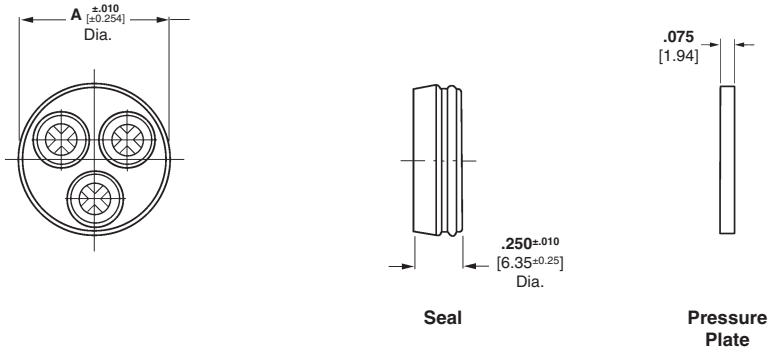
Note: All part numbers are RoHS Compliant.

Two-Piece Circular Plastic Connector Sealing Accessories

Wire Entry Seal Kits
for Plug and Receptacle Housings

Material and Finish

Seal—Silicon, black
Pressure Plate—Nylon, black



Arrangement No.	Insulation Dia. Range	Dimension A	Kit for Pins	Kit for Sockets
13-9	**.075-.125** 1.91-3.18	**.681** 17.30	213926-1	213925-1
17-3	**.178-.265** 4.52-6.73	**.790** 20.07	213899-1	213899-1
17-10	**.178-.265** 4.52-6.73 **.075-.125** 1.91-3.18	**.790** 20.07	213900-1	213900-1
17-14	**.075-.125** 1.91-3.16	**.790** 20.07	213919-2	213919-1
17-16	**.075-.125** 1.91-3.16	**.790** 20.07	213920-2	213920-1

Notes: 1. Kits include one Gang Seal and one Pressure Plate marked for cavity identification.
2. Arrangement No. 17-10 Insulation Dia. Range **.176-.265** [4.52-6.73] for two holes, **.075-125** [1.95-3.18] for eight holes.

One-Piece or Two-Piece Sealed CPC Sealing Accessories

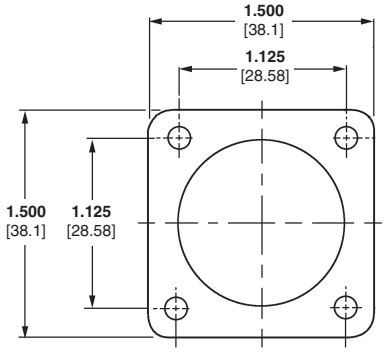
Flange Seals

Material Neoprene, black

Related Product Data

Dimensions—Shell Size 17 shown; request Customer Drawings for other sizes

Shell Size	Part No.
11	81665-3
13	81665-4
17 (shown)	81665-2
23	81665-5



Catalog 82021
Revised 7-07

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

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South America: 55-11-2103-6000
Hong Kong: 852-2735-1628
Japan: 81-44-844-8013
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