CIRCULAR PLASTIC CONNECTORS (CPC)

CPC Series 3

Power up your applications with Series 3 Circular Plastic Connectors. Designed for high power density in a rugged, compact form. Available in 3 and 7-position configurations with both standard and reverse gender arrangements, Series 3 Circular Plastic Connectors help increase flexibility and durability for demanding environments. Featuring quick connect/disconnect functionality and a tough thermoplastic shell, these connectors are built for high-performance power transmission.

Circular Plastic Connectors (CPC) are rugged, cost-effective connectors that can be used to provide power input and output to and from devices. Common applications are control cabinets, energy management systems, power generators, material handling, agriculture equipment, battery management systems, industrial machinery, rolling stock, forklifts, welding equipment, robotics, construction equipment, power supplies, industrial scales and weighting, etc.

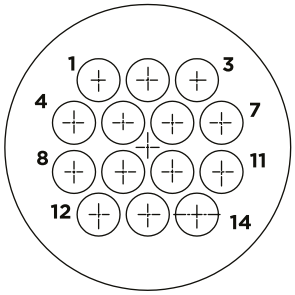
The use of Circular Plastic Connectors enables customers to reduce installation time, meet harsh and space saving requirements, design with high-performance materials, and speed up their go-to-market plans.

TABLE OF CONTENTS

CONNECTOR SERIES AND TYPES

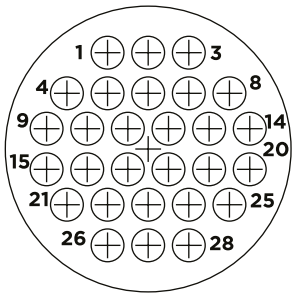
Series 1 – Size 16 Contacts

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 mate contact loading – **from 4 thru 37 positions**.



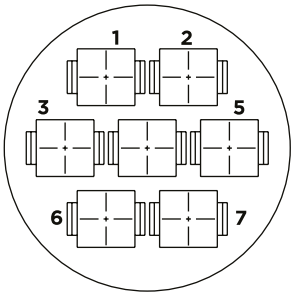
Series 2 – Size 20 Contacts

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 mate contact loading – from **8 thru 63 positions**.



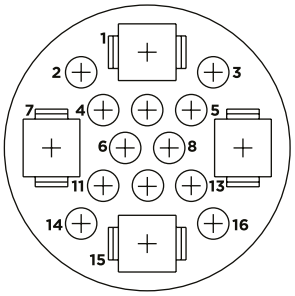
Series 3 – Power Contacts

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 mm2]. Two connector sizes are available in both standard and reverse mate connector arrangements **3 and 7 positions**.



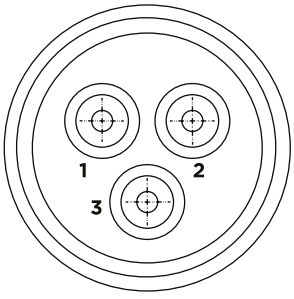
Series 4 – Combination, Size 16 and Power Contacts

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 three connector sizes offering power mixing combinations totaling **13, 16 an 22 positions**.



Series 5 – Power Contacts .125 POWERBAND

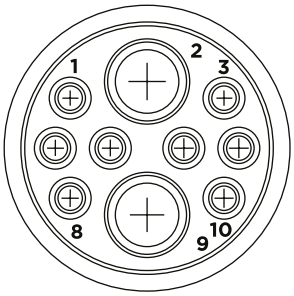
Series 5 connectors combine the revolutionary performance of the new AMP POWERBAND Contact, high current contact in configurations similar to the Series 3 connectors. AMP POWERBAND contacts offer the electrical performance of the best Mil Spec Size 8 screwmachined contacts with the economy and productivity of strip-fed, precision formed contacts. Series 5 connectors are environmentally sealable to meet IEC IP 65 and IP 67 specifications. Rated at 250 VAC or VDC, 50 amperes maximum in a single contact, the connectors are available in free-hanging and panelmount applications – **one connector configuration containing three .125 POWERBAND contacts**.



CONNECTOR SERIES AND TYPES

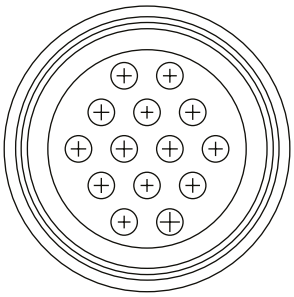
Series 6 – Combination, Size 16 and .125 POWERBAND Contacts

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.positions**.



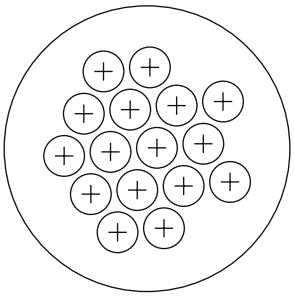
MIL-C-5015 Style – Size 16 Contacts

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.



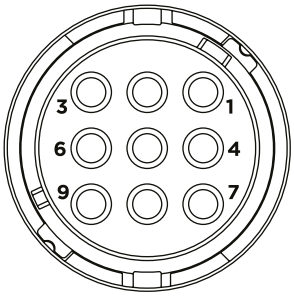
Metal-Shell, Circular Plastic Connectors

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

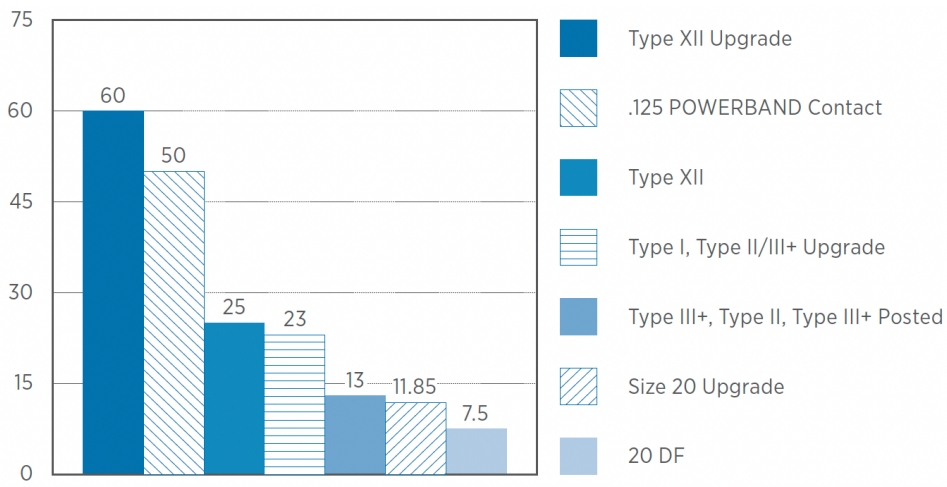
These compact connectors accept existing Mini-Universal MATE-N-LOK pin and socket contacts, 30-22 AWG [.05-.3 mm2]. Two shell sizes (8 or 11) are available, accommodating **from 1 to 4 and 5 to 9 positions**. Featuring high contact density and IP67 sealing, these durable connectors are well suited for many wire-to-wire and wire-topanel applications.



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.

Contact Selector Chart

Connector Type	20 DF	Type II	Type III+	Posted Type III+	Type XII	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		✓	✓		✓	

Note: All part numbers are RoHS Compliant.

PLUGS AND RECEPTACLES

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

Arrangement		Square Flange Receptacle		Free-Hanging Receptacle	Plug
Shell Size	No. of Positions	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.

Square Flange Receptacle

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

Arrangement		Square Flange Receptacle		Free-Hanging Receptacle	Plug
Shell Size	No. of Positions	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].

Free-Hanging Receptacle

Replacement Coupling Rings

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

Plug

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

Material

Housing – Thermoplastic, 94V-0 rated, black

Related Product Data

Contacts – Pages 7-8
Contact Arrangement – Page 8
Component Dimensions – Page 9
Accessories – Pages 10-14

POWER CONTACTS, TYPE XII, PRECISION FORMED, CRIMP

Wire Size Range[1]		Ins. Dia. Range	Contact Finish	Strip Form Contact Part Nos.				Loose Piece		Tooling	
				Standard***		Heavy Duty Miniature***		Contact Part Nos.			
AWG	mm²			Male	Female	Male	Female	Male	Female	OCEAN Applicator	Die Set for Hand Tool 69710-1
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	2151426-☐	90145-2[3] and 90145-1[4]
			A	-	-	-	-	66262-1[2]	-		
			B	66255-2	66740-5	66255-6	1-66740-1	66261-2	66740-6		
			B	66256-2[2]	-	66256-4[2]	-	66262-2[2]	-		
			C[5]	66255-7	66740-1	66255-8	66740-9	66261-4	66740-2		
			C[5]	66256-6[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	2151411-☐	90140-1
			A	-	-	-	-	-	-		
			B	66253-2	66741-5	66253-6	1-66741-1	66259-2	66741-6		
			B	66254-2[2]	-	-	-	66260-2[2]	-		
			C[5]	66253-4	66741-1	66253-8	66741-9	66259-4	66741-2		
			C[5]	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.

Extraction Tool No. **91019-3**.
*** Call Technical Support for Automatic Machine Applicator Part Numbers.

Material

Copper

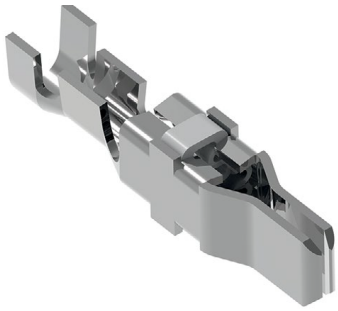
Finish

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

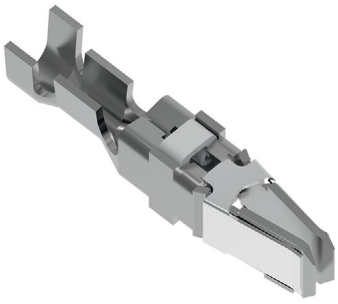
Test Current Rating

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

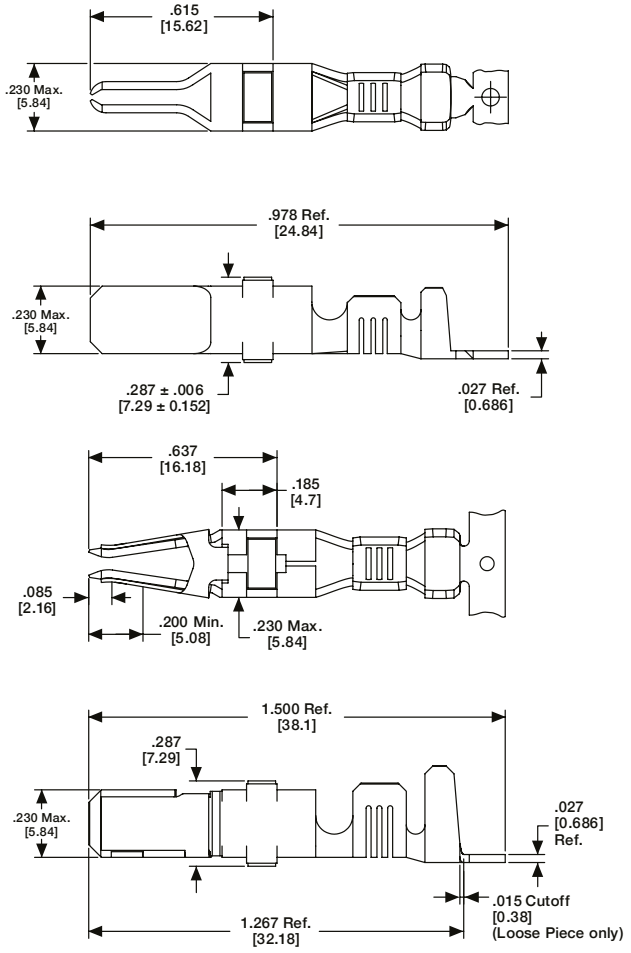
‡ Single contact, free-air test current; not to be construed as contact rating current. Use only for testing.



Male



Female



Note: All part numbers are RoHS Compliant.

POWER CONTACTS, HIGH CURRENT TYPE XII, CRIMP

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.

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

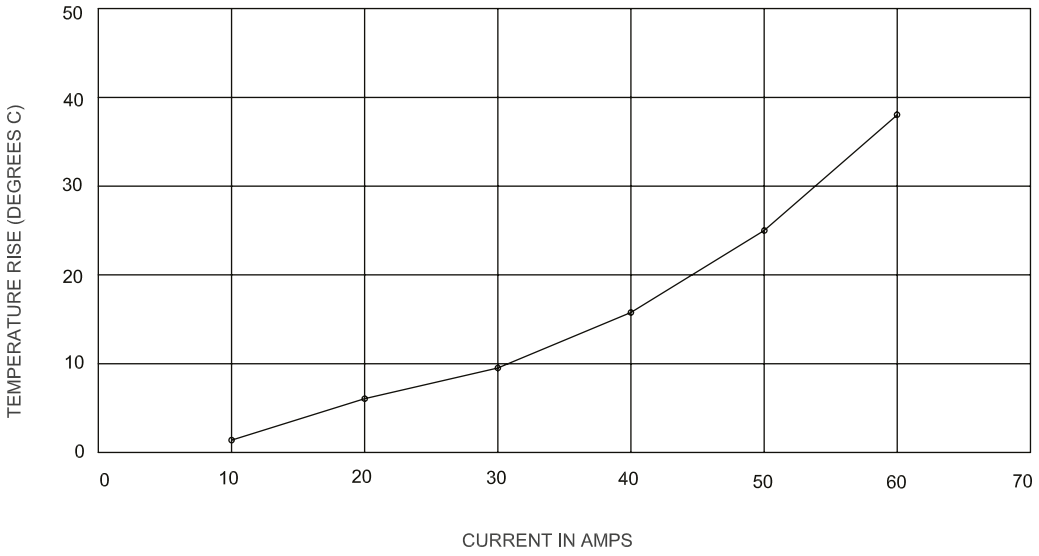
Related Product Data

Extraction Tool – 224155-1

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.

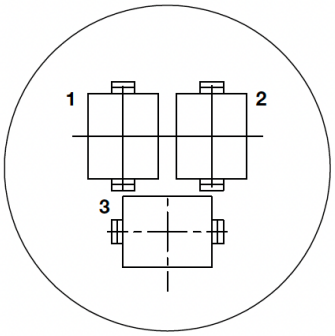
Current Rating for 30°C Temperature Rise 100% Energized
3 Circuit Connector (Wire-to-Wire)



CONTACT ARRANGEMENTS

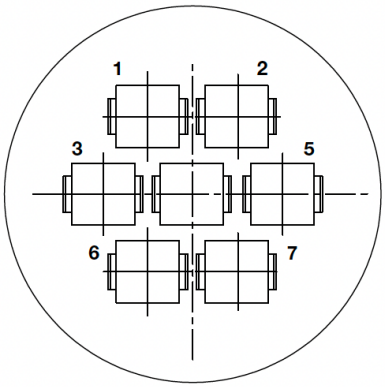
Note: Contact arrangements shown are of pin mating face (plug or receptacle). Socket mating face is mirror image.

Shell Size 17



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

Shell Size 23

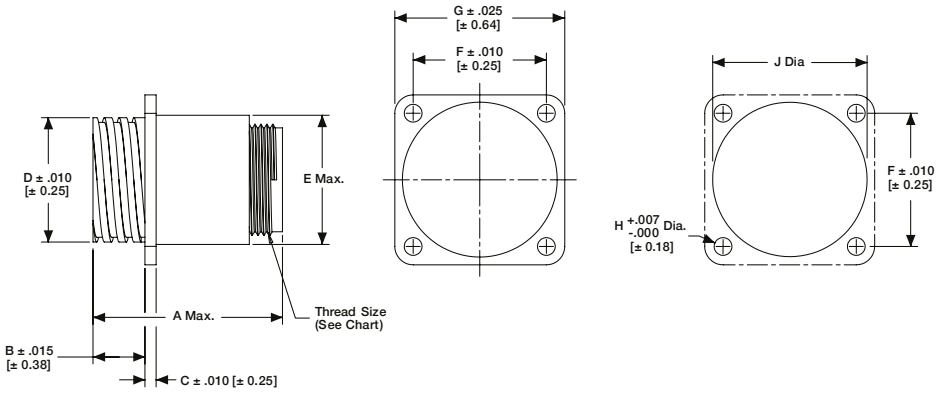


Arrangement 23-7
Max. Wire Ins. Dia. = .220 [5.59]

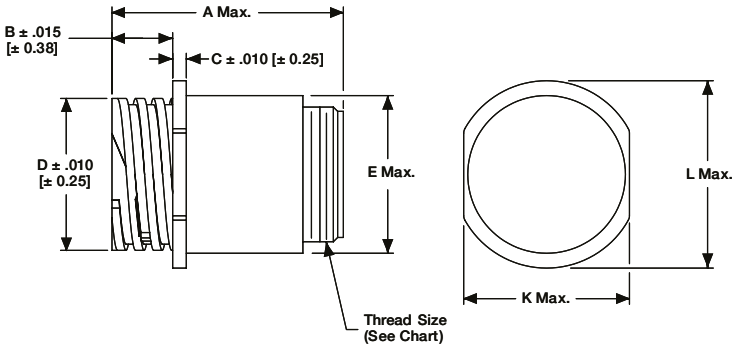
Dimensions are in inches and millimeters unless otherwise specified. Values in brackets are metric equivalents.
Dimensions are shown for reference purposes only. Specifications subject to change.

COMPONENT DIMENSIONS

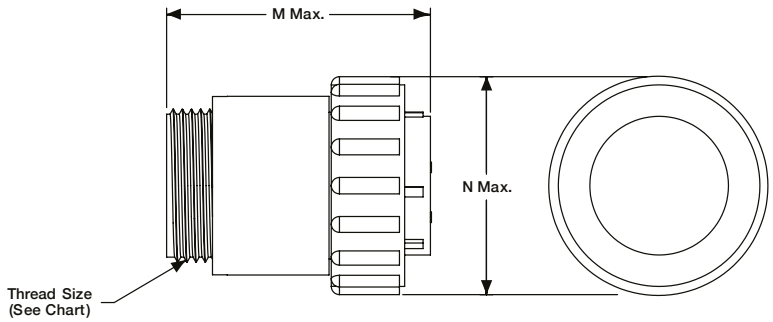
Square Flange Receptacle



Free-Hanging Receptacle



Plug



Arrangement		Dimensions													Thread Size
Shell Size	No. of Positions	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] [41.53]	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

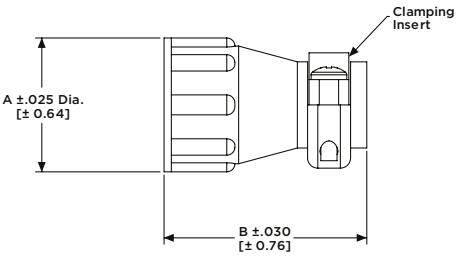
Note: All dimensions apply to both standard and reverse mate.

CABLE CLAMPS

Shell Size	Dimensions		Cable O.D. (Max.)	Thread Size	Part No.	
	A	B			Individually Packaged	Bulk Packaged*
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 size 23, screw length .625 [15.88].

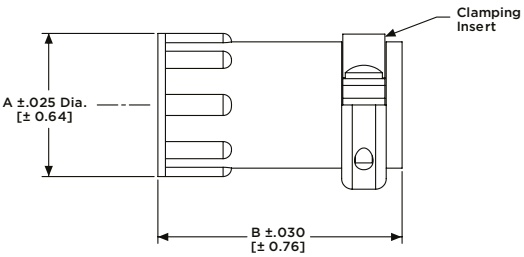
Notes:
1. Clamping areas adjustable by inverting or changing clamping inserts. The quantity of inserts supplied with each assembly is, two inserts.
2. Components for all cable clamps are packaged unassembled. This includes the cable clamp, two screws and the clamping inserts.
3. Cable clamps can be threaded directly onto plugs or receptacles, or onto back-shell extenders (page 12).
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.



Shell Size	Dimensions		Cable O.D. (Max.)	Thread Size	Part No.	
	A	B			Individually Packaged	Bulk Packaged*
17	1.131 [28.73]	1.655 [42.04]	.703 [17.86]	15/16-20 UNEF-2B	206322-9	1-206322-0** (200)
23	1.600 [40.64]	1.655 [42.04]	1.125 [28.58]	1-3/8-18 UNEF-2B	206512-5	206512-6** (100)

* Numbers in parentheses specify, in multiples, the minimum quantity of parts that can be ordered.
** Packaging includes two screws: 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, two inserts.
2. Components for all cable clamps are packaged unassembled. This includes the cable clamp, two screws and the clamping inserts.
3. Cable clamps can be threaded directly onto plugs or receptacles, or onto back-shell extenders (page 12).
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.



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

Standard Size

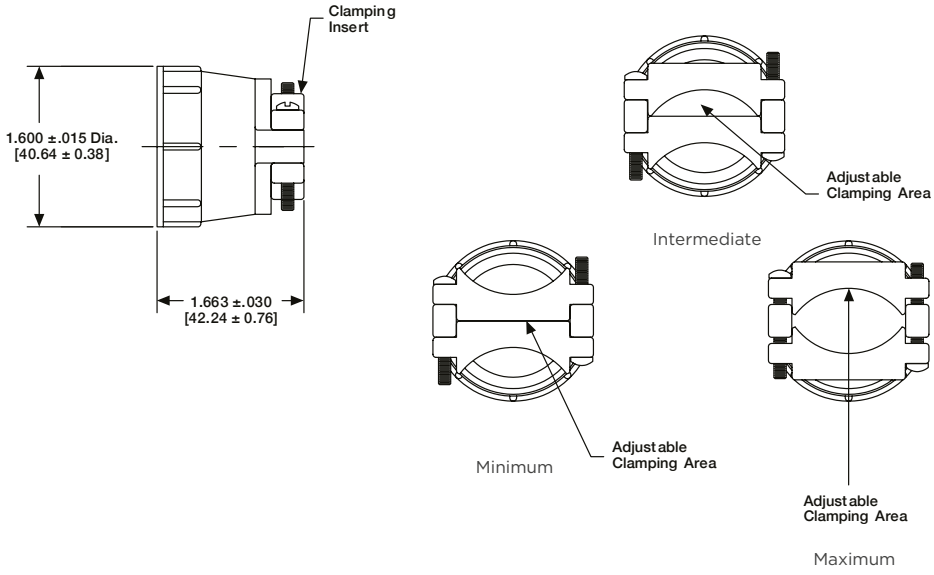
Material

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

Large Size

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.

SELF-CENTERING CABLE CLAMP (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 12).

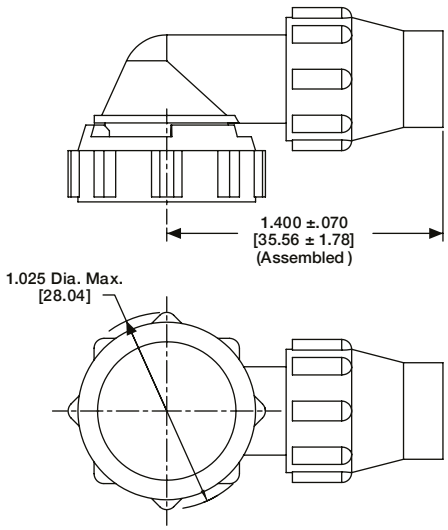
RIGHT-ANGLE CABLE CLAMPS

Shell Size	Dimensions	Cable O.D. (Max.)	Coupling Ring Thread Size	Part Number	
	A			Kit	Kit w/Cover
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

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

Material

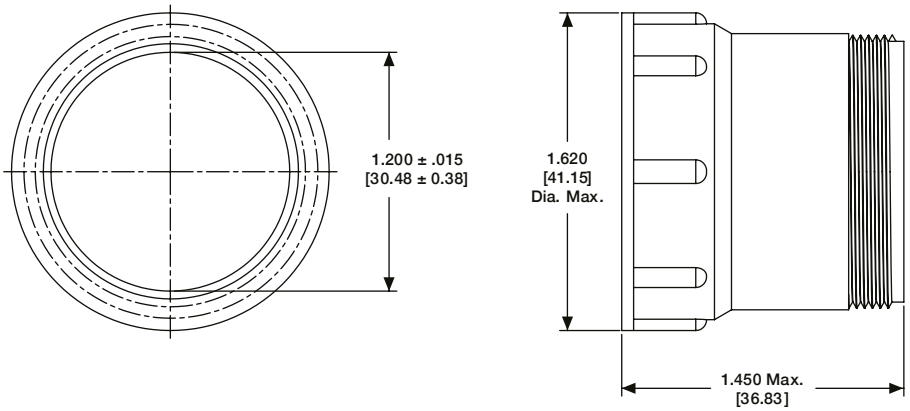
Black thermoplastic,
UL 94V-0 rated



Style B
Part Number 213982-1
(for Shell Size 13)

Note: All part numbers are RoHS Compliant.

BACK-SHELL EXTENDER (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.

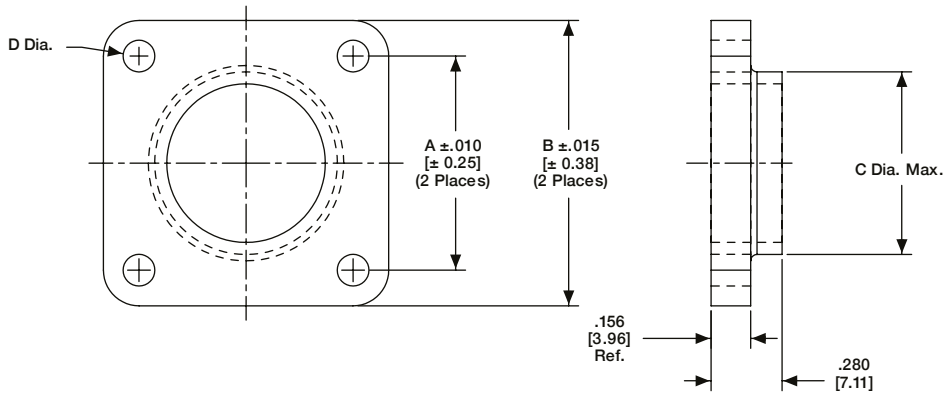
Note: Back-shell extenders can be threaded directly onto plugs or receptacles and will accept cable clamps of the appropriate size (pages 10-11).

Material
Black glass-filled thermoplastic

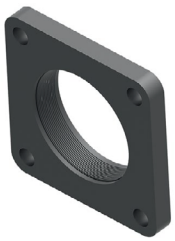
Part No. 207055-1

PANEL MOUNT FLANGES (PLUGS ONLY)

Shell Size	Dimensions				Part Number
	A	B	C	D	
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

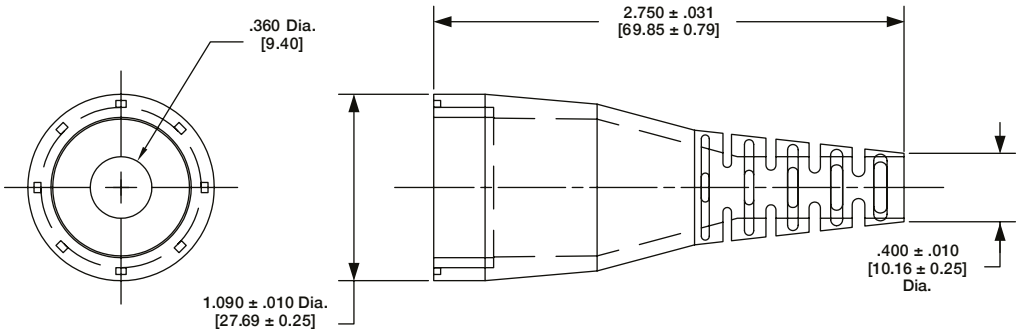


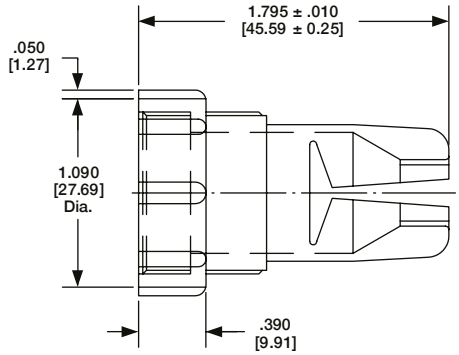
A panel mount flange is used in applications that require the plug half of a connector to be panel mounted.

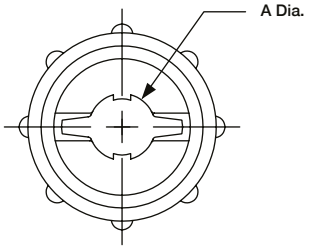


Material
Black thermoplastic

FLEXIBLE CABLE BOOT AND INTERNAL CABLE GRIP (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.

Cable Boot

Cable Grip

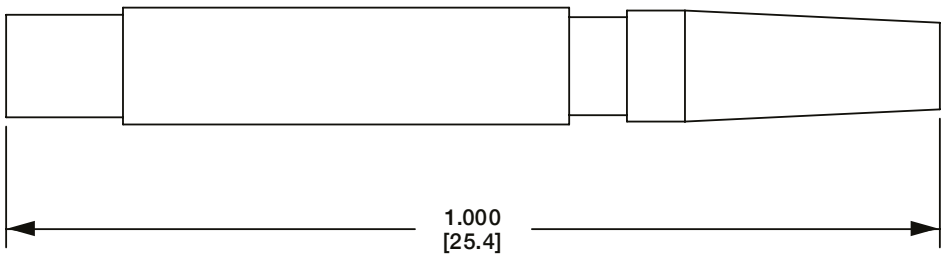
Material

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]

KEYING PLUGS

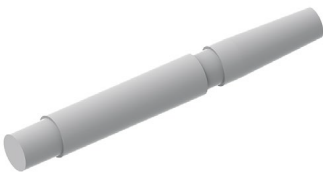


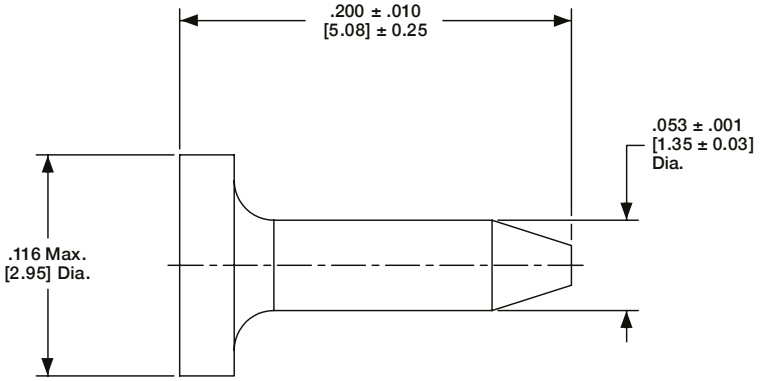
Material

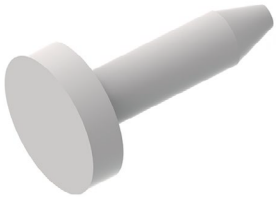
Nylon, natural, UL 94V-2 rated

Series 1 and Series 4 Keying Plug
(for Types III+ Contacts)
Part No. 200821-1

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



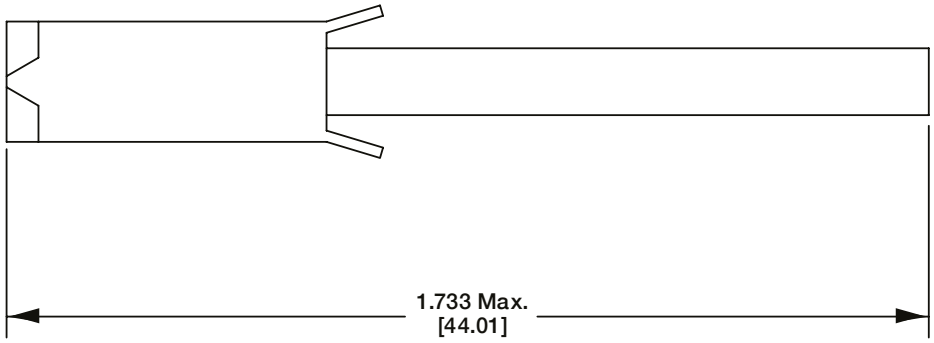


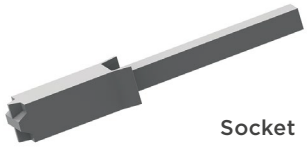


Material

Polyphenylene oxide, white,
UL 94V-1 rated

Series 2 Keying Plug
(for Size 20 DM and 20 DF Contacts)
Part No. 206509-1





Socket

Pin

Material

Nylon, natural, UL 94V-2 rated

Series 3 and Series 4 Keying Plugs
(for Type XII Contacts)
Part Nos. 206508-1 **(Socket Cavities) – Shown Above**
207597-1 **(Pin Cavities)**

PROTECTIVE CAPS

Cap Type	Shell Size	Part Number
PLUG	17	3-2407269-2
RECEPTACLE	17	4-2407269-2
PLUG	23	5-2407269-2

Note: Caps are available in orange, black, red and yellow. Download datasheet to learn more.

Material: LDPE (Low Density Polyethylene)

CPC disposable protective caps are designed to fit the existing CPC plugs and receptacles, providing protection from environmental contaminants during storage and handling.

CIRCULAR PLASTIC CONNECTOR SELECTOR TOOL

Explore Circular Plastic Connector Selector Tool. It takes guesswork out of the selection process and provides you with the best options tailored to your needs.

Connect With Us

We make it easy to connect with our experts and are ready to provide all the support you need.
Visit **te.com/support** to chat with a Product Information Specialist.

TE Connectivity
Connected Living Solutions

te.com/circular-plastic-connector

03-26