**Circular Connector Systems** & Economical Rugged



# PROFESSIONAL-QUALITY IP65 - RATED CIRCULAR CONNECTORS

IP65 Environmental Rating
Cable, Panel And PC Mount Options
Solid Machined Contacts
Unique "Twist-Lock" Mechanism

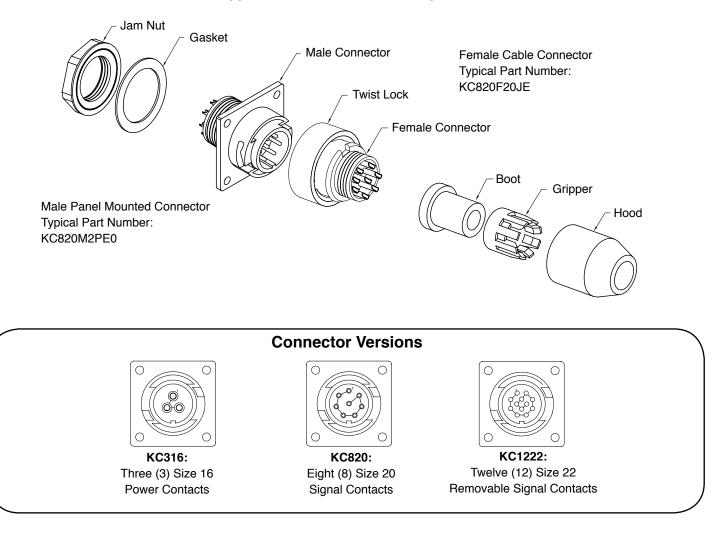
# Positronic Industries

Typical Connector Assembly



# FEATURES:

- Circular "Twist-Lock" connectors with competitive pricing!
- Dust and water ingress protection to IP65 per IEC 60529.
- High reliability power and signal solid machined contacts.
- High mating cycle life and vibration-resistant capabilities!



Unless otherwise specified, dimensional tolerances are:

| <ol> <li>Male contact mating diameters</li> </ol> | : ±0.03 [0.001] |
|---|-----------------|
| 2) Contact termination diameters                  | : ±0.08 [0.003] |
| 3) All other diameters                            | : ±0.13 [0.005] |
| 4) All other dimensions                           | : ±0.38 [0.015] |

Dimensions are in millimeters [inches]. All dimensions are subject to change.

Catalog A-004 rev. NC

Positronic believes the data contained herein to be reliable. Since the technical information is given free of charge, the user employs such information at his own discretion and risk. Positronic assumes no responsibility for results obtained or damages incurred from use of such information in whole or in part.



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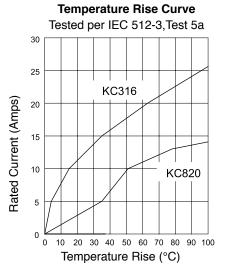




### **Technical Characteristics**

| Materials and Finishes   |   | Mechanical Characteristics                     |  |  |  |  |
|--|---|--|--|--|--|--|
| Insulator:   | Glass-filled nylon, UL 94V-0.   | Polarization:                                  | Provided in insulator design.  |  |  |  |
| Contacts:  | Precision machined copper alloy with gold over nickel plate.  | Removable Contacts:                            | Insert contact in rear face of insulator;<br>release from front face of insulator.   |  |  |  |
| Electrical Characteria<br>Contact Current Ratings<br>Size 16 Contacts: | 20.0 amperes.   |  | Size 22 Female contacts feature "Open Entry"<br>500 cycles design and "Closed Entry"<br>1000 cycles minimum design options.  |  |  |  |
| Size 20 Contacts:<br>Size 22 Contacts:                                 | 7.5 amperes.<br>3.0 amperes.  | Fixed Contacts:                                | Size 16 female contacts feature<br>"Closed Entry" 1000 cycles minimum design.  |  |  |  |
| Initial Contact Resistand<br>Size 16 Contacts:<br>Size 20/22 Contacts: | ce per IEC 512-2, Test 2b.<br>0.003 ohms, maximum.<br>0.005 ohms, maximum.  |  | (Consult factory for higher cycle options.)<br>Size 20 female contacts feature<br>"Open Entry" 500 cycles design.<br>(Consult factory for "Closed Entry" options.) |  |  |  |
| Insulator Resistance pe<br>Insulator:                                  | r IEC 512-2, Test 3a.<br>5 G ohms, minimum.   | Contact Retention in Inst<br>Size 16 Contacts: | ulator:<br>45 N [10 lbs.] minimum.   |  |  |  |
| Proof Voltage<br>Size 16 Contacts:<br>Size 20/22 Contacts:             | 1300 V r.m.s.<br>1000 V r.m.s.  | Size 20/22 Contacts:<br>Coupling System:       | 27 N [6 lbs.] minimum.<br>Twist lock.  |  |  |  |
| Working Voltage<br>Size 16 Contacts:<br>Size 20/22 Contacts:           | 433 V r.m.s.<br>333 V r.m.s.  | Shock and Vibration:<br>(Consult factory)      | Pending.   |  |  |  |
| Climatic Characteristics<br>Working temperature: -55°C to +125°C       |   | Recognized<br>UL certification in process.     |  |  |  |  |
| Dust and Water<br>Ingress Protecton:                                   | IP65 per IEC 60529 in mated<br>condition (when jacketed cable<br>is used). Degree of protection is<br>dust-tight (no ingress of dust)<br>and protected against water<br>projected in jets from any direction. | Consult factory for TÜV r                      | recognition.   |  |  |  |

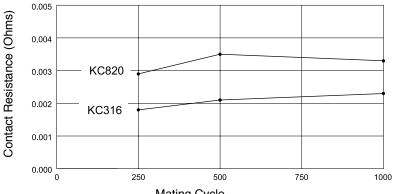
#### **Temperature Rise Curve and Contact Performance**



Above curves developed separately using (a) KC316 connectors and 16 AWG wires, and (b) KC820 connectors and 20 AWG wires. All contacts under load.

#### 1000 Cycle Contact Performance

Contact Resistance - During Cycle Testing and Humidity Conditioning. Contact resistance tested per IEC 512-2, Test 2b.



Mating Cycle

Humidity conditioning per EIA-364-31B, Method II (Condition A) after 250, 500 and 1000 mating cycles. Above curves developed separately using (a) KC316 connectors, and (b) KC820 connectors.

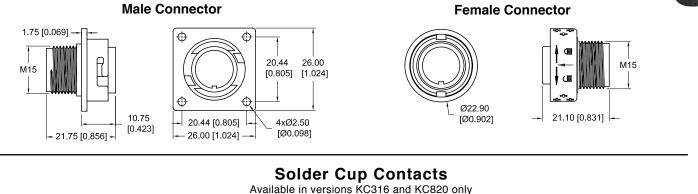
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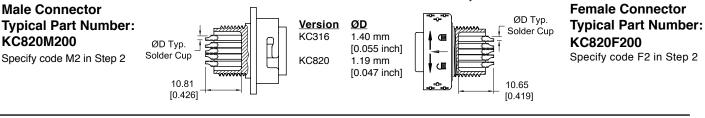




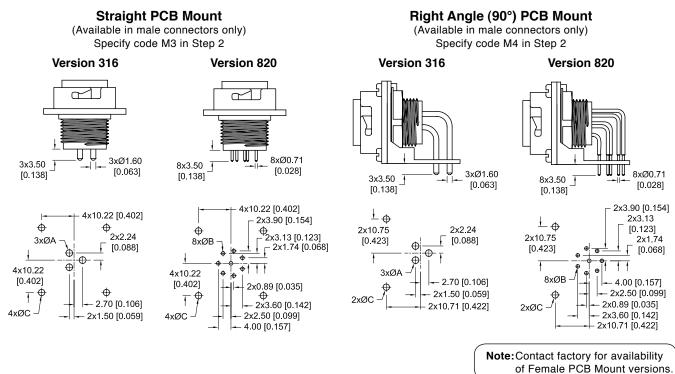
#### CONNECTOR DIMENSIONS AND PCB HOLE PATTERNS

#### **Outline Dimensions**





#### PCB Mount Contact Dimensions and PCB Hole Patterns Straight and Right Angle (90°) PCB Mount Male Connectors



Suggested PCB Hole Sizes and Mounting Screw:

Suggested ØA = Ø2.03 [0.080] holes for size 16 contact termination holes. (Version 316).

Suggested  $\emptyset B = \emptyset 1.14$  [0.045] holes for size 20 contact termination holes. (Version 820).

Suggested  $\emptyset C = \emptyset 2.00 \pm 0.08 [0.079 \pm 0.003]$  holes for use with push-on fasteners.

Suggested ØC = Ø2.54 [0.100] holes for mounting connector with screws. Screws ordered separately. Screw part number 4546-7-1-16 for PCB thickness between 1.00 mm [0.039 inch] and 2.50 mm [0.098 inch]. (Consult factory for other PCB thickness requirements.)



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## PANEL MOUNT CONNECTORS, ACCESSORIES AND SCREW TERMINATION VERSION



# Panel Mounting Options

Available in male connectors only

**Typical Part Number:** KC316M2P0 Specify code P in Step 3

**Front Panel Mount** 

**Rear Panel Mount Typical Part Number:** KC820M2PR0 Screws, nuts and washers

supplied seperately.

Jam Nut Panel Screw Nu

Panel

(Screws and nuts shown for reference only)

Maximum thickness 2.00 mm [0.079 inch] Panel Cutout for

**Panel Cutout for** 

**Front Panel Mount** 

**Rear Panel Mount** Maximum thickness 2.00 mm [0.079 inch]



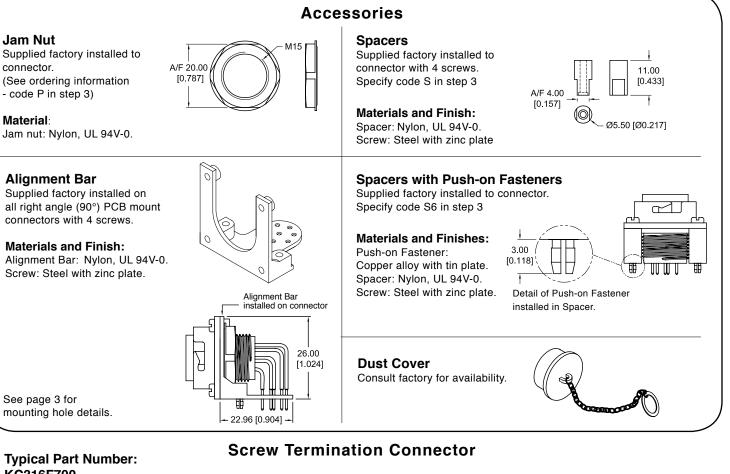
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20.44

[0.805]

4xØ3.00 [Ø0.118] Æ Ø20.00 [Ø0.787]  $\oplus$ - 20.44 [0.805] -

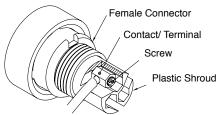


#### KC316F700 Specify code F7 in Step 2.

Available in version KC316 female connector only.

#### Materials and Finish:

Terminal and Screw: Copper alloy with tin plate Plastic Shroud: Nvlon, UL 94V-0.



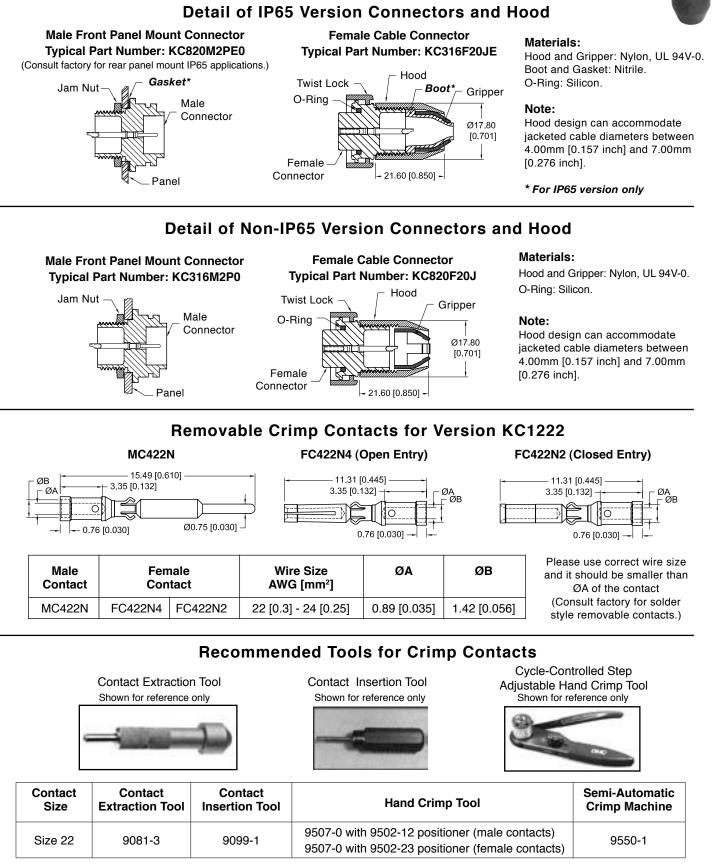
#### Note:

Screw Termination accomodates maximum wire size AWG 18 [1.0 mm<sup>2</sup>].



**ENVIRONMENTAL FEATURES, HOODS, CONTACTS AND TOOLS** 







**KING COBRA** 

**Circular Connectors** 



# Ordering Information - Code Numbering System Specify complete connector by following step 1 through step 4

| Step  | 1                                       | 2  | 3   | 4  | 5   | Γ                          | 6                                 | King Cobra   |
|---|---|--|---|--|---|----------------------------|-----------------------------------|--|
| Example   | KC316                                   | M2   | PE  | JE   | /AA   | - 1                        | XXX                               | Version 316  |
| STEP 1: CONNECTOR VERSION<br>KC316 : King Cobra Series -<br>Three (3) Size 16 Contacts  |   |  | STEP 6 - SPECIAL OPTIONS Consult fac<br>STEP 5: RoHS COMPLIANCE OPTIONS<br>/AA : Compliance per EU Directive 2002/95/EC (RoHS)  |  |   |                            |                                   |  |
| <ul> <li>STEP 2: CONNECTOR GENDER AND<br/>TYPE OF CONTACTS</li> <li>M2 : Male panel mount, solder cup, fixed contacts.</li> <li>M3 : Male straight PCB mount, solder.</li> <li>M4 : Male right angle (90°) PCB mount, solder.</li> <li>F2 : Female cable connector, solder cup, fixed contacts.<br/>(Select 0 in Step 3)</li> <li>F7 : Female cable connector, screw termination.<br/>Supplied with contacts. (Select 0 in Step 3)</li> <li>Note : Consult factory for other connector versions.</li> </ul> |   |  | AX : Compliance per EO Directive 2002/35/EC (Norts)         Note : If RoHS legislation is not required, this step will not be used.         STEP 4: HOODS         0 : None.         J : Hood with gripper, non-IP65.         JE : Hood with gripper and boot, IP65.         STEP 3: MOUNTING STYLES         0 : None.         S : Spacer for straight PCB mount connectors.         S6 : Spacer with push-on fastener for straight PCB mount connectors.         N : Push-on fastener for use with alignment bar and right angle (90°) PCB mount connectors.         P : Front panel mount male connectors with jam nut, non-IP65.         PE : Front panel mount male connectors, inp an ut and gasket, IP65.         PR : Rear panel mount male connectors with gasket, IP65. |  |   |                            |                                   |  |
| Step  | 1                                       | 2  | 3   | 4  | 5   | Γ                          | 6                                 | King Cobra   |
| Example   | KC820                                   | <br>F2   | 0   | JE   | /AA   | _                          | XXX                               | Version 820  |
| STEP 1: CONNECTOR VERSIO  |   |  |   |  |   | STEP                       |                                   | CIAL OPTIONS Consult factory.  |
| KC820 : King Cobra Series -<br>Eight (8) Size 20 Contacts         STEP 2: CONNECTOR GENDER AND<br>TYPE OF CONTACTS         M2 : Male panel mount, solder cup, fixed contacts.         M3 : Male straight PCB mount, solder.   |   | STEP 5: RoHS COMPLIANCE OPTIONS         /AA : Compliance per EU Directive 2002/95/EC (RoHS)         Note : If RoHS legislation is not required, this step will not be used.         STEP 4: HOODS         0 : None.         J : Hood with gripper, non-IP65         JE : Hood with gripper and boot, IP65. |   |  |   |                            |                                   |  |
| <ul> <li>M4 : Male right angle (90°) PCB mount, solder.</li> <li>F2 : Female cable connector, solder cup, fixed contacts.<br/>( Select 0 in Step 3 )</li> </ul>   |   |  | <ul> <li>STEP 3: MOUNTING STYLES</li> <li>0 : None.</li> <li>S : Spacer for straight PCB mount connectors.</li> <li>S6 : Spacer with push-on fastener for straight PCB mount connectors.</li> <li>N : Push-on fastener for use with alignment bar and right angle (90°) PCB mount connectors.</li> <li>P : Front panel mount male connectors with jam nut, non-IP65.</li> <li>PE : Front panel mount male connectors with jam nut and gasket, IP65.</li> <li>PR : Rear panel mount male connectors with gasket, IP65.</li> <li>PRE : Rear panel mount male connectors with gasket, IP65.</li> </ul>   |  |   |                            |                                   |  |
| Step  | 1                                       | 2  | 3   | 4  | 5   |                            | 6                                 | King Cobra   |
| Example   | KC1222                                  | M1   | Р   | J  | /AA   | -                          | XXX                               | Version 1222   |
| STEP 1: CONNECTOR VERSIO<br>KC1222 : King Cobra Series -<br>Twelve (12) Size 22 C<br>STEP 2: CONNECTOR GENDE<br>TYPE OF CONTACTS<br>M1 : Male panel mount, removabil<br>F1 : Female cable connector, rem<br>(Select 0 in Step 3)  | Contacts<br>ER AND<br>e crimp contacts. | tacts.   |   | <b>STEP 4: H</b><br>0 : None.<br>J : Hood v<br>JE : Hood v | /AA : Cc<br>Note : If<br>IOODS<br>vith grippe | r, non-IP                  | 6 COMPI<br>e per EU<br>egislation | CIAL OPTIONS Consult factory.<br>LIANCE OPTIONS<br>Directive 2002/95/EC (RoHS)<br>is not required, this step will not be used. |
| (Select 0 in Step 3)<br>Note: Contacts ordered separately.  |   | 0 : N<br>P : F<br>PE : F<br>PR : F   |   | ount male<br>ount male<br>ount male o                      | connecto<br>connecto<br>connecto              | ors with ja<br>ors, non-IF |                                   |  |



KING COBRA Circular Connectors

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| $\mathbf{J}$      |
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#### www.connectpositronic.com



# Positronic Industries



# Miniature, Economical & Rugged Circular Connector Systems

Connector Versions



BKC320: Three (3) Size 20 Contacts



BKC620: Six (6) Size 20 Contacts

| Iechnical Characteristics  |  |                                 |  |  |  |
|--|--|---------------------------------|--|--|--|
| Materials and Finishes<br>Insulator: Glass-filled nylon, UL 94V-0. |  |                                 | Climatic Characteristics<br>Working temperature:-55°C to +125°C    |  |  |
| Contacts:  | Precision machined copper<br>alloy with gold over nickel<br>plate. | Dust and<br>Water Ingress:      | IP65 with overmolded Assembles (Consult Factory for details)       |  |  |
| 'O' Ring:  | Silicon, UL 94V-0  | Mechanical Cha<br>Polarization: | Mechanical Characteristics<br>Polarization: Provided by insulator. |  |  |
| Electrical Charac<br>Contact Current Ra<br>Size 20 Contacts:       |  | Fixed Contacts:                 | Size 20 female contacts feature "Open Entry" 500 cycles design.    |  |  |
|  | stance per IEC 512-2, Test 2b.<br>0.005 ohms, maximum.             | Contact Retention in Insulator: | Size 20 Contacts: 27 N [6 lbs.]<br>minimum.                        |  |  |
| Insulator:   | ce per IEC 512-2, Test 3a.<br>5 G ohms, minimum.                   | Locking System:                 | Threaded or Twist<br>Locking Shroud                                |  |  |
| Proof Voltage<br>Size 20 Contacts:                                 | 1000 V r.m.s.  | UL :                            | File E220614   |  |  |
| Working Voltage<br>Size 20 Contacts:                               | 250 V r.m.s.   |                                 | S  |  |  |

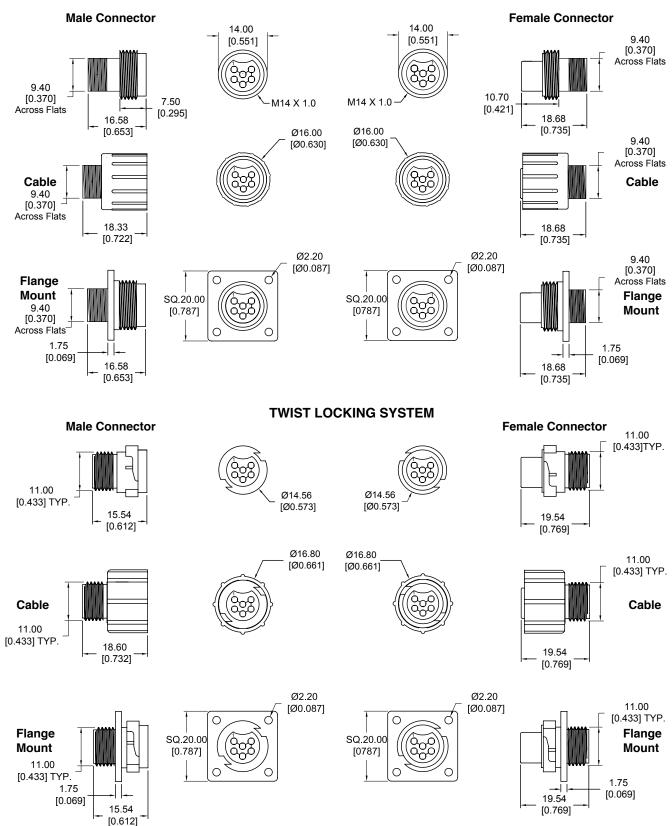


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## BABY KING COBRA Circular Connectors

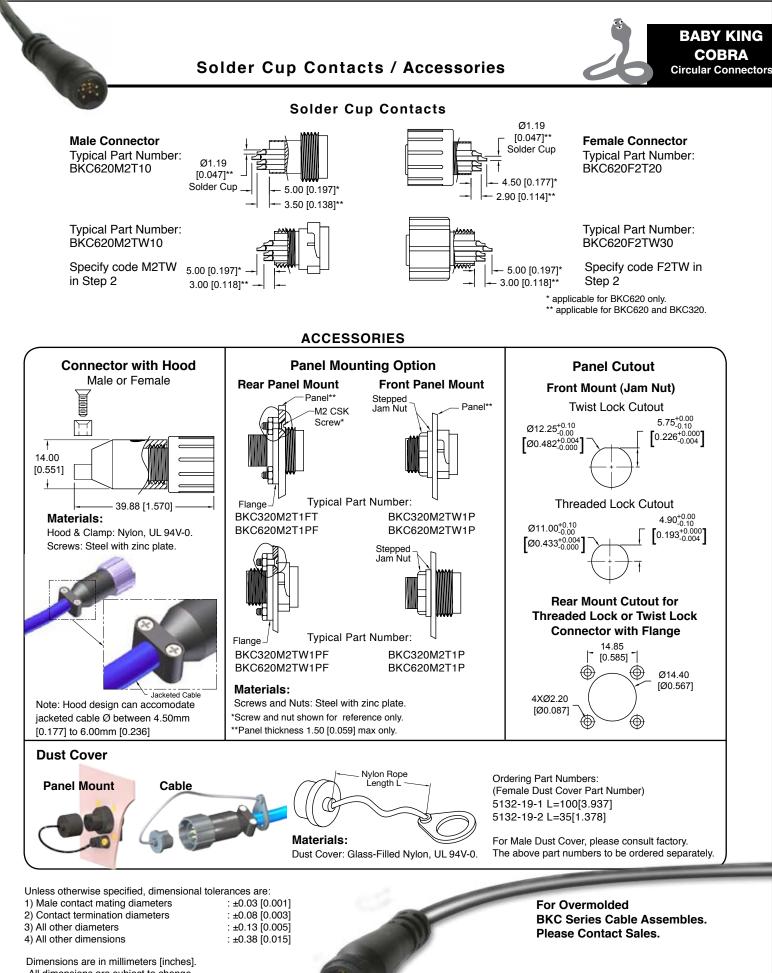
# **Outline Dimensions**





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All dimensions are subject to change.

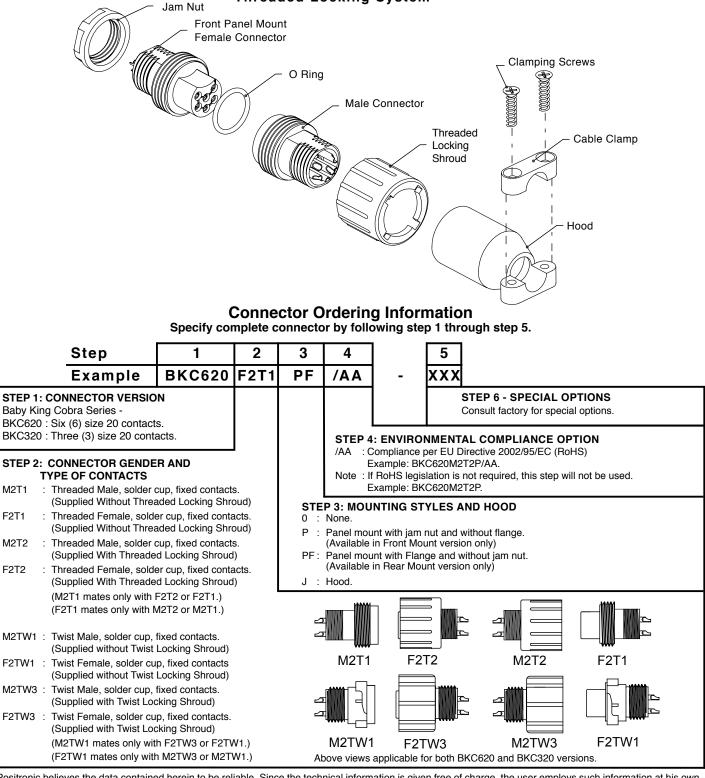




#### **TYPICAL CONNECTOR ASSEMBLY & ORDERING INFORMATION**



**Typical Connector Assembly Threaded Locking System** 



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M2T1

F2T1

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