

**Positronic Industries Presents**

## **COMBINATION SUBMINIATURE-D CONNECTOR WITH COMPLIANT CONTACT TERMINATIONS**

**Size 8 Power Contacts**

**Size 20 Signal Contacts**

**Large Surface Area Mating  
System**

**High Reliability**

**Contact Current Rating to 35  
Amperes**



### **TECHNICAL CHARACTERISTICS**

#### **MATERIALS AND FINISHES:**

Insulator:	Glass-filled polyester per MIL-M-24519, UL 94V-0, blue color.
Contact:	Machined copper alloy.
Signal Contact Plating:	Gold flash over nickel plate and gold 0.000050 [1.27 microns] over nickel plate. Other finishes available upon request.
Power Contact Plating:	Gold flash over nickel. Other finishes available upon request.
Shells:	Steel or brass with tin plate, or with zinc plate with dichromate seal, or stainless steel passivated.
Mounting Spacers:	Steel with zinc plate with dichromate seal or tin plate.
Jackscrew Systems:	Steel with zinc plate and dichromate seal.
Vibration Lock Systems:	Lock tabs, nickel plated steel.

#### **ELECTRICAL CHARACTERISTICS:**

##### *Signal Contacts*

Contact Current Rating:	7.5 amperes nominal.
Initial Contact Resistance:	0.008 ohms max.
Proof Voltage:	1000 V r.m.s.

##### *Power Contacts*

Contact Current Rating:	35 amperes nominal. See temperature rise curve for details.
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Initial Contact Resistance:	0.0005 ohms max.
Proof Voltage:	1000 V r.m.s.

##### *Connector*

Insulator Resistance:	5 G ohms
Clearance and Creepage Distance:	0.039 inch [1.0 mm] min.
Working Voltage:	300 V r.m.s.

#### **MECHANICAL CHARACTERISTICS:**

Signal Contacts, Fixed:	Size 20 contacts, male contact-0.040 inch [1.02 mm] diameter. CBD Series has open entry design female contacts. CBM Series has closed entry design female contacts. Omega style press-fit terminations.
Power Contacts:	Size 8 contacts, male contact-0.142 inch [3.61 mm] diameter. Female contact features Large Surface Area (L.S.A.) closed entry contact design utilizing BeCu mechanical retention member. Bi-Spring style press-fit terminations.
Shells:	Male shells may be dimpled for EMI/ESD ground paths.
Polarization:	Trapezoidally shaped shells and polarized jackscrews.
Mounting to Printed Board:	Threaded spacers.
Locking System:	Jackscrews and lock tabs.
Mechanical Operations, Signal Contacts:	CBD Series, 500 operations, CBM Series, 1000 operations per IEC 512-5.

#### **CLIMATIC CHARACTERISTICS:**

Temperature Range:	-55°C to +125°C
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**DIMENSIONS ARE IN INCHES [MILLIMETERS].  
ALL DIMENSIONS ARE SUBJECT TO CHANGE.**

# POSITRONIC INDUSTRIES' BI-SPRING POWER PRESS-FIT TERMINATIONS

**The Next Evolution In Compliant Technology. Fully Compliant, Fully Reliable.**

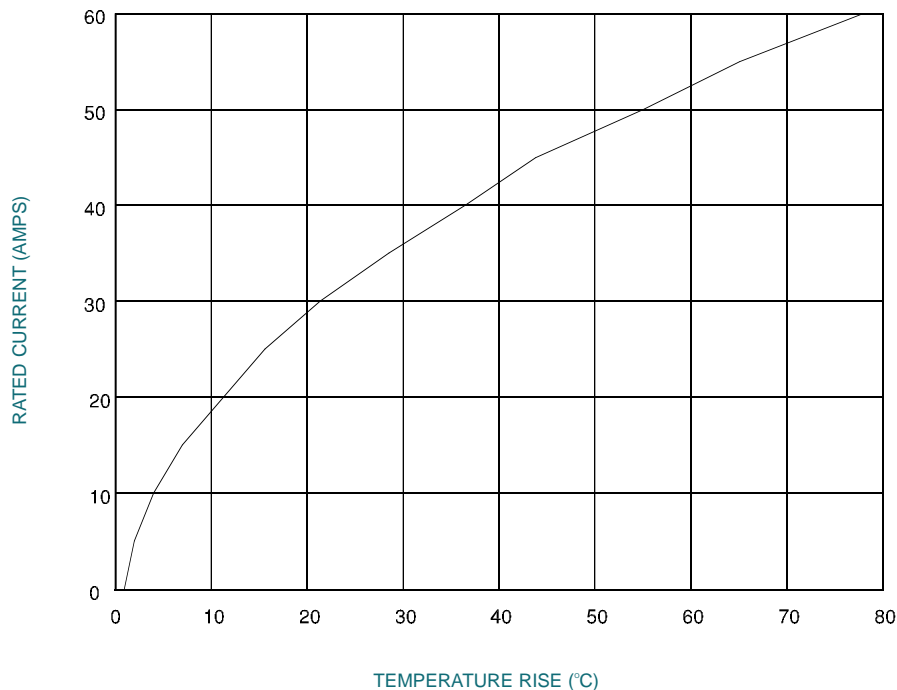
Reliable, solderless connections from connectors to backplanes started with solid press-fit technology. Although these are still used today, concerns about board damage led to the use of compliant press-fit technology. This technology allows the connection to be made through compliance of the contact termination along with P.C. board hole deformation. Although risk of damaged P.C. boards and backplanes is lessened, damage can still

occur due to relatively high insertion forces.

The next step in press-fit technology is a highly reliable connection between the contact termination and backplane that is accomplished with reduced insertion forces. This eliminates risk of P.C. board and backplane damage. **This technology exists today with Positronic Industries' Bi-Spring Power Press-Fit Termination.**

- The relatively low insertion forces of Bi-Spring Power Press-Fit contacts do not produce stresses in P.C. boards and backplanes that can occur with higher insertion forces. These stresses can cause board warpage and hole damage. Average insertion forces of size 8 contact are 133 N (30 lbs.) per contact.
- Connector systems utilizing Bi-Spring terminations use mounting screws to secure the connector to the P.C. board or backplane. Stresses that occur during coupling, uncoupling or shock and vibration of systems are not transferred to the P.C. boards or backplanes through the press-fit connection. The electrical integrity of the connector to board interface is maintained; this is particularly important in power applications. Bellcore GR1217 details a preference for mounting hardware when using press-fit terminations.
- Lower insertion forces eliminate the need for expensive pressing equipment.

## TEMPERATURE RISE CURVE

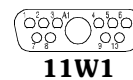
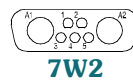
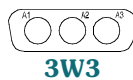


Curve developed using CBD8W8M00000 and CBD8W8F93S000 connectors and MC4008D contacts and 8 awg (10.0mm<sup>2</sup>) size wire. All contacts under load.

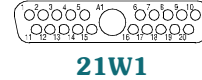
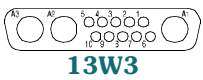
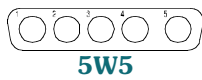
# CBD SERIES CONTACT VARIANTS

## Face View of Male or Rear View of Female

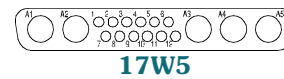
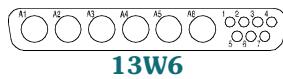
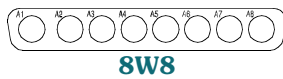
### SHELL SIZE 1



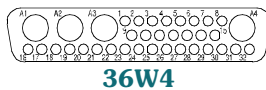
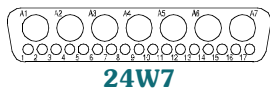
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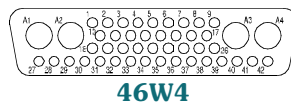
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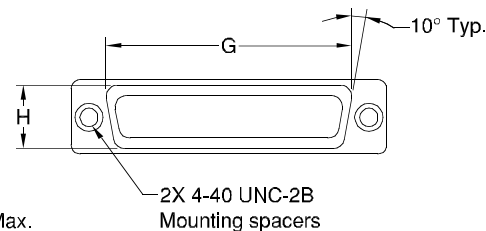
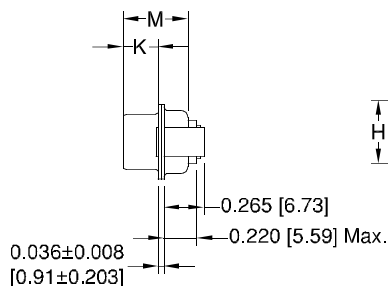
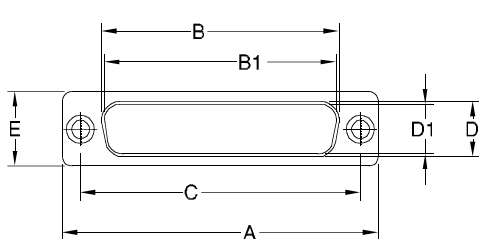
### SHELL SIZE 5



### SHELL SIZE 6



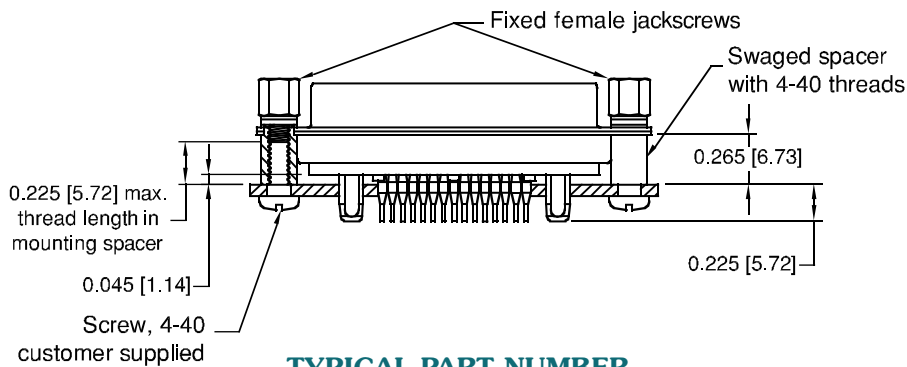
## STANDARD SHELL ASSEMBLY



SHELL SIZES	A ±0.015 [±0.38]	B ±0.005 [±0.13]	B1 ±0.005 [±0.13]	C ±0.005 [±0.13]	D ±0.005 [±0.13]	D1 ±0.005 [±0.13]	E ±0.015 [±0.38]	G ±0.010 [±0.25]	H ±0.010 [±0.25]	K ±0.005 [±0.13]	M ±0.010 [±0.25]
SHELL SIZE 1 MALE	1.213 [30.81]		0.666 [16.92]	0.984 [24.99]		0.329 [8.36]	0.494 [12.55]	0.759 [19.28]	0.422 [10.72]	0.233 [5.92]	0.422 [10.72]
SHELL SIZE 1 FEMALE	1.213 [30.81]	0.643 [16.33]		0.984 [24.99]	0.311 [7.90]		0.494 [12.55]	0.759 [19.28]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
SHELL SIZE 2 MALE	1.541 [39.14]		0.994 [25.25]	1.312 [33.32]		0.329 [8.36]	0.494 [12.55]	1.083 [27.51]	0.422 [10.72]	0.233 [5.92]	0.422 [10.72]
SHELL SIZE 2 FEMALE	1.541 [39.14]	0.971 [24.66]		1.312 [33.32]	0.311 [7.90]		0.494 [12.55]	1.083 [27.51]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
SHELL SIZE 3 MALE	2.088 [53.04]		1.534 [38.96]	1.852 [47.04]		0.329 [8.36]	0.494 [12.55]	1.625 [41.28]	0.422 [10.72]	0.230 [5.84]	0.426 [10.82]
SHELL SIZE 3 FEMALE	2.088 [53.04]	1.511 [38.38]		1.852 [47.04]	0.311 [7.90]		0.494 [12.55]	1.625 [41.28]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
SHELL SIZE 4 MALE	2.729 [69.32]		2.182 [55.42]	2.500 [63.50]		0.329 [8.36]	0.494 [12.55]	2.272 [57.71]	0.422 [10.72]	0.230 [5.84]	0.426 [10.82]
SHELL SIZE 4 FEMALE	2.729 [69.32]	2.159 [54.84]		2.500 [63.50]	0.311 [7.90]		0.494 [12.55]	2.272 [57.71]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
SHELL SIZE 5 MALE	2.635 [66.93]		2.079 [52.81]	2.406 [61.11]		0.441 [11.20]	0.605 [15.37]	2.178 [55.32]	0.534 [13.56]	0.230 [5.84]	0.426 [10.82]
SHELL SIZE 5 FEMALE	2.635 [66.93]	2.064 [52.43]		2.406 [61.11]	0.423 [10.74]		0.605 [15.37]	2.178 [55.32]	0.534 [13.56]	0.243 [6.17]	0.429 [10.90]
SHELL SIZE 6 MALE	2.729 [69.32]		2.212 [56.18]	2.500 [63.50]		0.503 [12.78]	0.668 [16.97]	2.302 [58.47]	0.596 [15.14]	0.230 [5.84]	0.426 [10.82]
SHELL SIZE 6 FEMALE	2.729 [69.32]	2.189 [55.60]		2.500 [63.50]	0.485 [12.32]		0.668 [16.97]	2.302 [58.47]	0.596 [15.14]	0.243 [6.17]	0.429 [10.90]

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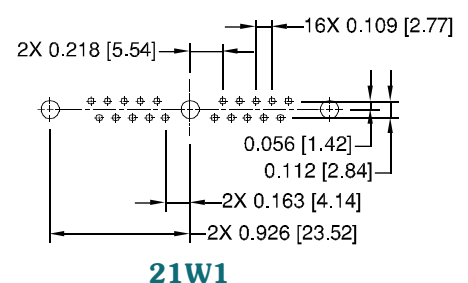
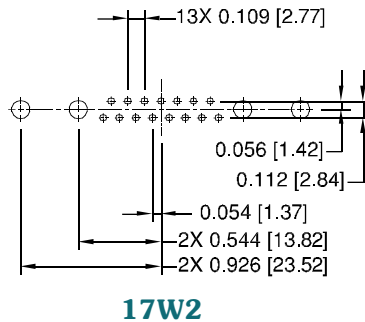
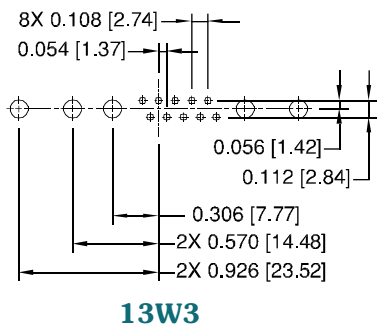
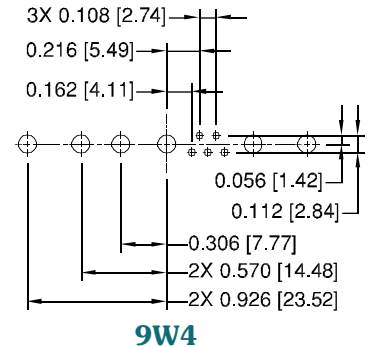
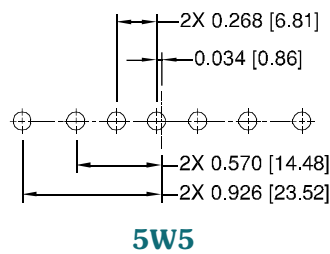
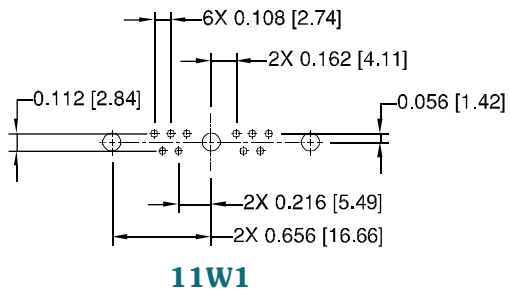
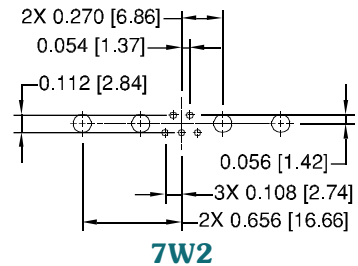
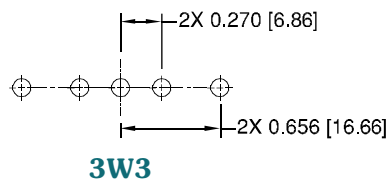
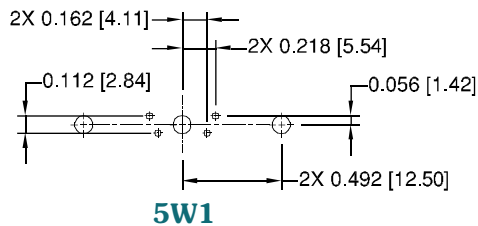
# COMPLIANT PRESS-FIT CONNECTORS



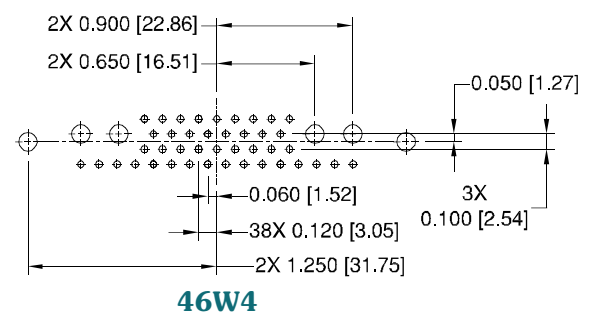
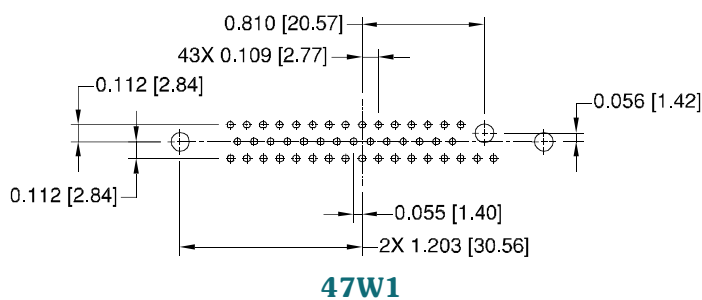
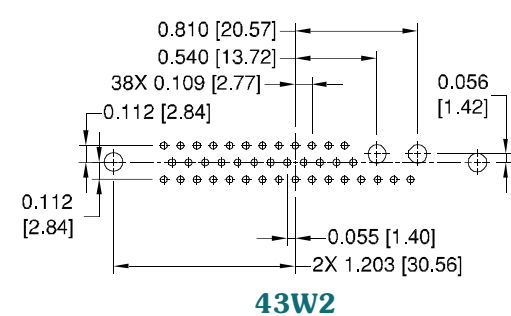
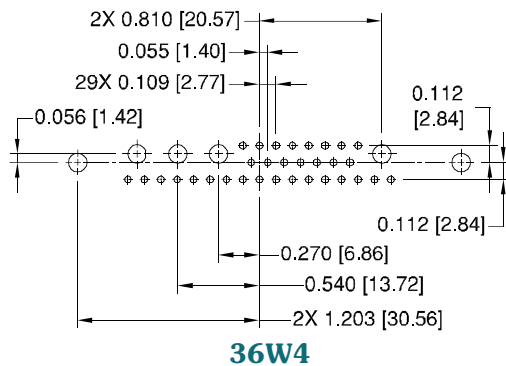
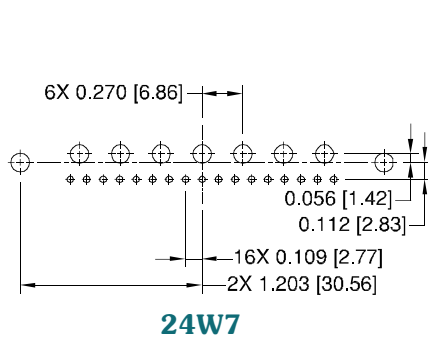
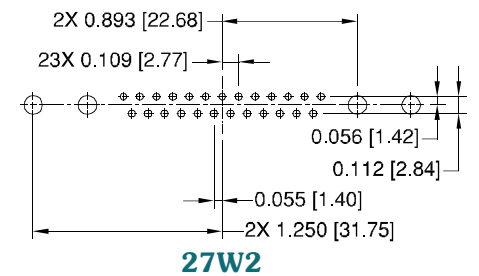
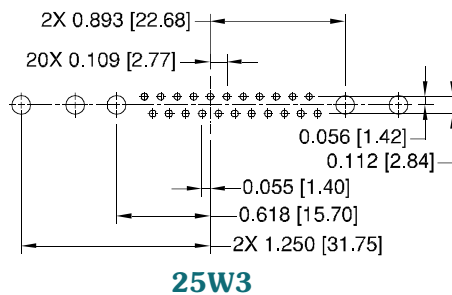
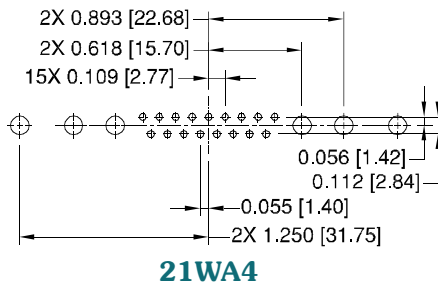
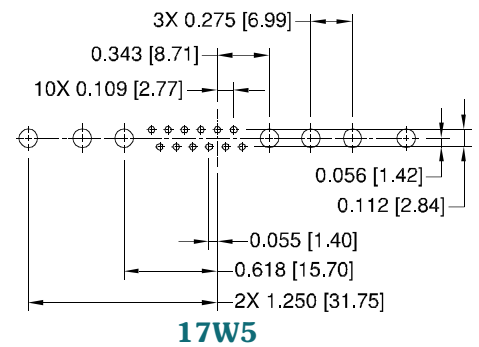
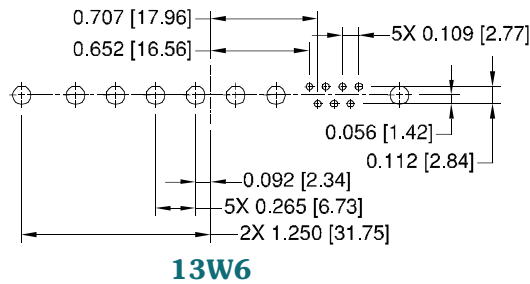
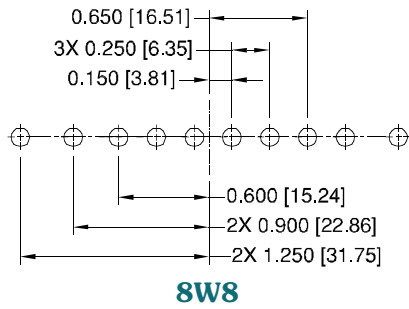
**TYPICAL PART NUMBER**  
**CBD17W2M93S0T20**

## PRINTED BOARD CONTACT HOLE PATTERNS

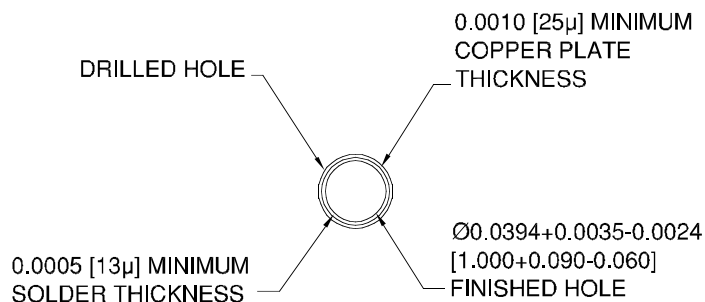
Hole pattern shown is for male connector; use mirror image for female connector



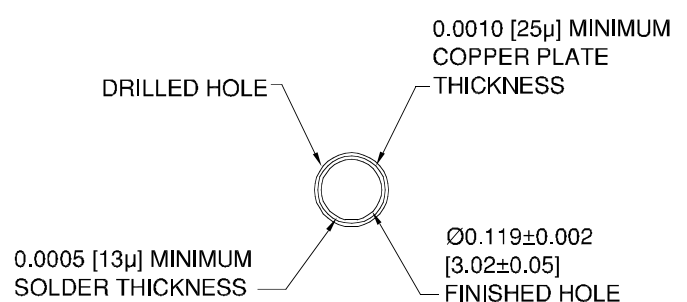
**DIMENSIONS ARE IN INCHES [MILLIMETERS].**  
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## SUGGESTED PRINTED BOARD HOLE SIZES



**Size 20 contacts**

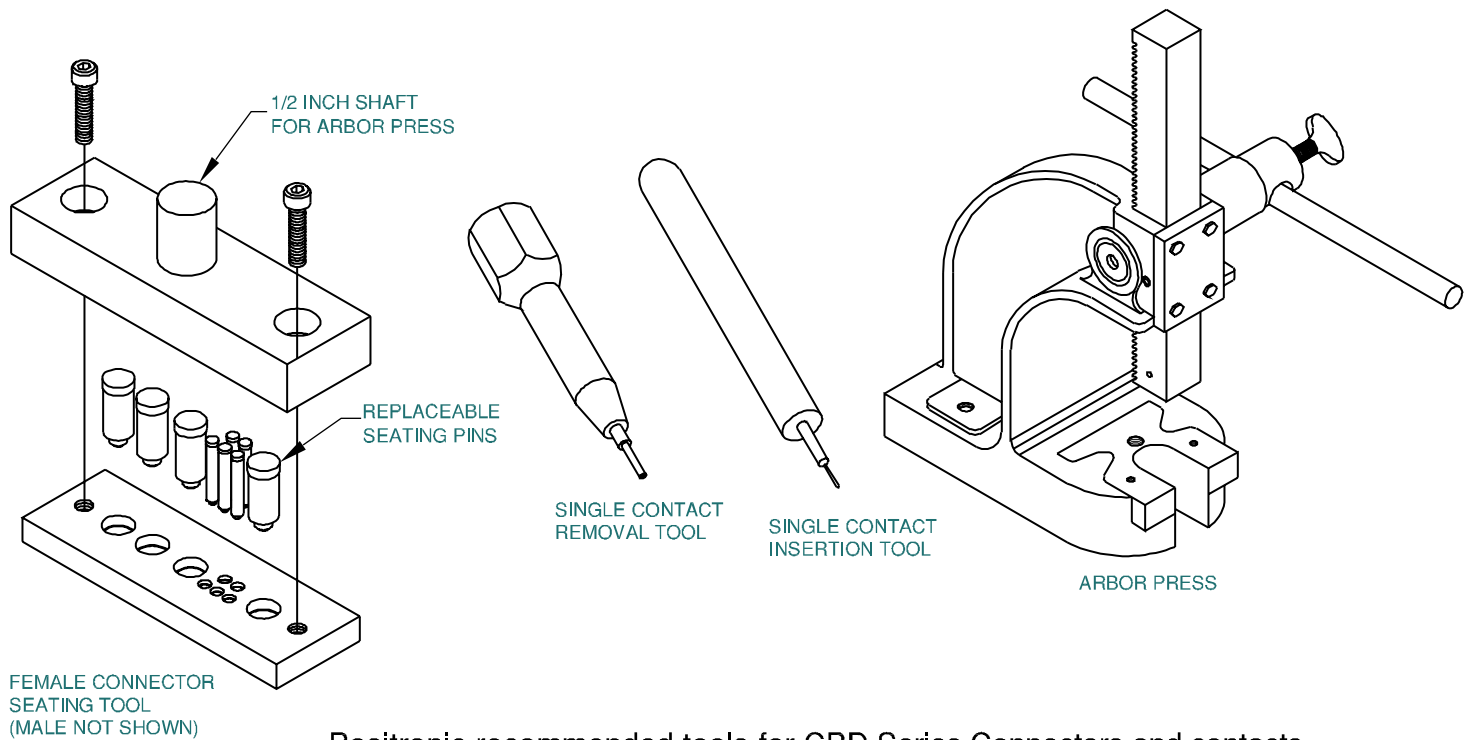


**Size 8 contacts**

Suggest Ø0.120 [3.05] for mounting holes.

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# COMPLIANT TERMINATION PRESS-FIT CONNECTOR INSTALLATION TOOLS



Positronic recommended tools for CBD Series Connectors and contacts

Contact Variant	Connector Seating		Single Contact Insertion		Single Contact Removal
	Male	Female	Male	Female	
5W1	9512-1-0-41	9512-18-0-41	9512-103-0-0 FOR SIZE 20 CONTACTS ONLY          SIZE 8 CONTACTS ARE NOT REPAIRABLE	9512-104-0-0 FOR SIZE 20 CONTACTS ONLY          SIZE 8 CONTACTS ARE NOT REPAIRABLE	9512-105-0-0 FOR SIZE 20 CONTACTS ONLY          SIZE 8 CONTACTS ARE NOT REPAIRABLE
3W3	9512-2-0-41	9512-19-0-41			
7W2	9512-2-0-41	9512-20-0-41			
11W1	9512-2-0-41	9512-21-0-41			
5W5	9512-3-0-41	9512-22-0-41			
9W4	9512-3-0-41	9512-23-0-41			
13W3	9512-3-0-41	9512-24-0-41			
17W2	9512-3-0-41	9512-25-0-41			
21W1	9512-3-0-41	9512-26-0-41			
8W8	9512-4-0-41	9512-27-0-41			
13W6	9512-4-0-41	9512-28-0-41			
17W5	9512-4-0-41	9512-29-0-41			
21WA4	9512-4-0-41	9512-30-0-41			
25W3	9512-4-0-41	9512-31-0-41			
27W2	9512-4-0-41	9512-32-0-41			
24W7	9512-5-0-41	9512-33-0-41			
36W4	9512-5-0-41	9512-34-0-41			
43W2	9512-5-0-41	9512-35-0-41			
47W1	9512-5-0-41	9512-36-0-41			
46W4	9512-16-0-41	9512-37-0-41			
Arbor press for connector seating tools-9530-1-0					

# ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Following Steps 1 Through 8

Insert "0" When Step Is Not Used

STEP	1	2	3	4	5	6	7	8	9
	CBD	5W5	M	93	S	0	V3	0	
<b>STEP 1 - Basic Series</b> CBD - Industrial Quality with Open Entry Signal Contacts CBM - Military Conformance with "Closed Entry" Signal Contacts						<b>STEP 9 - Special Options</b> Consult Technical Sales for special options.			
<b>STEP 2 - Connector Variants</b> <b>Shell Size 1</b> 5W1 <b>Shell Size 2</b> 3W3, 7W2, 11W1 <b>Shell Size 3</b> 5W5, 9W4, 13W3, 17W2, 21W1 <b>Shell Size 4</b> 8W8, 13W6, 17W5, 21WA4, 25W3, 27W2 <b>Shell Size 5</b> 24W7, 36W4, 43W2, 47W1 <b>Shell Size 6</b> 46W4						<b>STEP 8 - Shell Options</b> 0 - Zinc Plated with Dichromate Seal S - Stainless Steel X - Tin Plated Z - Tin Plated and Dimpled			
<b>STEP 3 - Connector Gender</b> M - Male F - Female						<b>STEP 7 - Locking and Polarizing Systems</b> 0 - None V3 - Lock Tab T2 - Fixed Female Jackscrews, 4-40 Thread T6 - Fixed Male and Female Polarized Jackscrews Note: These options must be ordered with connector and cannot be ordered separately.			
<b>STEP 4 - Type of Contact</b> 93 - Size 20 Omega type compliant and Size 8 Bi-Spring type compliant, termination length 0.225 [5.72]						<b>STEP 6 - Hoods and Push-On Fasteners</b> 0 - None.			
						<b>STEP 5 - Mounting style</b> S - Swaged Spacer, 4-40 Threads, 0.265 [6.73]			

## SIZE 20 REPLACEMENT CONTACTS PART NUMBERS

CODE	MALE	OPEN ENTRY FEMALE (CBD)	CLOSED ENTRY FEMALE (CBM)
93	9305-16-0-*	4306-17-1-*	4306-199-1-*

\* - PLATING OPTIONS FOR REPLACEMENT CONTACTS

-14 GOLD 0.000030 [0.75 MICRONS] OVER NICKEL PLATE

-15 GOLD 0.000050 [1.27 MICRONS] OVER NICKEL PLATE

-51 GOLD FLASH OVER NICKEL PLATE

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CATALOG NUMBER:  
**C-025 REV. NC**  
PRINTED DATE:  
**November, 2001**

Products described within this catalog may be protected by one or more of the following U.S. patents:

5,255,580

5,329,697

6,260,268

Other Patents Pending

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