

cannon

# Cannon 2D Series Catalog

Double Density D-Sub Connectors



ITT

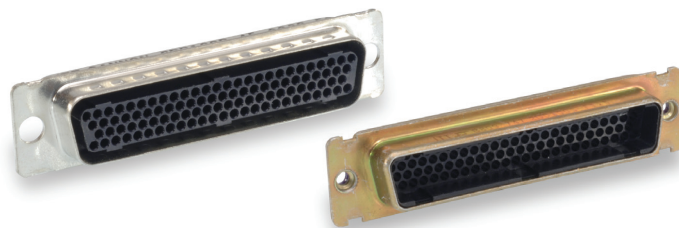
# Cannon 2D Series

## The Centi Line - .075" Contact Spacing

The Cannon Centi connectors are especially suitable for commercial applications such as computers, instrumentation, communications and audio equipment. They are available in D subminiature size metal shell rectangular, plastic shell rectangular and strip configurations.

All Centi connectors use the reliable twist pin contact design in a 5 amp version terminated on .075 (1.91) and .100 (2.54) centers. The Centi contact is crimp removable, connectors are available for customer assembly. Standard crimp and assembly tools are available.

The twist pin contact is recessed within the insulator housing while the rugged cylindrical socket is exposed. When the connector halves are mated, the chamfered sockets guide the pins into positive alignment. The Centipin™ contact, now under compression, forms a multi-point contact with the Centisocket™ to provide a high degree of reliability.



### Standard Data

- Contact rating: 5 amps max, except BR Series (2 amps max.)
- Minimum contact centers: 0.075 (1.91).
- Wire sizes: #22 thru #26 AWG, stranded or solid.
- Contact termination: Multiple indent crimp.
- Contact retention: Crimp snap-in/removable.
- Contact materials and finish: Copper alloy, gold-plated per ASTM B488, Type II, Code C, Class 1.25.
- Mating/unmating force: 12 oz. per contact, max.

### Performance Data

Test	Method	Criteria of Acceptance
Dielectric Withstanding Voltage	Method 301: 1,000 VAC at sea level 300 VAC at 70,000' altitude	No breakdown No breakdown
Insulation Resistance	Method 302, Condition A	5,000 megohms minimum
Thermal Shock	Method 107. Condition A: - 55°C to + 125°C	No physical damage
Physical Shock	Method 2004, Condition E: 50 G's, 3 axes, 6 millisecond duration sawtooth pulse	No physical damage No loss of continuity > 1 μsec
Vibration	Method 204, Condition B: 15 G's, 10-2,000 Hz, 12 hours	No physical damage No loss of continuity > 1 μsec
Durability	500 cycles of mating and unmating, 500 CPH max.	No mechanical or electrical defects
Moisture Resistance	Method 106, omit 7a and 7b	Insulation resistance > 100 megohms
Salt Spray	Method 101, Condition B: 48 hours	Shall be capable of mating and unmating and meet contact resistance requirements
Contact Resistance (MIL-STD-202)	Method 307: At 5 amps	9 milliohms maximum
Contact Retention	- At 5 amps	4 lb. minimum axial load (after 10 insertion extraction cycles)

The Double Density D is a rectangular connector in the popular D Subminiature shell configuration featuring double the contact density in the same insert area. The Double Density D connector can thus accommodate up to 100 contacts instead of 50.

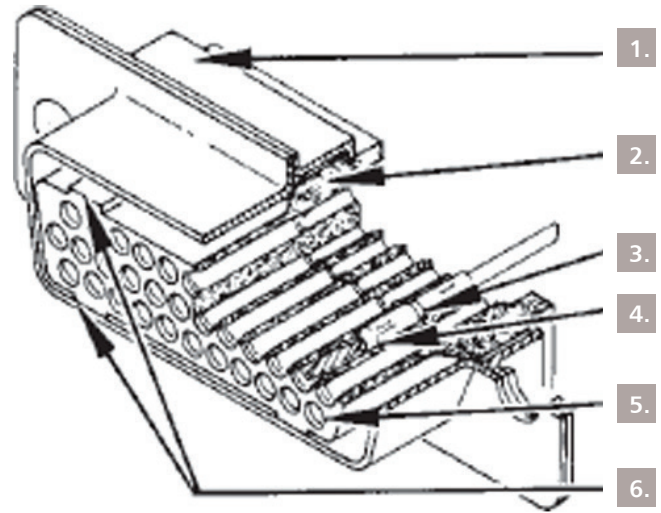
This double contact density is achieved by using field-proven, highly reliable Centipin™/Centisocket™ contacts on .075 (1.91) centers, in the positive contact alignment design. In this design contact positions are reversed; the flexible Centipin™ contacts are recessed in the insulator and the more rugged Centisocket™ contacts are exposed. This reversal of positions, and the chamfered-entry of the sockets, assures positive mating even

under severe misalignment conditions. The contacts are retained in the monobloc insulator by a resilient internal shoulder that snaps into a locking groove in the contact. The chamfered front of the contact will not damage the internal shoulder in the insulator. Contacts are crimp removable type.

The Double Density D connector is available in the five popular shell and insert sizes accommodating up to 100 contacts. These connectors mate exclusively with other Double Density D connectors. A wide range of accessories can be used, including junction shells, potting cups, switching shells, guide pin plates, and dust caps.

## The Centi Line - .075" Contact Spacing

1. **Standard D Hardware**  
Including full range of D-Subminiature accessories
2. **One Piece Monoblock Insulator**  
Glass-filled nylon material
3. **Contact Retention**  
Thermoplastic internal shoulder snaps into a locking groove in the contact. Retention Force: 8 lbs. min. initially, 4 lbs. min. after 10 cycles.
4. **Twist Pin Contacts**  
Seven outer wiping surfaces assure electrical continuity even under severe shock and vibration
5. **Positive Contact Alignment**  
Flexible pin is recessed in insulator cavity and rugged socket is exposed
6. **Guide-In Keys And Keyways**  
Assure alignment during mating and prevent scooping



### Specifications

Weight				
Part Number by shell size	Weight (in gr.) Less with Contacts		Weight (in oz.) Less with Contacts	
2DE19P	4.05	5.02	.142	.177
2DE19S	3.75	5.17	.133	.182
2DA31P	5.20	6.78	.183	.239
2DA31S	4.90	7.22	0.73	.255
2DB52P	8.75	11.40	.308	.402
2DB52S	7.15	11.05	.252	.390
2DC79P	11.70	15.73	.413	.555
2DC79S	9.70	15.62	.342	.551
2DD100P	12.85	17.95	.453	.633
2DD100S	10.95	18.45	.386	.651

Materials and Finishes	
*Shell	Steel, cadmium plated with yellow chromate supplementary coating
Mounting Hardware and Floats	Stainless steel
Insulator	Glass-filled nylon
Contacts	Copper alloy, gold plate
Alternate finish, Modification Code	A106 Gold over brass A156 Gold over brass A197 Tin/Lead over steel

\* Brass non-magnetic also available

Mechanical Features	
Sizes	Five shell sizes: E, A, B, C, and D
Coupling	Friction or jackscrew
Polarization	Keystone-shaped shells
Contact Spacing	.075 (1.91)
Contact Termination	Crimp snap-in

### How to Order



RoHS Compliance Series \_\_\_\_\_

Series \_\_\_\_\_

Shell Size \_\_\_\_\_

Float Mounts \_\_\_\_\_

Contact Arrangement \_\_\_\_\_

Contact Type \_\_\_\_\_

Termination \_\_\_\_\_

Modification \_\_\_\_\_

#### Series

2D - Double Density D

#### Shell Size

E, A, B, C and D

#### Float Mounts

Omit if not required

#### Contact Arrangement

19, 31, 52, 79 and 100

#### Contact Type\*

P - Pin

S - Socket

\* Accommodates AWG #26 thru #22

#### Termination

BR - 90° right angle PCB mounting

(For BR Series use "P" to designate jackpost)

#### Modification

F171 - Jackpost assembly

F172 - Standard jackscrew

F173 - Low profile jackscrew

For other modifications consult factory

Dimensions shown in mm

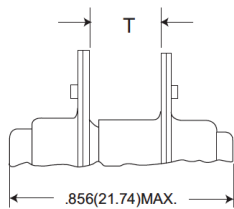
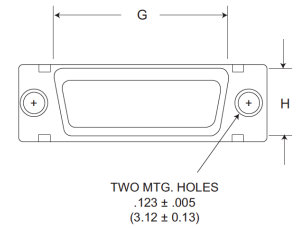
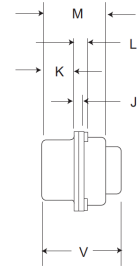
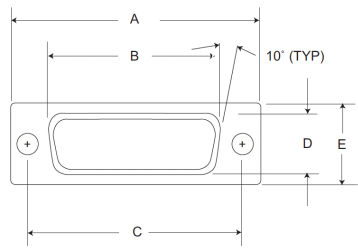
Specifications and dimensions subject to change

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# Cannon 2D Series

## The Centi Line - .075" Contact Spacing

### Standard Shell



Part Number by shell size	T
	+ .020 (0.51) - .000 (0.00)
2DE19P	.250 (6.35)
2DE19S	.250 (6.35)
2DA31P	.250 (6.35)
2DA31S	.250 (6.35)
2DB52P	.236 (5.99)

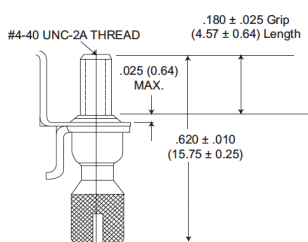
Part Number by shell size	T
	+ .020 (0.51) - .000 (0.00)
2DB52S	.236 (5.99)
2DC79P	.236 (5.99)
2DC79S	.236 (5.99)
2DD100P	.236 (5.99)
2DD100S	.236 (5.99)

### Float Mount

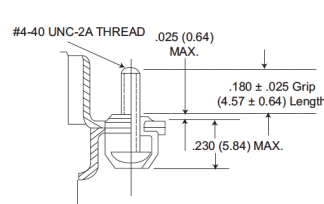
Part Number by shell size	T	B	C	D	E	G	H	J	K	L	M	N	V
	± .015 (0.38)	± .010 (0.25)	± .010 (0.25)	± .010 (0.25)	± .015 (0.38)	± .010 (0.25)	± .010 (0.25)	± .010 (0.25)	± .010 (0.25)	± .010 (0.25)	± .010 (0.25)	± .010 (0.25)	Max.
2DE19P	1.213 (30.81)	.697 (17.70)	.984 (24.99)	.360 (9.14)	.494 (12.55)	.759 (19.28)	.422 (10.72)	.036 (.914)	.236 (5.99)	.055 (1.40)	.422 (10.72)	.120 (3.05)	.555 (14.10)
2DE19S	1.213 (30.81)	.640 (16.26)	.984 (24.99)	.308 (7.82)	.494 (12.55)	.759 (19.28)	.422 (10.72)	.032 (213)	.243 (6.17)	.047 (1.19)	.429 (10.90)	.120 (3.05)	.555 (14.10)
2DA31P	1.541 (39.14)	1.025 (26.03)	1.312 (33.32)	.360 (9.14)	.494 (12.55)	1.083 (27.51)	.422 (10.72)	.036 (.914)	.236 (5.99)	.055 (1.40)	.422 (10.72)	.120 (3.05)	.555 (14.10)
2DA31S	1.541 (39.14)	.968 (24.58)	1.312 (33.32)	.308 (7.82)	.494 (12.55)	1.083 (27.51)	.422 (10.72)	.032 (213)	.243 (6.17)	.047 (1.19)	.429 (10.90)	.120 (3.05)	.555 (14.10)
2DB52P	2.088 (53.03)	1.583 (40.21)	1.852 (47.04)	.378 (9.60)	.494 (12.55)	1.625 (41.27)	.422 (10.72)	.036 (.914)	.231 (5.87)	.055 (1.40)	.426 (10.82)	.129 (3.28)	.555 (14.10)
2DB52S	2.088 (53.03)	1.508 (38.30)	1.852 (47.04)	.308 (7.82)	.494 (12.55)	1.625 (41.27)	.422 (10.72)	.032 (213)	.243 (6.17)	.047 (1.19)	.429 (10.90)	.120 (3.05)	.555 (14.10)
2DC79P	2.729 (69.31)	2.231 (56.67)	2.500 (63.50)	.378 (9.60)	.494 (12.55)	2.272 (57.71)	.422 (10.72)	.036 (.914)	.231 (5.87)	.055 (1.40)	.426 (10.82)	.129 (3.28)	.555 (14.10)
2DC79S	2.729 (69.31)	2.156 (54.76)	2.500 (63.50)	.308 (7.82)	.494 (12.55)	2.272 (57.71)	.422 (10.72)	.032 (213)	.243 (6.17)	.047 (1.19)	.429 (10.90)	.120 (3.05)	.555 (14.10)
2DD100P	2.635 (66.92)	2.127 (54.02)	2.406 (61.11)	.484 (12.29)	.605 (15.37)	2.178 (55.32)	.534 (13.56)	.036 (.914)	.231 (5.87)	.055 (1.40)	.426 (10.82)	.129 (3.28)	.555 (14.10)
2DD100S	2.635 (66.92)	2.062 (52.37)	2.406 (61.11)	.420 (10.67)	.605 (15.37)	2.178 (55.32)	.534 (13.56)	.032 (213)	.243 (6.17)	.047 (1.19)	.429 (10.90)	.120 (3.05)	.555 (14.10)

For shell with float mounts, add letter F after shell size, e.g., 2DEF19P.

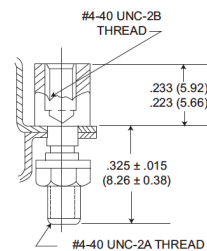
### JackscREW/Jackpost Assembly



Standard (F172) Jackscrew (factory installed)



Low Profile (F173) Jackscrew (factory installed)



Jackpost (F171) Front Panel Connector Mounting Only



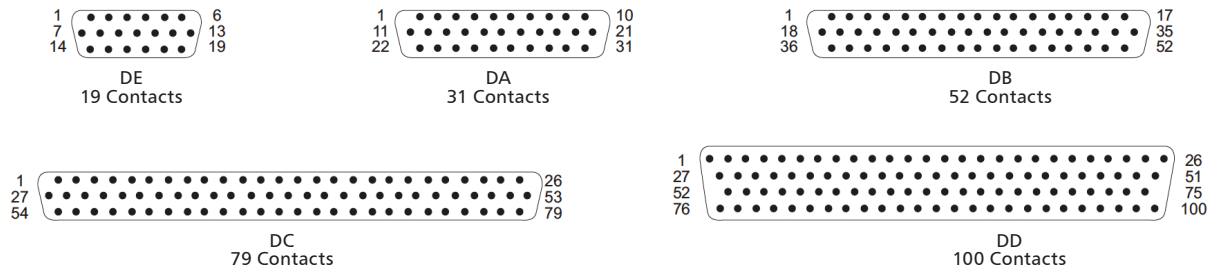
Dimensions shown in mm  
Specifications and dimensions subject to change

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## The Centi Line - .075" Contact Spacing

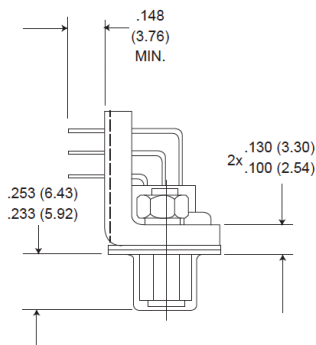
### Contact Arrangements

All views are pin front face. Use reverse order for socket side.



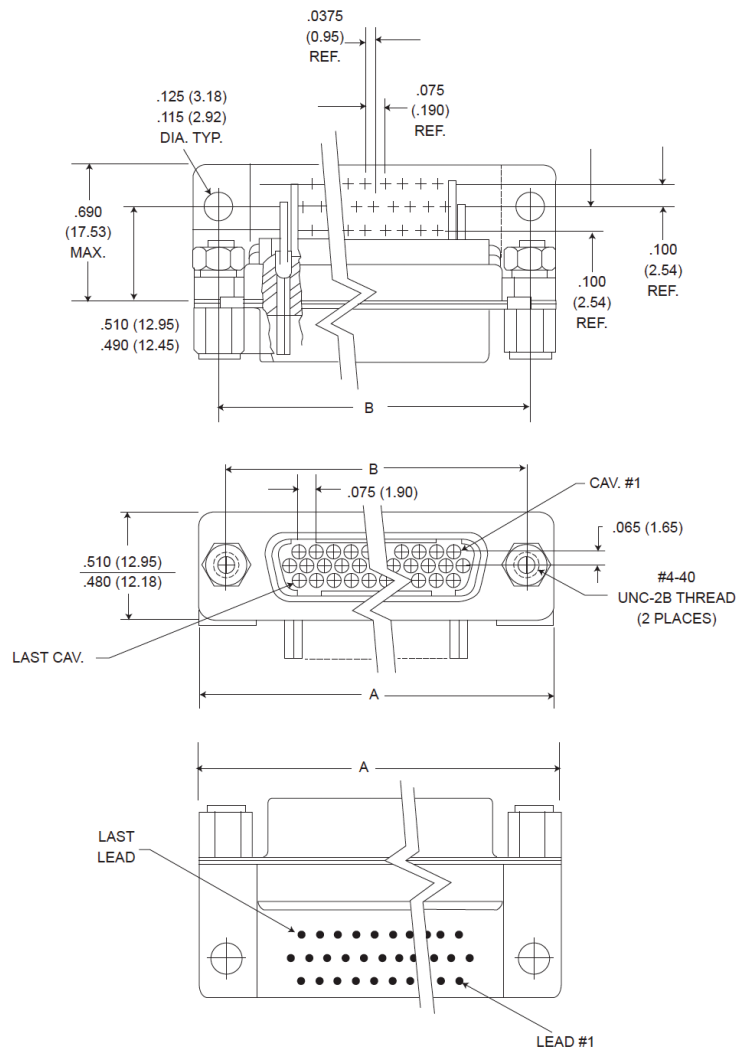
Cavity identification numbers are shown for reference only and do not appear on insulator front face. However they do appear on rear of insulator.

### 90° PCB Mounting - 3 Row



PCB Termination Leads  
(all contact arrangements)  
.024 (6.10) to .028 (7.11).

Suggested finished PC hole  
Size .033 (8.38) + .003 (0.08)

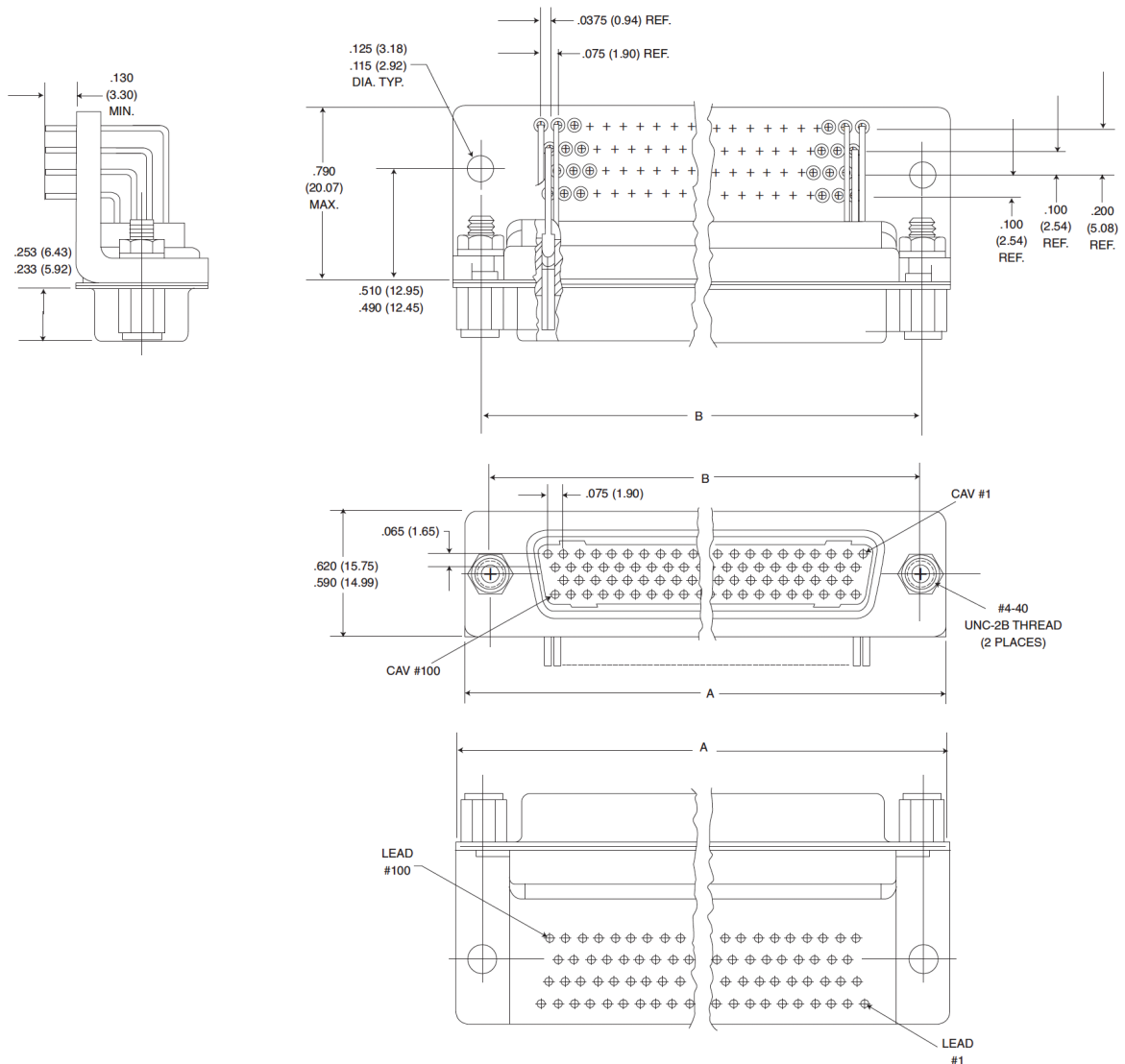


	A	B	C
Part Number by shell size	± .015 (0.38)	± .010 (0.25)	Max.
2DE19SBRP	1.215 (30.86)	.984 (24.99)	.690 (17.53)
2DA31SBRP	1.540 (39.12)	1.312 (33.32)	.690 (17.53)
2DB52SBRP	2.090 (53.09)	1.852 (47.04)	.690 (17.53)
2DC79SBRP	2.730 (69.34)	2.500 (63.50)	.690 (17.53)

# Cannon 2D Series

## The Centi Line - .075" Contact Spacing

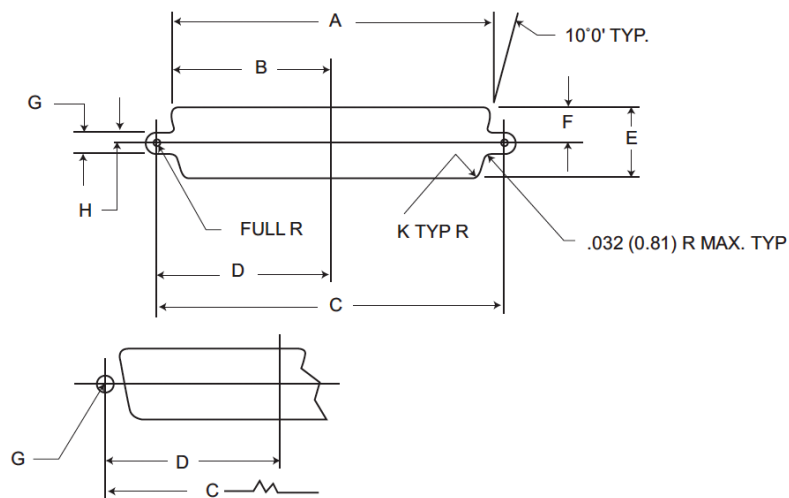
### 90° PCB Mounting - 4 Row



	A	B	C
Part Number by shell size	± .015 (0.38)	± .010 (0.25)	Max.
2DD100SBRP	2.635 (66.93)	2.406 (61.11)	.690 (17.53)

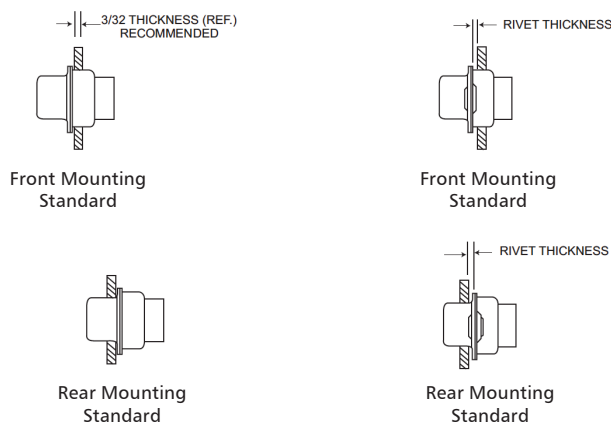
## The Centi Line - .075" Contact Spacing

### 90° PCB Mounting - 4 Row



Conn.	Mtg. Method	A	B	C	D	E	F	G	H	K
		± .005 (0.13)	± .005 (0.13)	± .005 (0.13)	± .005 (0.13)	± .005 (0.13)	± .005 (0.13)	± .002 (0.05)	± .002 (0.05)	± .002 (0.05)
2DE	Front	.874 (22.20)	.437 (11.10)	.984 (24.99)	.492 (12.50)	.513 (13.03)	.257 (6.53)	.120 (3.05)	.120 (3.05)	.083 (2.11)
	Rear	.806 (20.47)	.403 (10.24)	.984 (24.99)	.492 (12.50)	.449 (11.40)	.225 (5.71)	.120 (3.05)	.120 (3.05)	.132 (3.35)
2DA	Front	1.202 (30.53)	.601 (15.26)	1.312 (33.32)	.656 (16.66)	.513 (13.03)	.257 (6.53)	.120 (3.05)	.120 (3.05)	.083 (2.11)
	Rear	1.134 (28.80)	.567 (14.40)	1.312 (33.32)	.656 (16.66)	.449 (11.40)	.225 (5.71)	.120 (3.05)	.120 (3.05)	.132 (3.35)
2DB	Front	1.743 (44.27)	.872 (22.15)	1.852 (47.04)	.926 (23.52)	.513 (13.03)	.257 (6.53)	.120 (3.05)	.120 (3.05)	.083 (2.11)
	Rear	1.674 (42.52)	.837 (21.26)	1.852 (47.04)	.926 (23.52)	.449 (11.40)	.225 (5.71)	.120 (3.05)	.120 (3.05)	.132 (3.35)
2DC	Front	2.391 (60.73)	1.196 (30.38)	2.500 (63.50)	1.250 (31.75)	.513 (13.03)	.257 (6.53)	.120 (3.05)	.120 (3.05)	.083 (2.11)
	Rear	2.326 (59.08)	1.163 (29.54)	2.500 (63.50)	1.250 (31.75)	.449 (11.40)	.225 (5.71)	.120 (3.05)	.120 (3.05)	.132 (3.35)
2DD	Front	2.297 (58.34)	1.149 (29.18)	2.406 (61.11)	1.203 (30.56)	.623 (15.82)	.312 (7.92)	.120 (3.05)	.120 (3.05)	.083 (2.11)
	Rear	2.218 (56.34)	1.109 (28.17)	2.406 (61.11)	1.203 (30.56)	.555 (14.10)	.278 (7.06)	.120 (3.05)	.120 (3.05)	.132 (3.35)

### 90° PCB Mounting - 3 Row



Dimensions shown in mm  
Specifications and dimensions subject to change

# Cannon 2D Series

## The Centi Line - .075" Contact Spacing 2D

A resilient internal shoulder retains the contacts in the insulator housing. The front of the contact is chamfered to prevent damage to the internal shoulder as the contact is pushed into position.

Part Number				
Pin	Socket	Type	Pin	Socket
031-9540-000	030-9542-001	Standard 30 $\mu$ in. plating		
031-9540-004	030-9542-002	50 $\mu$ in. plating		
031-9540-005	030-9542-004	With inspection hole; 50 $\mu$ in. plating		
N/A	030-9542-011	P.C. tail .026 dia. x .083 lg. Soc.		
*031-9540-013	030-9542-012	P.C. tail .020 dia. x .183 lg. Soc. .183 lg. Pin		
031-9540-016	030-9542-014	Long crimp barrel **		
31-9540-022 ***	030-9556-000 ***	Small crimp bore for AWG #32 & 30		
31-9540-007	030-9542-022	Small crimp bore for AWG #28 & 30		
*031-9540-015	030-9542-015	P.C. tail .020 dia. x .232 lg. Soc. .255 lg. Pin		
*031-9540-019	030-9542-016	P.C. tail .018 dia. x .444 lg. Soc. .445 lg. Pin 50 $\mu$ in. plating		

NOTE: Plating, except as noted, is 30 micro-inch gold.

\* Consult factory for any tail size or plating requirements.

\*\* Special crimp locator required. Part number: 995-0001-714. (L3198-CL-PSL)

\*\*\* Use special insertion tip (323-9510-016 &-017).

### P.C. Tail Contacts

Subtract .064 (1.63) + $\pm$ .010 (.25) from pigtail length when used in 2D pin insulator for potting well of connector assembly.

Subtract .081 (2.08) + $\pm$ .010 (.25) from pigtail length when used in 2D socket insulator for potting well of connector assembly.



## 2D Crimp and Assembly Tools

### Insertion Tools for Standard Contact

	Tool	Locators	
		Pin	Socket
Description	M22520/2-01	K154-1	K154-1
Part Number	995-0001-584	995-0001-338	995-0001-353



M22520/2-01

### Insertion Tools for Standard Contact

AWG Size*	Kit (handle and tip)	Tip Part Number	Handle Part Number
22	CIT-PS-CTA-22	323-9510-001	204-9500-000
24	CIT-PS-CTA-24	323-9510-002	204-9500-000
26	CIT-PS-CTA-26	323-9510-003	204-9500-000
28	CIT-PS-CTA-28	323-9510-004	204-9500-000
30/P.C. Tail	CIT-PS-CTA-30	323-9510-005	204-9500-000



CIET-CTA Handle



Insertion Tips

\* Based on wire size per MIL-W-16878 with Type E insulation, use smaller tool for wire with thin insulation, larger tool for wire having thick insulation.  
 \*\* The 5 insertion tips (part numbers 323-9510-001 thru -005), plus handle, and the pin and socket extraction tips maybe ordered as a SINGLE KIT by specifying the part number CIET-CTA-2. [Part number: 070143-0002].

### Insertion Tools for Long Crimp Barrel Contacts

AWG Size*	Tip Part Number *** Pin Contact	Tip Part Number *** Socket Contact	Handle Part Number ***
22	323-9510-008	323-9510-012	204-9500-000
24	323-9510-009	323-9510-013	204-9500-000
26	323-9510-010	323-9510-014	204-9500-000



CTA-AB  
Assembly Holding Block  
Part Number: 328-9508-000

\*\*\* To order the SINGLE KIT for the long crimp barrel contact (tip part numbers 323-9510-008 thru -014, handle and pin and socket extraction tips) please specify CIET-CTA-3.

### Extraction Tools

Contact	Description	Kit (handle and tip) Part Number	Tip Part Number	Handle Part Number
CENTIPIN	CET-P-CTA-2	070112-0002	324-9502-000	204-9500-000
CENTISOCKET	CET-S-CTA-1	070113-0001	324-9501-000	204-9500-000



Socket Extraction Tip



Pin Extraction Tip

# Cannon 2D Series

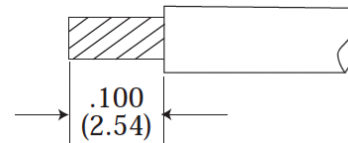
## 2D Connectors Assembly Instructions

The Double Density D Connectors are highly reliable and simple connectors to use. There are a few helpful suggestions that will assure complete satisfaction when followed:

1. The following instructions should be followed.
2. The proper crimp tool and locator (if required) must be used. These tools have been designed for use with this product. Substitutions of crimping equipment may result in connector failure at the assembly operation.
3. After crimping a contact to a lead it is of vital importance that the proper tool be used to assure seating the contact in the insulator in the proper position. Any substitution of insertion tools may result in over or under insertion of the contact which may damage the retention system of the insulator.
4. The female (socket) side of the connector has been designed with a controlled float to allow for ease of mating. To avoid reducing this float or causing a splaying of the contacts, any unnecessary strain caused by clamping the leads too close to the rear of the connector should be avoided.

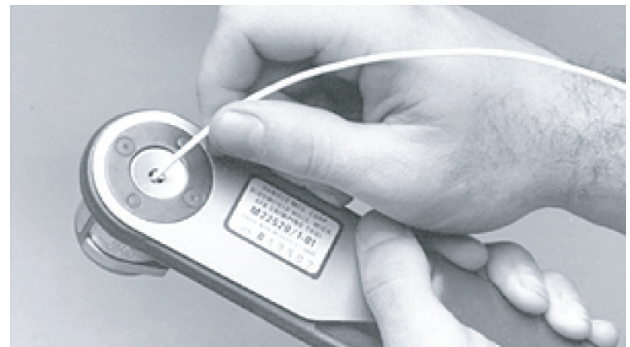
Use of recommended tooling together with proper assembly techniques will pay dividends in reliability and reduced costs.

### Wire Stripping



Cut the wires to length required and strip .100" of insulation from the end to be crimped. Check for cut or broken wires and frayed insulation.

### Contact Crimping



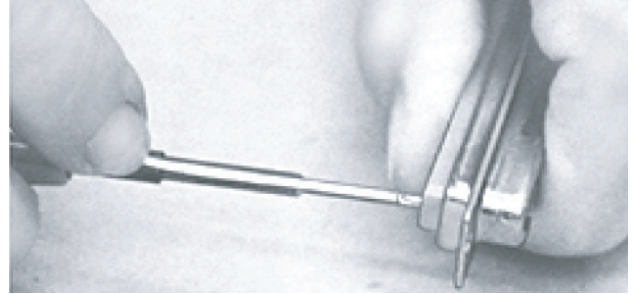
Using the proper crimp tool and locator, insert the contact into the locator. Insert the stripped end of the wire into the contact crimp pot, and crimp the contact to the wire. Squeeze the handles firmly to insure a proper crimp (tool will not release if crimping is incomplete).

NOTE: Contact stop must be changed in tool locator when crimping pin and socket contacts.

## Contact Insertion

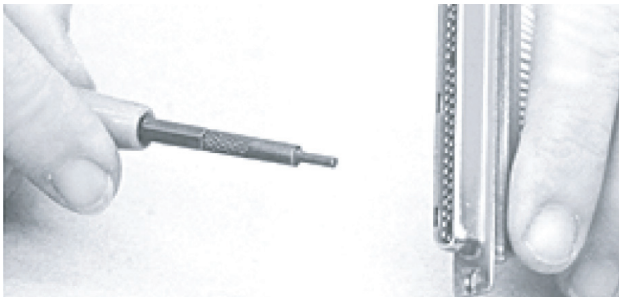


1. Place the proper insertion tip in the insertion/-extraction handle and put the tip over the wire as shown. The tool tip will butt up against the crimp pot. Connector must be firmly supported during both insertion and extraction operations.

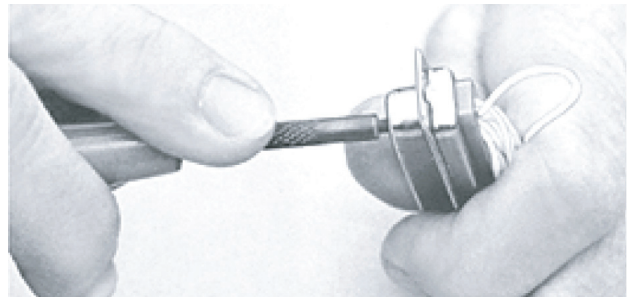


2. Using a firm, steady pressure, push the contact into the cavity until the resilient internal shoulder in the insulator snaps into the locking groove in the contact. The shoulder of the tool tip bottoms against the rear of the insulator, preventing over-insertion. Repeat for balance of contacts.

## Contact Extraction



1. For contact extraction, remove the insertion tool tip and replace it with the proper extraction tool tip. (The socket tip will fit into the socket, and the pin tip will slide over the pin bundle). Insert the tool tip into the contact cavity: (the pin tip will butt up against the shoulder of the pin contact, and the socket tip will bottom out in the socket contact.)



2. Apply a firm, steady pressure until the contact is released from the internal shoulder in the insulator. The shoulder of the tool tip bottom against the insulator face to prevent damage to the internal shoulder. Remove the tool tip and pull the contact from the rear of the connector. Repeat for the balance of contacts to be removed.

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