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DL / DLM / DLD

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ZERO INSERTION FORCE

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CONNECTORS

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Cannon



**ITT Industries**  
*Engineered for life*

1999

The Cannon Zero Insertion Force (ZIF) series of connectors provide versatile low-cost, high performance, multiple-wire power and signal connectors. This series can be mated/unmated in less than two seconds even with as many as 2,496 contacts. The long life and rapid mating are achieved through the ZIF design, where contacts in the plug and receptacle design do not touch each other while the connector halves are being engaged.

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On the Cover ◀

DL1, DLM6, DLM3, DL5, DLD2  
(with and without contacts)

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DL



**DL1/2/3/5**

- Plastic Body.
- 60, 96, 156, or 260 Contact Cavities.
- Single Hand Actuation.
- Crimp or Square Post Contacts.

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DLM



**DLM1/2/3/5/6**

- Metal Body.
- EMI/RFI Shielding.
- 60, 96, 156, 260, or 360 Contact Cavities.
- Single Hand Actuation.
- Crimp, Square Post, or PC/RC Contacts.

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DLD Drawer



**DLD1/2**

- Drawer Style.
- Plastic Body.
- 96 or 156 Contact Cavities.
- Sliding Actuation.
- Crimp or Square Post Contacts.

| Contents     | Page  |
|--------------|-------|
| Introduction | 6     |
| DLD1-156     | 19-20 |
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DL4



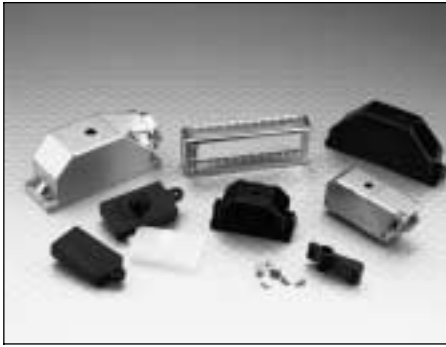
**DL4**

- Panel Mount.
- Metal Frame.
- 624, 1248, or 2496 Contact Cavities.
- Lever Actuation.
- Crimp or Square Post Contacts.

| Contents     | Page  |
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| Introduction | 7     |
| DL4-624      | 33-34 |
| DL4-1248     | *     |
| DL4-2496     | *     |

\* Contact Cannon for details

Accessories



See Pages 43-49

**Accessories**

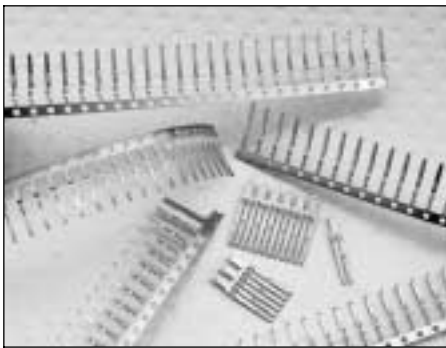
- Cannon offers a large selection of accessories to meet a variety of application requirements.
- Allows customization using standard components.

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Contacts



See Pages 50-53

**Contacts**

- Crimp and Buss contacts are available loose or reeled.
- Accommodates wire sizes #42-#18 AWG.
- Customer installed. Field installable/removeable.

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Tools and Assembly



See Pages 54-59

**Tools and Assembly**

- Cannon offers hand crimp tooling for low volume applications.
- Contact extraction tools.
- Automatic tooling can be leased for large volume applications.

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| Assembly Instructions   | 56-58 |
| Lease Automatic Tooling | 59    |

Series Selection — Available Size in Series by Number of Contacts

| Number of Contacts | Connector Series |          |          |
|--------------------|------------------|----------|----------|
|                    | DL               | DLD      | DLM      |
| 60                 | DL3-60           | —        | DLM3-60  |
| 96                 | DL2-96           | DLD2-96  | DLM2-96  |
| 156                | DL1-156          | DLD1-156 | DLM1-156 |
| 260                | DL5-260          | —        | DLM5-260 |
| 360                | —                | —        | DLM6-360 |
| 624                | DL4-624          | —        | —        |
| 1248               | DL4-1248*        | —        | —        |
| 2496               | DL4-2496*        | —        | —        |

\* For DL4-1248 and DL4-2496 versions contact Cannon for details.

## DL Product Introduction

The Cannon DL Series of Zero Insertion Force (ZIF) connectors fill the need in the medical, commercial/industrial, computer and peripheral equipment market places for low-cost, high performance multiple-wire power and signal connectors.

DL connectors feature: a **minimum** rated life of 10,000 complete mating and unmating cycles with no performance loss; can be mated and unmated in less than two seconds even with as many as 2496 contacts; and they cost less (often as much as 25% less) per mated line than singular high-density rack-and-panel connectors.

Simple. Effective. Reliable. Durable.

Combining their special design with commercial-grade materials and low cost crimp, PCB and wrappable hermaphroditic contacts, that may be hand or machine terminated, makes the DL Series of ZIF connectors the finest low-cost-per-mated-line I/O connectors available today.



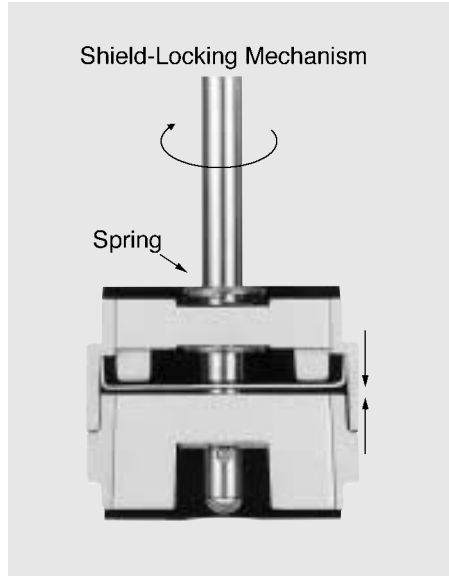
## Materials and Finishes

|                                |  |
|--------------------------------|--|
| DL1/2/3 Housing                | Glass filled thermoplastic, UL 94V-1 rated, Color: Black   |
| DL5 Housing                    | Glass filled thermoplastic, UL 94V-0 rated, Color: Black   |
| Crimp Contact*                 | Copper alloy, 50 $\mu$ inches gold over 50 $\mu$ inches nickel in mating area, gold flash on balance |
|                                | Copper alloy, 20 $\mu$ inches gold over 50 $\mu$ inches nickel in mating area, tin lead on balance   |
| Square Post Contact            | Copper alloy, 50 $\mu$ inches gold over 50 $\mu$ inches nickel in mating area, gold flash on balance |
|                                | Copper alloy, 20 $\mu$ inches gold over 50 $\mu$ inches nickel in mating area, gold flash on balance |
| Actuating Camshaft             | Stainless steel, Passivated  |
| Insulator Retainer (Plug Only) | Stainless steel, Passivated  |

\*Order crimp contacts separately, see pages 52-53.

DLM Product Introduction

Cannon has expanded the DL-ZIF Series offering with the addition of the DLM (Metal Shell) versions. The DLM uses a rugged nickel plated aluminum housing. The Shield-Locking Mechanism feature (see illustration below) ensures uniform mating pressure around the perimeter of the mated connector to create an EMI/RFI shield. Facilitates compliance of equipment to CE EMC directives.



The DLM1/2/3 connectors are an extension of the DL line, similar to the current DLM5 and DLM6 products. The DLM series connectors are interchangeable to the DL (Plastic) versions for backwards/forwards compatibility.

The DLM Series are offered with the 3,18(.125) long 0,64(.025) square post 50μ inch gold contacts, as well as the 4,50(.177) long Ø 0,50(.020) PC/RC round tail contacts.

Materials and Finishes

|                                |  |
|--------------------------------|--|
| DLM1/2/3/5/6 Housing           | Aluminum alloy, nickel plated  |
| DLM1/2/3/5/6 Insulator         | Glass filled thermoplastic, UL 94V-0 rated, Color: Black                                   |
| Crimp Contact*                 | Copper alloy, 50μ inches gold over 50μ inches nickel in mating area, gold flash on balance |
|                                | Copper alloy, 20μ inches gold over 50μ inches nickel in mating area, tin lead on balance   |
| Square Post Contact            | Copper alloy, 50μ inches gold over 50μ inches nickel in mating area, gold flash on balance |
|                                | Copper alloy, 20μ inches gold over 50μ inches nickel in mating area, gold flash on balance |
| PC/RC Contact                  | Copper alloy, 20μ inches gold over nickel in mating area, tin lead on balance              |
| Actuating Camshaft             | Stainless steel, Passivated  |
| Insulator Retainer (Plug Only) | Stainless steel, Passivated  |

\* Order crimp contacts separately, see pages 52-53.

DLD Drawer Product Introduction

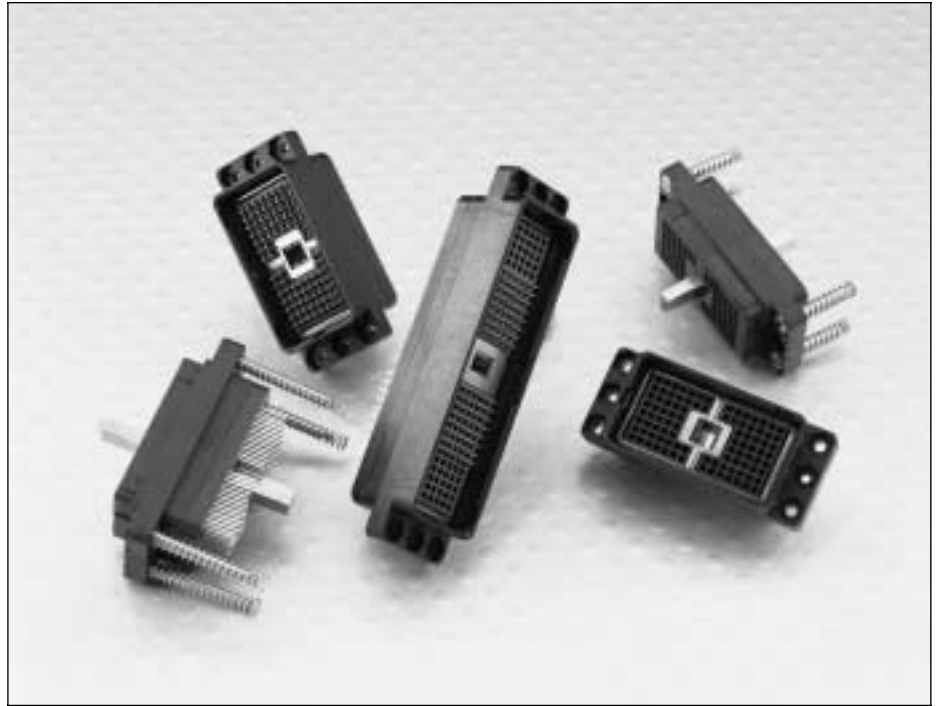
**C**annon has combined Zero Insertion Force (ZIF) technology with remote electrical engagement. The DLD Drawer allows the movement of a drawer or panel to effortlessly mate/unmate the connector halves. As an example: electrical sub-systems can be easily removed for service, interchangeability, or portability.

By specifying DLD Drawer interconnect systems, your packaging design is simplified as the need for expensive, complicated, and space-consuming manual actuation mechanisms is eliminated. Tight space requirements no longer restrict your use of ZIF connectors.

The contacts in the DLD Drawer product line do not touch each other while the connector halves are mating. This unique ZIF technology, introduced in the Cannon DL series in the early 1970's, has time-tested proven reliability and durability.

The DLD Drawer's remote mating feature utilizes the axial thrust of a cam to move and mate the contacts. At the end of the cam travel, the cam ramps on a flat surface thereby negating any uncoupling forces.

This rack-and-panel connector is available with crimp or square post contacts, allowing cable, PCB, or flat-flex termination.



Materials and Finishes

|   |  |
|---|--|
| DLD1/2 Housing                          | Glass Filled thermoplastic, UL 94V-1 rated, Color: Black                                   |
| Crimp Contact*                          | Copper alloy, 50μ inches gold over 50μ inches nickel in mating area, gold flash on balance |
|   | Copper alloy, 20μ inches gold over 50μ inches nickel in mating area, tin lead on balance   |
| Square Post Contact                     | Copper alloy, 50μ inches gold over 50μ inches nickel in mating area, gold flash on balance |
|   | Copper alloy, 20μ inches gold over 50μ inches nickel in mating area, gold flash on balance |
| Insulator Retainer (Plug Only)          | Stainless steel, Passivated  |
| Actuating Camshaft (Receptacle Only)    | Stainless steel  |
| Spring Mounting Screw (Receptacle Only) | Stainless steel, Passivated  |
| Compression Spring (Receptacle Only)    | Music wire, zinc plated  |

\* Order crimp contacts separately, see pages 52-53.

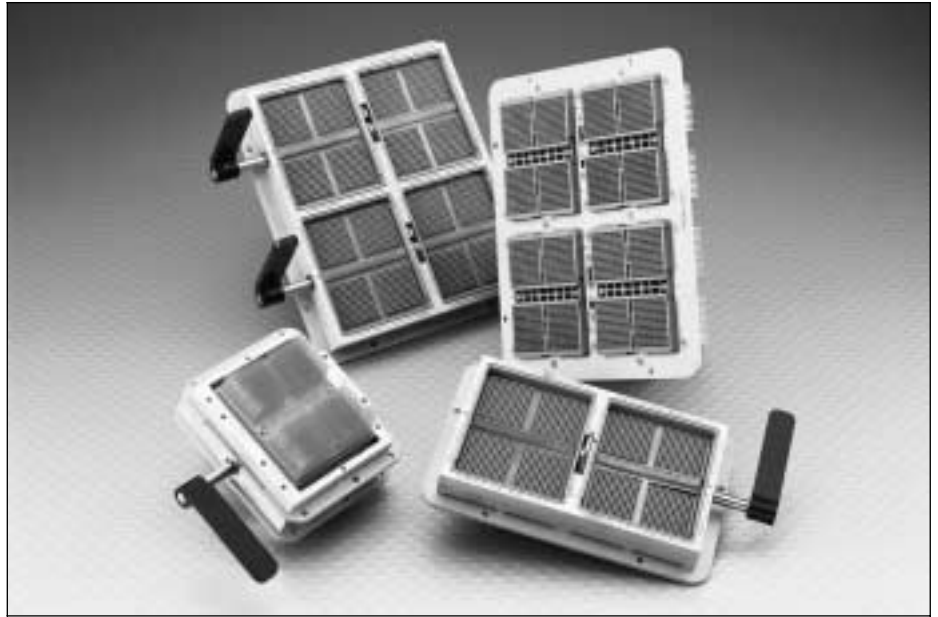
DL4 Product Introduction

The Cannon DL4 Series of Zero Insertion Force (ZIF) connectors fill the need in the commercial/industrial, aerospace/military, computer and peripheral equipment marketplaces for low-cost, high performance multiple wire power and signal connectors. The DL4 Series is a panel mounted connector with easy actuating lever from the side.

DL connectors feature: a **minimum** rated life of 20,000 complete mating and unmating cycles with no performance loss; can be mated and unmated in less than two seconds even with as many as 2496 contacts; and they cost less (often as much as 25% less) per mated line than singular high-density rack-and-panel connectors.

Simple. Effective. Reliable. Durable.

Combining their special design with commercial-grade materials and low cost crimp, PCB and wrappable hermaphroditic contacts, that may be hand or machine terminated, makes the DL Series of ZIF connectors the finest low-cost-per-mated-line I/O connectors available today.



Materials and Finishes

|                                |  |
|--------------------------------|--|
| DL4 Insulator                  | Glass filled thermoplastic, UL 94V-1 rated, Color: Gray                                    |
| DL4 Housing Frame              | Aluminum alloy, cadmium plated   |
| DL4 Mounting Plate             | Aluminum alloy, clear anodized   |
| Crimp Contact*                 | Copper alloy, 50μ inches gold over 50μ inches nickel in mating area, gold flash on balance |
|                                | Copper alloy, 20μ inches gold over 50μ inches nickel in mating area, tin lead on balance   |
| Square Post Contact            | Copper alloy, 50μ inches gold over 50μ inches nickel in mating area, gold flash on balance |
|                                | Copper alloy, 20μ inches gold over 50μ inches nickel in mating area, gold flash on balance |
| Actuating Camshaft             | Stainless steel, Passivated  |
| Insulator Retainer (Plug Only) | Stainless steel, Passivated  |

\*Order crimp contacts separately, see pages 52-53.



## DL/DLM Product Features

- High pin count: 60, 96, 156, 260, 360, 624, 1248\* or 2496\* contact positions.
- Variety of contacts:
  - Crimp
  - Square Post
  - Wrap Post
  - Buss
  - PC/RC
- Metal or plastic housing.
- Wide range of accessories.
- Easy actuation by screwdriver, socket wrench (DL1/2/3 only), allen wrench or actuating handle (see accessories page 47).

The long life and rapid mating are achieved through the use of our Zero Insertion Force design. Contacts in the plug and receptacle do not touch each other while the connector halves are being engaged.

### Zero Insertion Force Camming Instructions



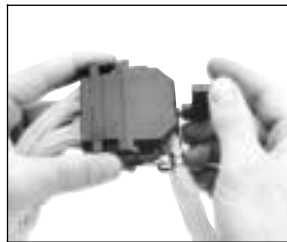
### It's as easy as 1, 2, 3...

- Step 1.** The plug is placed over the receptacle.  
**Step 2.** A "quarter turn" of an actuating shaft mates all the contacts at once.  
**Step 3.** The "same quarter" turn also physically locks the connector halves together.

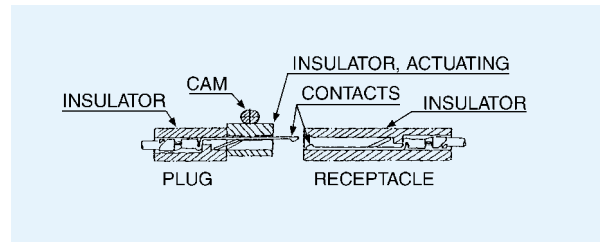
Connector engagement force is zero, and the only wear on the contacts occurs as they are pressed together and lightly wiped past each other during the camming and locking operation.

\* Contact Cannon for details.

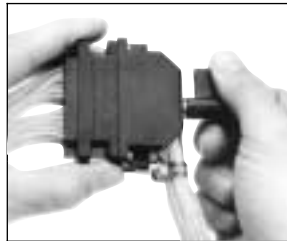
### This is our "DL/DLM" series of connectors.



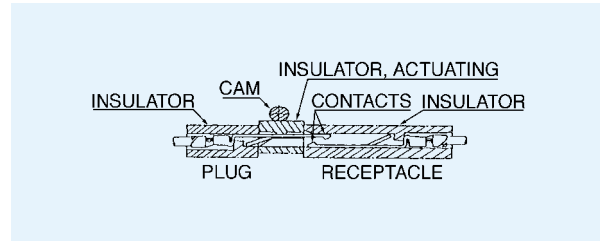
Step 1. Simply place it together.



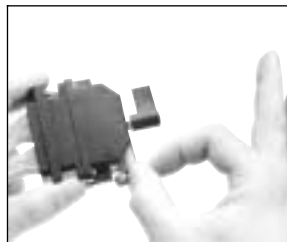
Contacts aligned.



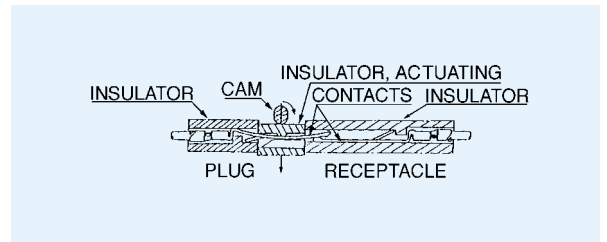
Step 2. Turn the cam a quarter turn.



Contacts engaged.



Step 3. It's locked and mated.



Contacts are mated.

DL/DLM/DLD Applications

**Medical**

- Ultrasound Diagnostic
- Patient Monitoring
- Hospital Equipment

**Test & Instrumentation**

- Avionics
- Automated Test Equipment
- Computer & Peripheral Equipment
- Semiconductor

**Commercial/Industrial Manufacturing**

- Automation
- Robotics
- Electrical Controls

**Entertainment**

- Recording Studio Equipment
- Stage Lighting & Sound
- Broadcasting Equipment

**Telecommunication**

- Systems Interconnect
- Manufacturing Test Equipment
- Switching Systems

**Transportation**

- Locomotive Systems
- Automotive Electronics
- Aircraft Simulators

**Signal and Power Distribution Cable Harness**



For your complete cable harnessing resource, contact Cannon for details.

DL/DLM/DLD Performance Specifications

|                                 |  |
|---------------------------------|--|
| Current Rating                  | 5 A max. - Crimp/Square Post/PCB Contact<br>4 A max. - PC/RC Contact<br>10 A, 20 A, 30 A, 40 A, 50 A, 60 A max. - Buss Contact |
| Dielectric Withstanding Voltage | 1200 VAC RMS - Crimp/Square Post Contact<br>1000 VAC RMS - PC/RC Contact<br>750 VAC RMS - DL4                                  |
| Operating Temperature           | -55°C to 105°C (DL/DLM/DLD)<br>-55°C to 71°C (DL4)   |
| Durability                      | 10,000 Cycles min. (DL/DLM)<br>20,000 Cycles min. (DL4)<br>100,000 Cycles min. (DLD)   |
| Contact Resistance              | 15 mΩ max. - Crimp/Square Post Contact<br>20 mΩ max. - Crimp #32 AWG - #30 AWG Contact<br>30 mΩ max. - PC/RC Contact           |
| Insulation Resistance           | 5000 MΩ min.   |
| Wire Accommodation              | #42 AWG-#18 AWG  |
| Contact Spacing                 | 2,54 (.100) Square Grid  |
| Contact Retention:              | 8 lbs (35,585 N) min.  |

DL/DLM/DLD Mechanical Data

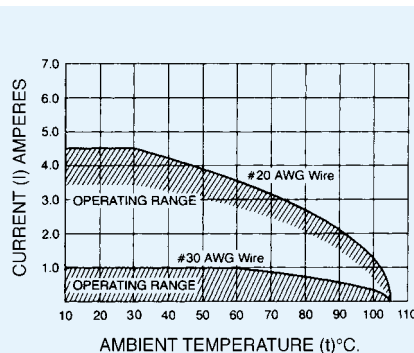
|                     |   |
|---------------------|---|
| Polarization        | Polarizing Posts  |
| Contact Termination | PC Tails, Straight<br>Crimp<br>Square Post<br>Wrap Post<br>Buss |

## DL/DLM/DLD Temperature/Current Rating

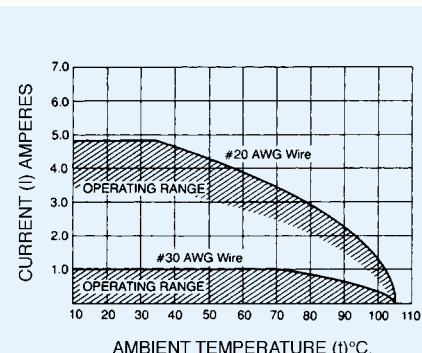
The ambient temperature curves shown represent the rated current carrying capacity of the Cannon DL1/2/3/4, DLM1/2/3 and DLD1/2 electrical connectors, derated to 80% of the values recorded using the methods specified by International Electro-Technical Commission Document 48 (1975).

Current was applied to the total connector (all contacts) in one-half ampere increments and maintained at each current level until thermal stability was achieved. A thermocouple inserted into the "hottest area" of each connector then measured the connector temperature at the same time that an ambient temperature reading was taken. The difference between the two measured values is the heat rise or self-heating created solely by the current flow, and this temperature rise for the current level was deducted from the insulator material rated temperature. These values were then derated to 80% to obtain the curves shown.

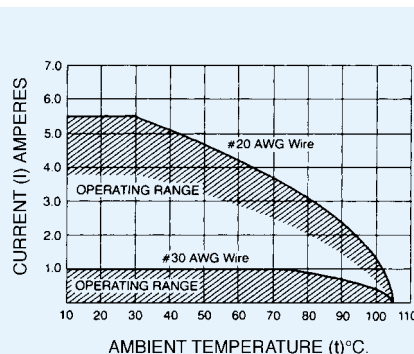
**DL1/DLM1/DLD1**



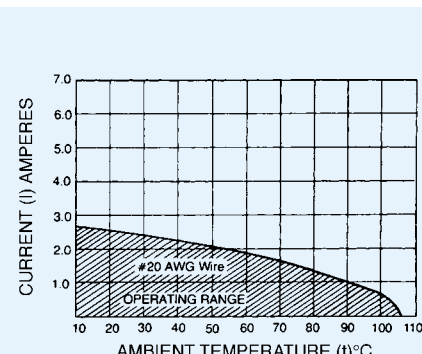
**DL2/DLM2/DLD2**



**DL3/DLM3**



**DL4**



## DL/DLM/DLD Test Data

| Test Description                | MIL Standard             | Test Method                 |
|---------------------------------|--------------------------|-----------------------------|
| Dielectric Withstanding Voltage | MIL-STD-202              | 301                         |
| Contact Resistance              | MIL-STD-202              | 307                         |
| Insulation Resistance           | MIL-STD-202              | 302, Condition B            |
| Humidity (Standard)             | MIL-STD-202              | 103, Condition B            |
| Humidity (DL4)                  | MIL-STD-202              | 106                         |
| Salt Spray                      | MIL-STD-202              | 101, Condition B (48 Hours) |
| Shock                           | MIL-STD-202              | 213, Condition A (50 G's)   |
| Vibration (Standard)            | MIL-STD-202              | 204, Condition C            |
| Vibration (DL4)                 | MIL-STD 167-1/2 Modified | —                           |

## How to Identify the Ideal DL Product for Your Application

- Q. What type of actuation does the application require?
- A. Manual (turn handle cam) – DL / DLM series.  
Blind mating (self cam) – DLD drawer series.
- Q. Does the application require plastic housing?
- A. DL / DLD series.
- Q. Does the application require metal housing?
- A. DLM series (for EMI / RFI shielding).  
DL4 series.
- Q. Does this application involve low currents?
- A. For 100 milliamps or less use 50 $\mu$  inch gold contacts (Flat contacts on Receptacle, and Bump contacts on Plug), see pages 52-53.
- Q. Does this application involve standard currents of more than 100 milliamps?
- A. For more than 100 milliamps, use 20 $\mu$  inch gold contacts (Hermaphroditic Bump contact), see pages 52-53.
- Q. Does this application involve higher than 5 amps?
- A. For higher than 5 amps use Buss contacts, see page 51.
- Q. What type of contact is required for this application?
- A. Select the appropriate part number for the Plug and Receptacle based on the number and type of contacts needed for this application, see pages 12-13.
- Q. Does the application require crimp contacts?
- A. Order appropriate crimp contacts for the wire size used in this application, see pages 50-53.
- 50 $\mu$  inch Gold (low current to 5 A applications) – Most Versatile
  - 20 $\mu$  inch Gold (standard application)
  - Buss contacts (high amps-greater than 5 A)
- Q. Does the application require crimp tooling, with low or high volume?
- A. For low volume of crimps:  
Order loose contacts and order the appropriate hand tool, see page 55.  
For high volume of crimps (50,000 per year or more):  
Order reeled contacts, see page 53, and contact Cannon's Customer-Use-Tooling to lease an automatic crimp machine, see page 59.
- Q. Is an actuating handle needed?
- A. Actuating handles are ordered separately (except DL4 Series), see page 47.
- Q. Does the application require fool-proof mating?
- A. Order the polarizing posts to protect from erroneous mating, see page 48.
- Q. How do I protect the wiring / cabling?
- A. Two Options:
- Plastic Junction Shell with optional second entry cable clamp kit, see page 46.
  - Metal Backshell available, see pages 44-45.
- Q. When the DL5-260 series application requires EMI / RFI shielding?
- A. Order the EMI / RFI metal shielding shells or utilize the new DLM5 series without shield shell, see page 49.
- Q. Does the customer need to protect the contacts when connector is not mated?
- A. Order the appropriate protective cover, see page 47.

## How to Order — Plug

| Contact Style  | Nomenclature   | Part Number  | Size        | Type              | No. of Contacts    | Contact Style     | Page Reference |
|--|--|--------------|-------------|-------------------|--------------------|-------------------|----------------|
| <b>Crimp AWG #42-#18</b><br>(50 $\mu$ inches Gold, BUMP in Plug)<br><br>Note: Crimp Contacts Sold Separately   | DL1-156P   | 110535-0000  | DL1         | Plastic Body      | 156 Pin Connector  | Crimp             | 14             |
|  | DLM1-156P  | 127050-0204  | DLM1        | Metal Body        | 156 Pin Connector  | Crimp             | 16             |
|  | DLD1-156P  | 111496-0000  | DLD1        | Plastic Body      | 156 Pin Connector  | Crimp             | 19             |
|  | DL2-96P  | 110777-0000  | DL2         | Plastic Body      | 96 Pin Connector   | Crimp             | 21             |
|  | DLM2-96P   | 127050-0212  | DLM2        | Metal Body        | 96 Pin Connector   | Crimp             | 23             |
|  | DLD2-96P   | 111922-0000  | DLD2        | Plastic Body      | 96 Pin Connector   | Crimp             | 26             |
|  | DL3-60P  | 110900-0008  | DL3         | Plastic Body      | 60 Pin Connector   | Crimp             | 28             |
|  | DLM3-60P   | 127050-0220  | DLM3        | Metal Body        | 60 Pin Connector   | Crimp             | 30             |
|  | DL4-624P   | 110959-0002  | DL4         | Metal Frame       | 624 Pin Connector  | Crimp             | 33             |
|  | DL4-1248P  | 110959-0003  | DL4         | Metal Frame       | 1248 Pin Connector | Crimp             | **             |
|  | DL4-2496P  | 110959-0004  | DL4         | Metal Frame       | 2496 Pin Connector | Crimp             | **             |
|  | DL5-260P   | 111986-0014  | DL5         | Plastic Body      | 260 Pin Connector  | Crimp             | 35             |
|  | DLM5-260P  | 127050-0109  | DLM5        | Metal Body        | 260 Pin Connector  | Crimp             | 37             |
| DLM6-360P  | 127050-0034  | DLM6         | Metal Body  | 360 Pin Connector | Crimp              | 40                |                |
| <b>Square Post 7,11 (.280) Ext.</b><br>50 $\mu$ inches Gold, BUMP<br>Std. Square Post $\square$ 0,64 (.025)<br>Factory Installed<br>Solder to PCB Through Hole<br>Interconnect Termination | DL1-156PW6A*   | 110535-0030  | DL1         | Plastic Body      | 156 Pin Connector  | Square Post       | 15             |
|  | DLM1-156PW6A*  | 112134-0000  | DLM1        | Metal Body        | 156 Pin Connector  | Square Post       | 17             |
|  | DLD1-156PW6A*  | 111496-0002  | DLD1        | Plastic Body      | 156 Pin Connector  | Square Post       | 20             |
|  | DL2-96PW6A*  | 110777-0025  | DL2         | Plastic Body      | 96 Pin Connector   | Square Post       | 22             |
|  | DLM2-96PW6A*   | 112136-0000  | DLM2        | Metal Body        | 96 Pin Connector   | Square Post       | 24             |
|  | DLD2-96PW6A*   | 111922-0002  | DLD2        | Plastic Body      | 96 Pin Connector   | Square Post       | 27             |
|  | DL3-60PW6A*  | 110900-0014  | DL3         | Plastic Body      | 60 Pin Connector   | Square Post       | 29             |
|  | DLM3-60PW6A*   | 112138-0000  | DLM3        | Metal Body        | 60 Pin Connector   | Square Post       | 31             |
|  | DL4-624PW6A*   | 110959-0042  | DL4         | Metal Frame       | 624 Pin Connector  | Square Post       | 34             |
|  | DL5-260PW6A*   | 111986-0000  | DL5         | Plastic Body      | 260 Pin Connector  | Square Post       | 36             |
|  | DLM5-260PW6A*  | 112086-0000  | DLM5        | Metal Body        | 260 Pin Connector  | Square Post       | 38             |
|  | DLM6-360PW6A*  | 111995-0000  | DLM6        | Metal Body        | 360 Pin Connector  | Square Post       | 41             |
|  | <b>Square Post 3,18 (.125) Ext.</b><br>50 $\mu$ inches Gold, BUMP<br>Std. Square Post $\square$ 0,64 (.025)<br>Factory Installed<br>Solder to PCB Through Hole | DL110535-40  | 110535-0040 | DL1               | Plastic Body       | 156 Pin Connector | Square Post    |
| DLM112134-2  |  | 112134-0002  | DLM1        | Metal Body        | 156 Pin Connector  | Square Post       | 17             |
| DLM112136-2  |  | 112136-0002  | DLM2        | Metal Body        | 96 Pin Connector   | Square Post       | 24             |
| DLM112138-2  |  | 112138-0002  | DLM3        | Metal Body        | 60 Pin Connector   | Square Post       | 31             |
| DLM112086-3  |  | 112086-0003  | DLM5        | Metal Body        | 260 Pin Connector  | Square Post       | 38             |
| DLM111995-7  |  | 111995-0007  | DLM6        | Metal Body        | 360 Pin Connector  | Square Post       | 41             |
| <b>Wrap Post 15,37 (.605) Ext.</b><br>50 $\mu$ inches Gold, BUMP<br>Std. Square Post $\square$ 0,64 (.025)<br>Factory Installed  |  | DL1-156PW4A* | 110535-0025 | DL1               | Plastic Body       | 156 Pin Connector | Wrap Post      |
|  | DLM1-156PW4A*  | 112134-0001  | DLM1        | Metal Body        | 156 Pin Connector  | Wrap Post         | 17             |
|  | DLD1-156PW4A*  | 111496-0001  | DLD1        | Plastic Body      | 156 Pin Connector  | Wrap Post         | 20             |
|  | DL2-96PW4A*  | 110777-0022  | DL2         | Plastic Body      | 96 Pin Connector   | Wrap Post         | 22             |
|  | DLM2-96PW4A*   | 112136-0001  | DLM2        | Metal Body        | 96 Pin Connector   | Wrap Post         | 24             |
|  | DLD2-96PW4A*   | 111922-0001  | DLD2        | Plastic Body      | 96 Pin Connector   | Wrap Post         | 27             |
|  | DL3-60PW4A*  | 110900-0013  | DL3         | Plastic Body      | 60 Pin Connector   | Wrap Post         | 29             |
|  | DLM3-60PW4A*   | 112138-0001  | DLM3        | Metal Body        | 60 Pin Connector   | Wrap Post         | 31             |
|  | DL4-624PW4A*   | 110959-0035  | DL4         | Metal Frame       | 624 Pin Connector  | Wrap Post         | 34             |
|  | DL5-260PW4A*   | 111986-0003  | DL5         | Plastic Body      | 260 Pin Connector  | Wrap Post         | 36             |
|  | DLM5-260PW4A*  | 112086-0002  | DLM5        | Metal Body        | 260 Pin Connector  | Wrap Post         | 38             |
| DLM6-360PW4A*  | 111995-0001  | DLM6         | Metal Body  | 360 Pin Connector | Wrap Post          | 41                |                |
| <b>Square Post 7,11 (.280) Ext.</b><br>20 $\mu$ inches Gold, Hermaphroditic<br>Std. Square Post $\square$ 0,64 (.025)<br>Factory Installed<br>Solder to PCB Through Hole                   | DL1-156PW6   | 110535-0026  | DL1         | Plastic Body      | 156 Pin Connector  | Square Post       | 15             |
| <b>Wrap Post 15,37 (.605) Ext.</b><br>20 $\mu$ inches Gold, Hermaphroditic<br>Std. Square Post $\square$ 0,64 (.025)<br>Factory Installed  | DL1-156PW4   | 110535-0012  | DL1         | Plastic Body      | 156 Pin Connector  | Wrap Post         | 15             |
|  | DL2-96PW4  | 110777-0008  | DL2         | Plastic Body      | 96 Pin Connector   | Wrap Post         | 22             |
|  | DL3-60PW4  | 110900-0006  | DL3         | Plastic Body      | 60 Pin Connector   | Wrap Post         | 29             |
|  | DL4-624PW4   | 110959-0011  | DL4         | Metal Frame       | 624 Pin Connector  | Wrap Post         | 34             |
| <b>PC / RC 4,50 (.177) Ext.</b><br>20 $\mu$ inches Gold - 4 A max.<br>Round Tail - $\varnothing$ 0,50 (.020)<br>Factory Installed<br>Solder to PCB Through Hole                            | DLM1-156PC   | 127050-0207  | DLM1        | Metal Body        | 156 Pin Connector  | PC                | 18             |
|  | DLM2-96PC  | 127050-0215  | DLM2        | Metal Body        | 96 Pin Connector   | PC                | 25             |
|  | DLM3-60PC  | 127050-0223  | DLM3        | Metal Body        | 60 Pin Connector   | PC                | 32             |
|  | DLM5-260PC   | 127050-0111  | DLM5        | Metal Body        | 260 Pin Connector  | PC                | 39             |
|  | DLM6-360PC   | 127050-0097  | DLM6        | Metal Body        | 360 Pin Connector  | PC                | 42             |

Note: 50 $\mu$  inches gold contacts (Bump on plug side, Flat on receptacle side) are mandatory for applications with less than 100 milliamps.

## How to Order — Receptacle

| Contact Style  | Nomenclature  | Part Number  | Size        | Type              | No. of Contacts    | Contact Style     | Page Reference |
|--|---|--------------|-------------|-------------------|--------------------|-------------------|----------------|
| <b>Crimp AWG #42-#18</b><br>(50 $\mu$ inches Gold, FLAT in Receptacle)<br><br>Note: Crimp Contacts Sold Separately   | DL1-156R  | 086-0030-000 | DL1         | Plastic Body      | 156 Pin Connector  | Crimp             | 14             |
|  | DLM1-156R   | 127050-0208  | DLM1        | Metal Body        | 156 Pin Connector  | Crimp             | 16             |
|  | DLD1-156R   | 111497-0004  | DLD1        | Plastic Body      | 156 Pin Connector  | Crimp             | 19             |
|  | DL2-96R   | 086-0031-000 | DL2         | Plastic Body      | 96 Pin Connector   | Crimp             | 21             |
|  | DLM2-96R  | 127050-0216  | DLM2        | Metal Body        | 96 Pin Connector   | Crimp             | 23             |
|  | DLD2-96R  | 111921-0000  | DLD2        | Plastic Body      | 96 Pin Connector   | Crimp             | 26             |
|  | DL3-60R   | 086-0032-000 | DL3         | Plastic Body      | 60 Pin Connector   | Crimp             | 28             |
|  | DLM3-60R  | 127050-0224  | DLM3        | Metal Body        | 60 Pin Connector   | Crimp             | 30             |
|  | DL4-624R  | 110960-0002  | DL4         | Metal Frame       | 624 Pin Connector  | Crimp             | 33             |
|  | DL4-1248R   | 110960-0003  | DL4         | Metal Frame       | 1248 Pin Connector | Crimp             | **             |
|  | DL4-2496R   | 110960-0004  | DL4         | Metal Frame       | 2496 Pin Connector | Crimp             | **             |
|  | DL5-260R  | 086-4501-000 | DL5         | Plastic Body      | 260 Pin Connector  | Crimp             | 35             |
| DLM5-260R  | 127050-0110   | DLM5         | Metal Body  | 260 Pin Connector | Crimp              | 37                |                |
| DLM6-360R  | 127050-0045   | DLM6         | Metal Body  | 360 Pin Connector | Crimp              | 40                |                |
| <b>Square Post 7,11 (.280) Ext.</b><br>50 $\mu$ inches Gold, FLAT<br>Std. Square Post $\square$ 0,64 (.025)<br>Factory Installed<br>Solder to PCB Through Hole<br>Interconnect Termination | DL1-156RW6B*  | 110536-1007  | DL1         | Plastic Body      | 156 Pin Connector  | Square Post       | 15             |
|  | DLM1-156RW6B*   | 112135-0000  | DLM1        | Metal Body        | 156 Pin Connector  | Square Post       | 17             |
|  | DLD1-156RW6B*   | 111497-0010  | DLD1        | Plastic Body      | 156 Pin Connector  | Square Post       | 20             |
|  | DL2-96RW6B*   | 110855-0014  | DL2         | Plastic Body      | 96 Pin Connector   | Square Post       | 22             |
|  | DLM2-96RW6B*  | 112137-0000  | DLM2        | Metal Body        | 96 Pin Connector   | Square Post       | 24             |
|  | DLD2-96RW6B*  | 111921-0002  | DLD2        | Plastic Body      | 96 Pin Connector   | Square Post       | 27             |
|  | DL3-60RW6B*   | 110901-0010  | DL3         | Plastic Body      | 60 Pin Connector   | Square Post       | 29             |
|  | DLM3-60RW6B*  | 112139-0000  | DLM3        | Metal Body        | 60 Pin Connector   | Square Post       | 31             |
|  | DL4-624RW6B*  | 110960-0048  | DL4         | Metal Frame       | 624 Pin Connector  | Square Post       | 34             |
|  | DL5-260RW6B*  | 111987-0000  | DL5         | Plastic Body      | 260 Pin Connector  | Square Post       | 36             |
|  | DLM5-260RW6B*   | 112087-0000  | DLM5        | Metal Body        | 260 Pin Connector  | Square Post       | 38             |
|  | DLM6-360RW6B*   | 111996-0001  | DLM6        | Metal Body        | 360 Pin Connector  | Square Post       | 41             |
| <b>Square Post 3,18 (.125) Ext.</b><br>50 $\mu$ inches Gold, FLAT<br>Std. Square Post $\square$ 0,64 (.025)<br>Factory Installed<br>Solder to PCB Through Hole                             | DL110536-1011   | 110536-1011  | DL1         | Plastic Body      | 156 Pin Connector  | Square Post       | 15             |
|  | DLM112135-2   | 112135-0002  | DLM1        | Metal Body        | 156 Pin Connector  | Square Post       | 17             |
|  | DLM112137-2   | 112137-0002  | DLM2        | Metal Body        | 96 Pin Connector   | Square Post       | 24             |
|  | DLM112139-2   | 112139-0002  | DLM3        | Metal Body        | 60 Pin Connector   | Square Post       | 31             |
|  | DLM112087-3   | 112087-0003  | DLM5        | Metal Body        | 260 Pin Connector  | Square Post       | 38             |
|  | DLM111996-5   | 111996-0005  | DLM6        | Metal Body        | 360 Pin Connector  | Square Post       | 41             |
|  | <b>Wrap Post 15,37 (.605) Ext.</b><br>50 $\mu$ inches Gold, FLAT<br>Std. Square Post $\square$ 0,64 (.025)<br>Factory Installed | DL1-156RW4B* | 110536-1006 | DL1               | Plastic Body       | 156 Pin Connector | Wrap Post      |
| DLM1-156RW4B*  |   | 112135-0001  | DLM1        | Metal Body        | 156 Pin Connector  | Wrap Post         | 17             |
| DLD1-156RW4B*  |   | 111497-0009  | DLD1        | Plastic Body      | 156 Pin Connector  | Wrap Post         | 20             |
| DL2-96RW4B*  |   | 110855-0013  | DL2         | Plastic Body      | 96 Pin Connector   | Wrap Post         | 22             |
| DLM2-96RW4B*   |   | 112137-0001  | DLM2        | Metal Body        | 96 Pin Connector   | Wrap Post         | 24             |
| DLD2-96RW4B*   |   | 111921-0001  | DLD2        | Plastic Body      | 96 Pin Connector   | Wrap Post         | 27             |
| DL3-60RW4B*  |   | 110901-0009  | DL3         | Plastic Body      | 60 Pin Connector   | Wrap Post         | 29             |
| DLM3-60RW4B*   |   | 112139-0001  | DLM3        | Metal Body        | 60 Pin Connector   | Wrap Post         | 31             |
| DL4-624RW4B*   |   | 110960-0045  | DL4         | Metal Frame       | 624 Pin Connector  | Wrap Post         | 34             |
| DL5-260RW4B*   |   | 111987-0001  | DL5         | Plastic Body      | 260 Pin Connector  | Wrap Post         | 36             |
| DLM5-260RW4B*  |   | 112087-0001  | DLM5        | Metal Body        | 260 Pin Connector  | Wrap Post         | 38             |
| DLM6-360RW4B*  |   | 111996-0000  | DLM6        | Metal Body        | 360 Pin Connector  | Wrap Post         | 41             |
| <b>Square Post 7,11 (.280) Ext.</b><br>20 $\mu$ inches Gold, Hermaphroditic<br>Std. Square Post $\square$ 0,64 (.025)<br>Factory Installed<br>Solder to PCB Through Hole                   | DL1-156RW6  | 110536-1009  | DL1         | Plastic Body      | 156 Pin Connector  | Square Post       | 15             |
| <b>Wrap Post 15,37 (.605) Ext.</b><br>20 $\mu$ inches Gold, Hermaphroditic<br>Std. Square Post $\square$ 0,64 (.025)<br>Factory Installed  | DL1-156RW4  | 110536-1003  | DL1         | Plastic Body      | 156 Pin Connector  | Wrap Post         | 15             |
|  | DL2-96RW4   | 110855-0008  | DL2         | Plastic Body      | 96 Pin Connector   | Wrap Post         | 22             |
|  | DL3-60RW4   | 110901-0004  | DL3         | Plastic Body      | 60 Pin Connector   | Wrap Post         | 29             |
|  | DL4-624RW4  | 110960-0022  | DL4         | Metal Frame       | 624 Pin Connector  | Wrap Post         | 34             |
| <b>PC / RC 4,50 (.177) Ext.</b><br>20 $\mu$ inches Gold - 4 A max.<br>Round Tail - $\varnothing$ 0,50 (.020)<br>Factory Installed<br>Solder to PCB Through Hole                            | DLM1-156RC  | 127050-0211  | DLM1        | Metal Body        | 156 Pin Connector  | RC                | 18             |
|  | DLM2-96RC   | 127050-0219  | DLM2        | Metal Body        | 96 Pin Connector   | RC                | 25             |
|  | DLM3-60RC   | 127050-0227  | DLM3        | Metal Body        | 60 Pin Connector   | RC                | 32             |
|  | DLM5-260RC  | 127050-0112  | DLM5        | Metal Body        | 260 Pin Connector  | RC                | 39             |
|  | DLM6-360RC  | 127050-0098  | DLM6        | Metal Body        | 360 Pin Connector  | RC                | 42             |

Note: 50 $\mu$  inches gold contacts (Bump on plug side, Flat on receptacle side) are mandatory for applications with less than 100 milliamps.

DL1 — Plastic Body — 156 Pin Connectors — Crimp Contacts

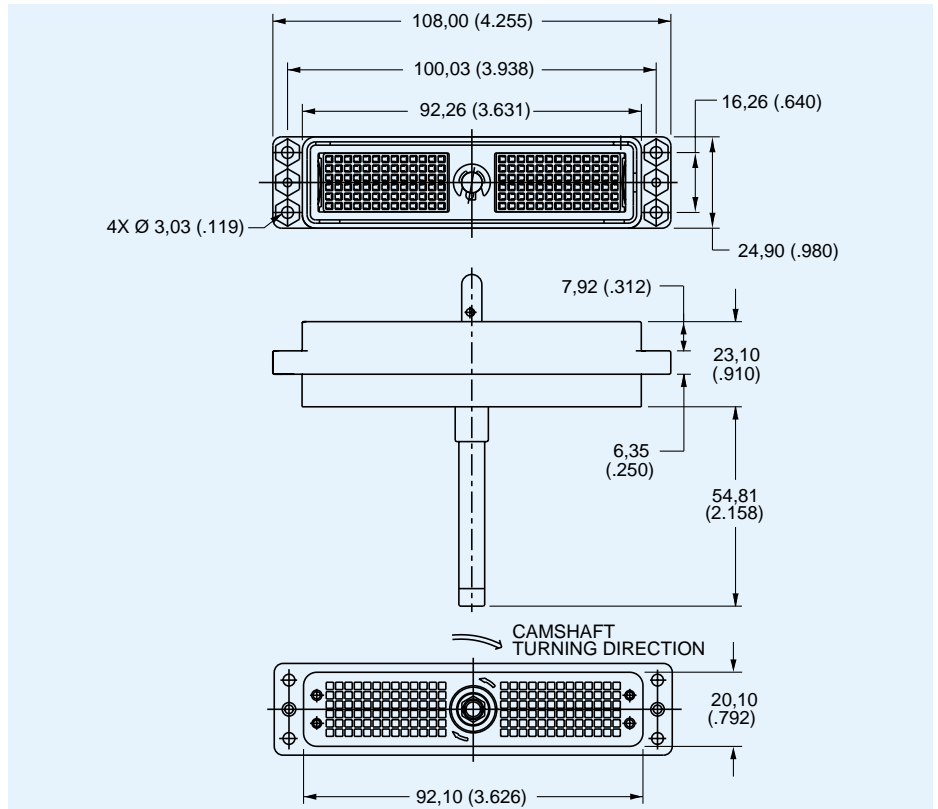
Plug

DL1, DL1M1, DL1D



- For contact cavity arrangement, see page 68.
- For panel cutout and mounting hole pattern, see page 65.
- Crimp contacts are to be ordered separately and installed by customer, see pages 52-53.
- Order actuating handle kit separately, see page 47.

| Part Number | Nomenclature |
|-------------|--------------|
| 110535-0000 | DL1-156P     |

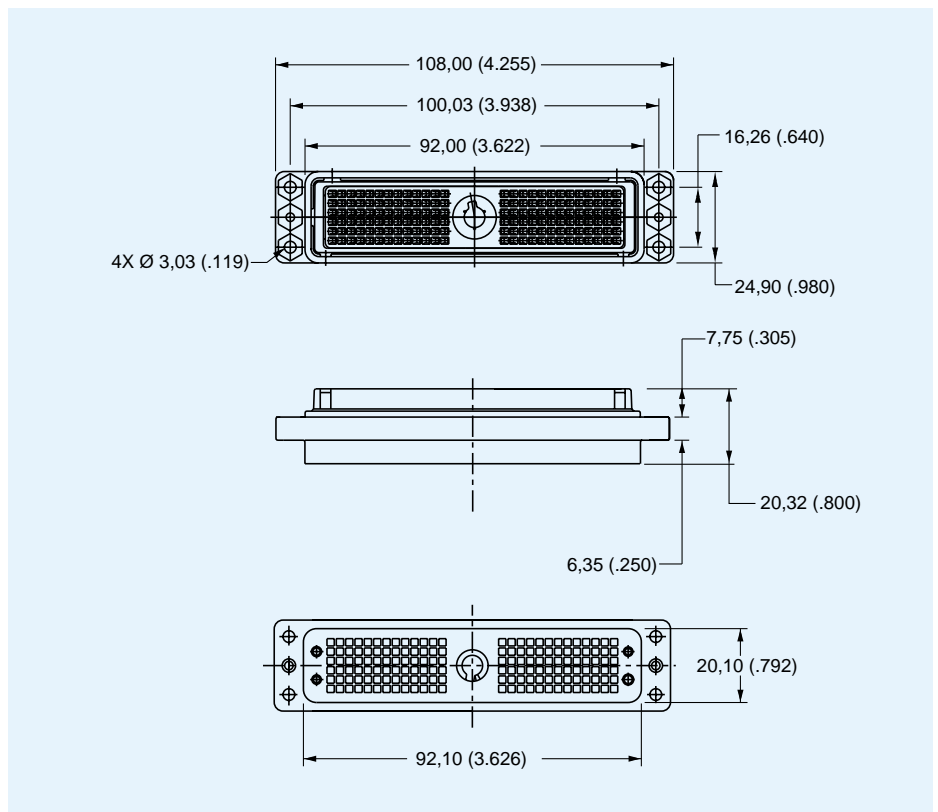


Receptacle



- For contact cavity arrangement, see page 68.
- For panel cutout and mounting hole pattern, see page 65.
- Crimp contacts are to be ordered separately and installed by customer, see pages 52-53.

| Part Number  | Nomenclature |
|--------------|--------------|
| 086-0030-000 | DL1-156R     |



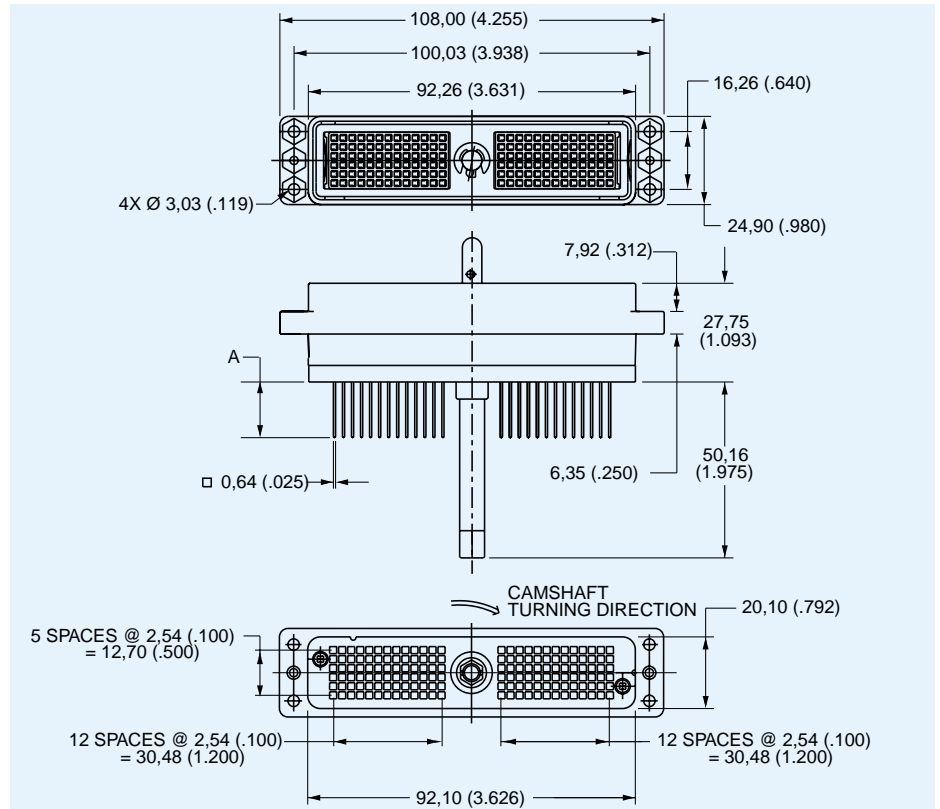
## DL1 — Plastic Body — 156 Pin Connectors — Square Post Contacts

### Plug



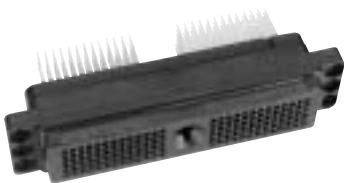
- For contact cavity arrangement, see page 68.
- For panel cutout and mounting hole pattern, see page 65.
- For PC hole pattern, see page 60.
- Front Removable 0,64 (.025) Square Posts 2,54 (.100) Centers.
- Order actuating handle kit separately, see page 47.

| Part Number | Nomenclature | A            |
|-------------|--------------|--------------|
| 110535-0012 | DL1-156PW4   | 15,37 (.605) |
| 110535-0025 | DL1-156PW4A  | 15,37 (.605) |
| 110535-0026 | DL1-156PW6   | 7,11 (.280)  |
| 110535-0030 | DL1-156PW6A  | 7,11 (.280)  |
| 110535-0040 | DL110535-40  | 3,18 (.125)  |



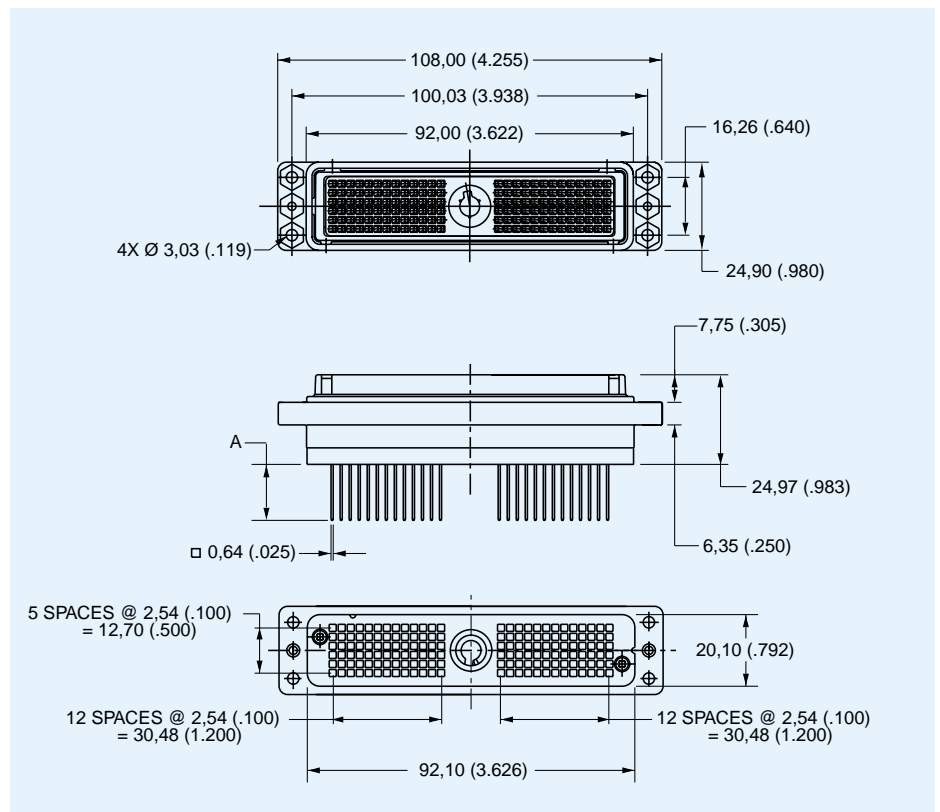
DL1, DL1M,  
DL1T

### Receptacle



- For contact cavity arrangement, see page 68.
- For panel cutout and mounting hole pattern, see page 65.
- For PC hole pattern, see page 60.
- Front Removable 0,64 (.025) Square Posts 2,54 (.100) Centers.

| Part Number | Nomenclature  | A            |
|-------------|---------------|--------------|
| 110536-1003 | DL1-156RW4    | 15,37 (.605) |
| 110536-1006 | DL1-156RW4B   | 15,37 (.605) |
| 110536-1009 | DL1-156RW6    | 7,11 (.280)  |
| 110536-1007 | DL1-156RW6B   | 7,11 (.280)  |
| 110536-1011 | DL110536-1011 | 3,18 (.125)  |





DLM1 — Metal Body — 156 Pin Connectors — Crimp Contacts

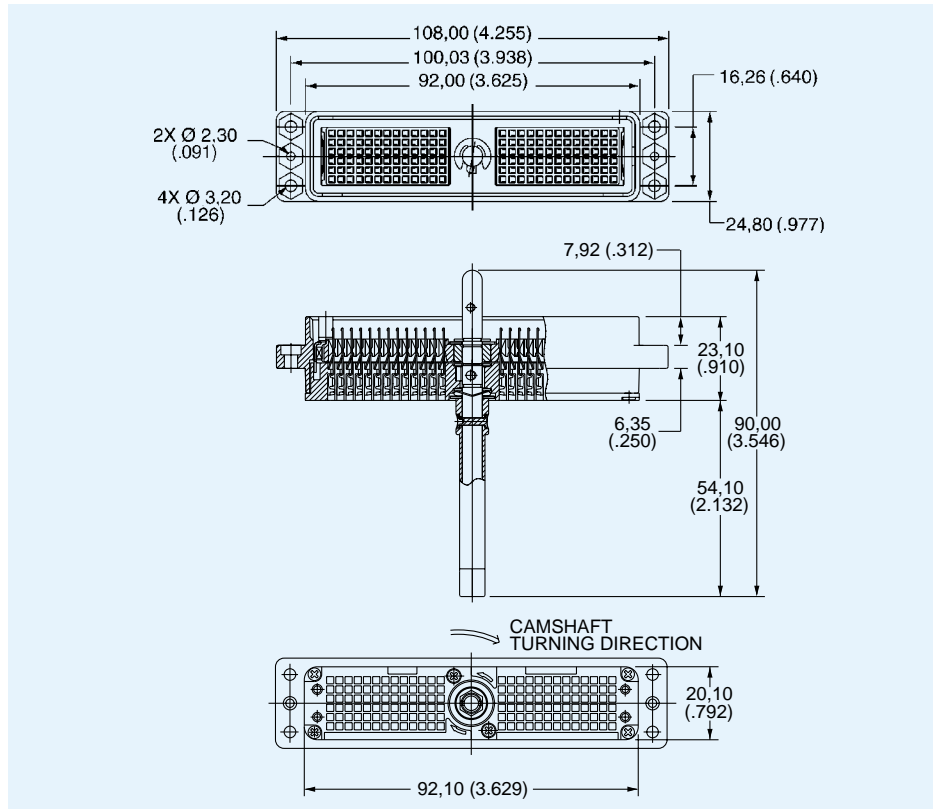
Plug

DLM1, DLM1, DLM1



- For contact cavity arrangement, see page 68.
- For panel cutout and mounting hole pattern, see page 65.
- Crimp contacts are to be ordered separately and installed by customer, see pages 52-53.
- Order actuating handle kit separately, see page 47.

| Part Number | Nomenclature |
|-------------|--------------|
| 127050-0204 | DLM1-156P    |

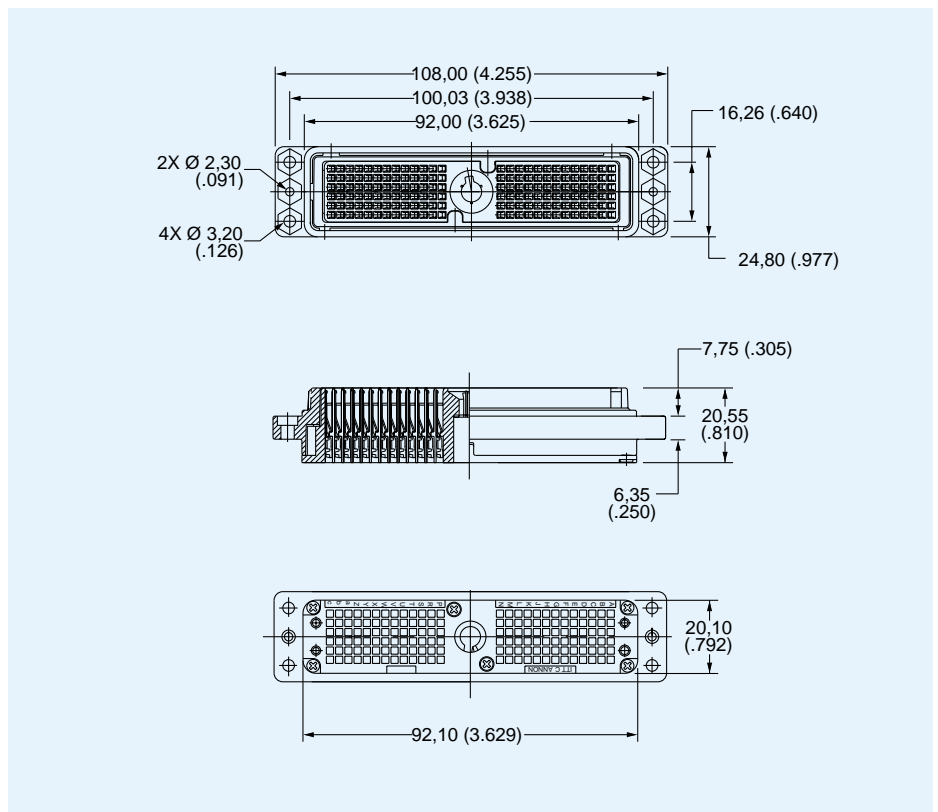


Receptacle



- For contact cavity arrangement, see page 68.
- For panel cutout and mounting hole pattern, see page 65.
- Crimp contacts are to be ordered separately and installed by customer, see pages 52-53.

| Part Number | Nomenclature |
|-------------|--------------|
| 127050-0208 | DLM1-156R    |



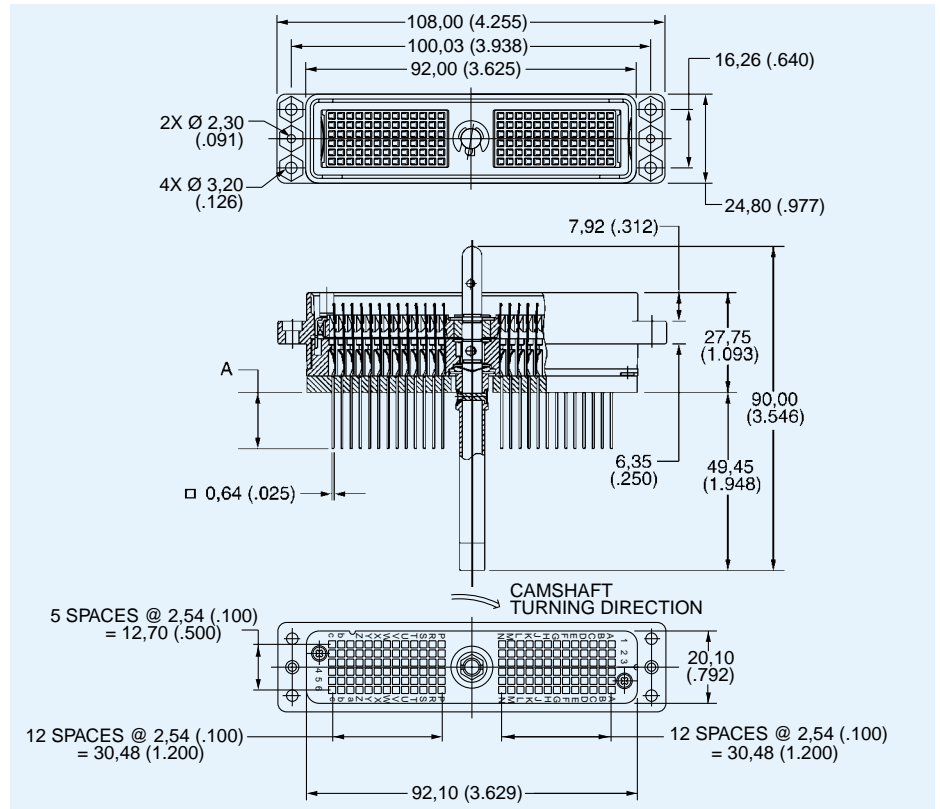
DLM1 — Metal Body — 156 Pin Connectors — Square Post Contacts

Plug



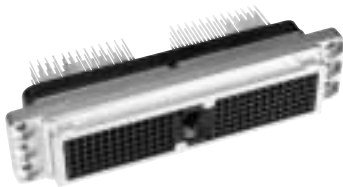
- For contact cavity arrangement, see page 68.
- For panel cutout and mounting hole pattern, see page 65.
- For PC hole pattern, see page 60.
- Front Removable 0,64 (.025) Square Posts 2,54 (.100) Centers.
- Order actuating handle kit separately, see page 47.

| Part Number | Nomenclature | A            |
|-------------|--------------|--------------|
| 112134-0001 | DLM1-156PW4A | 15,37 (.605) |
| 112134-0000 | DLM1-156PW6A | 7,11 (.280)  |
| 112134-0002 | DLM112134-2  | 3,18 (.125)  |



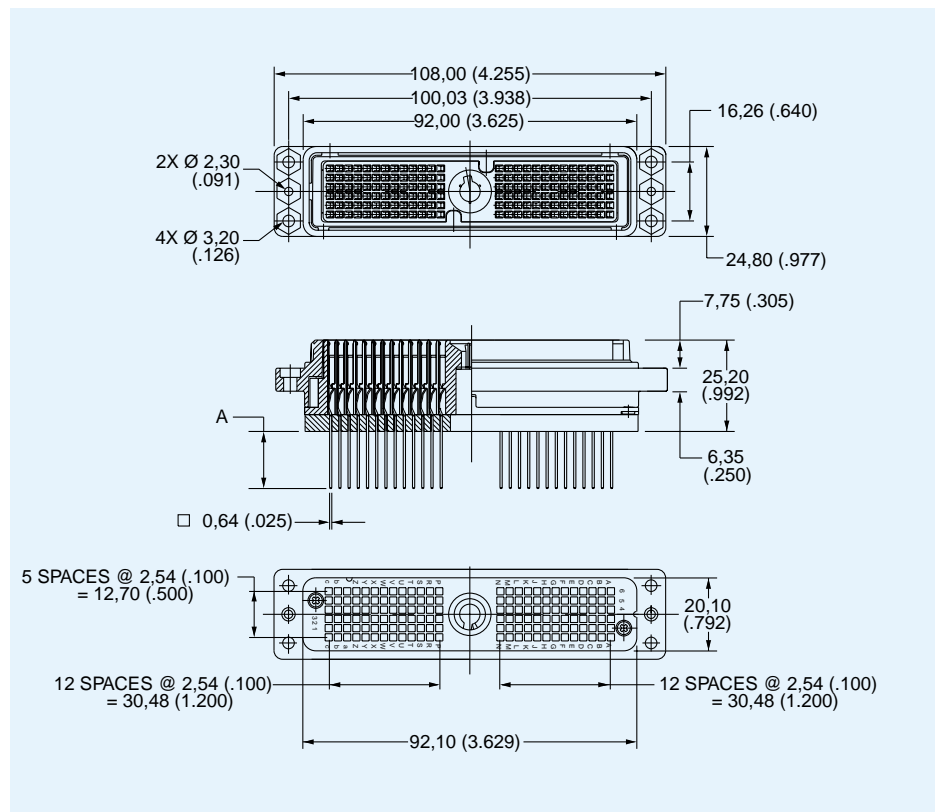
DLM1, DLM1, DLM1

Receptacle



- For contact cavity arrangement, see page 68.
- For panel cutout and mounting hole pattern, see page 65.
- For PC hole pattern, see page 60.
- Front Removable 0,64 (.025) Square Posts 2,54 (.100) Centers.

| Part Number | Nomenclature | A            |
|-------------|--------------|--------------|
| 112135-0001 | DLM1-156RW4B | 15,37 (.605) |
| 112135-0000 | DLM1-156RW6B | 7,11 (.280)  |
| 112135-0002 | DLM112135-2  | 3,18 (.125)  |



## DLM1 — Metal Body — 156 Pin Connectors — PC/RC Contacts

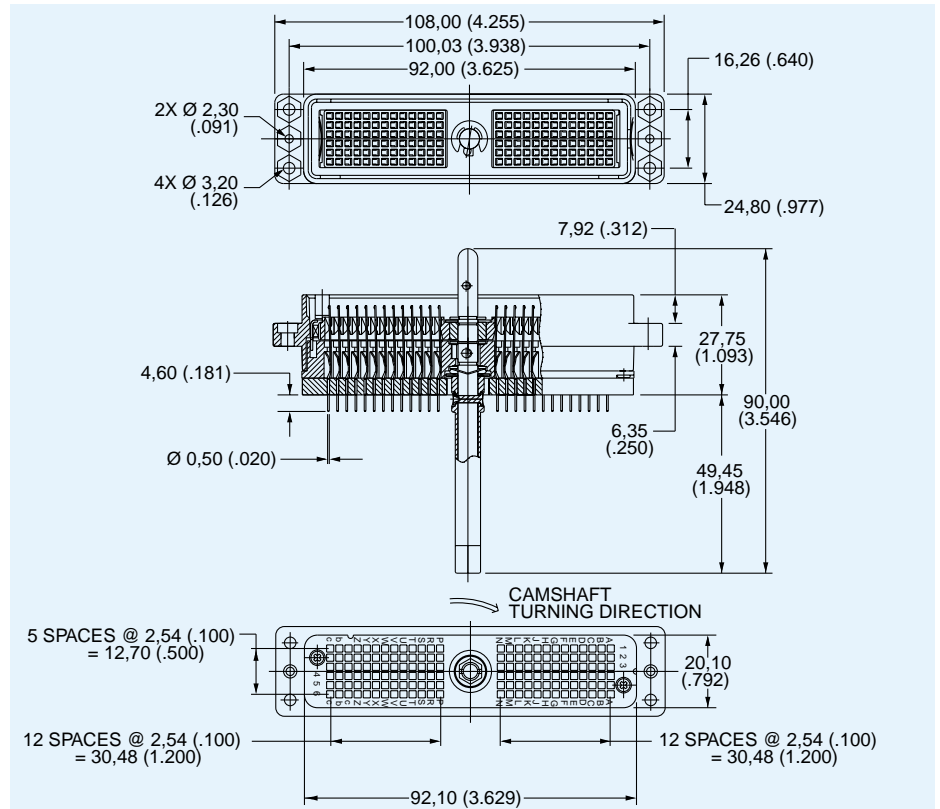
### Plug

DLM1, DLM1, DLM1



- For contact cavity arrangement, see page 68.
- For panel cutout and mounting hole pattern, see page 65.
- For PC hole pattern, see page 60.
- Order actuating handle kit separately, see page 47.

| Part Number | Nomenclature |
|-------------|--------------|
| 127050-0207 | DLM1-156PC   |

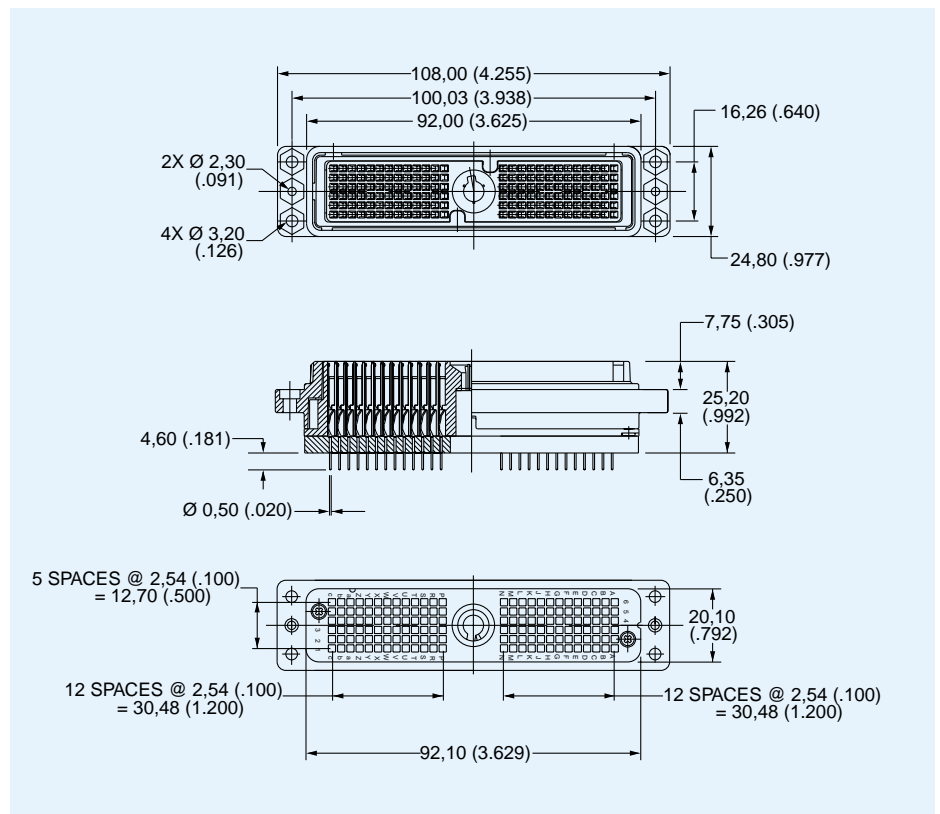


### Receptacle



- For contact cavity arrangement, see page 68.
- For panel cutout and mounting hole pattern, see page 65.
- For PC hole pattern, see page 60.

| Part Number | Nomenclature |
|-------------|--------------|
| 127050-0211 | DLM1-156RC   |

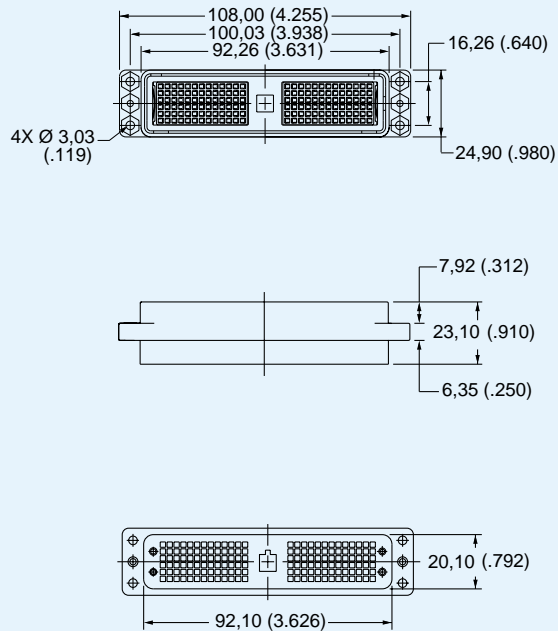


DLD1 — Plastic Body — 156 Pin Connectors — Crimp Contacts

Plug



- For contact cavity arrangement, see page 68.
- For panel cutout and mounting hole pattern, see page 66.
- Crimp contacts are to be ordered separately and installed by customer, see pages 52-53.
- For assembly dimensions and mating sequence, see page 70.

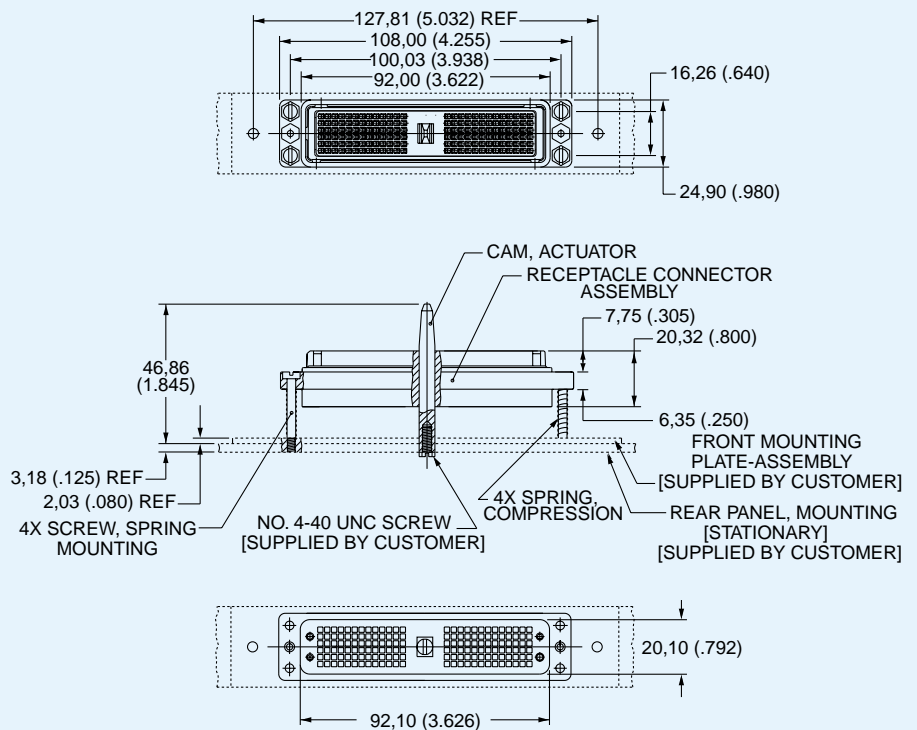


| Part Number | Nomenclature |
|-------------|--------------|
| 111496-0000 | DLD1-156P    |

Receptacle



- For contact cavity arrangement, see page 68.
- For panel cutout and mounting hole pattern, see page 66.
- Crimp contacts are to be ordered separately and installed by customer, see pages 52-53.
- For assembly dimensions and mating sequence, see page 70.



| Part Number | Nomenclature |
|-------------|--------------|
| 111497-0004 | DLD1-156R    |

## DLD1 — Plastic Body — 156 Pin Connectors — Square Post Contacts

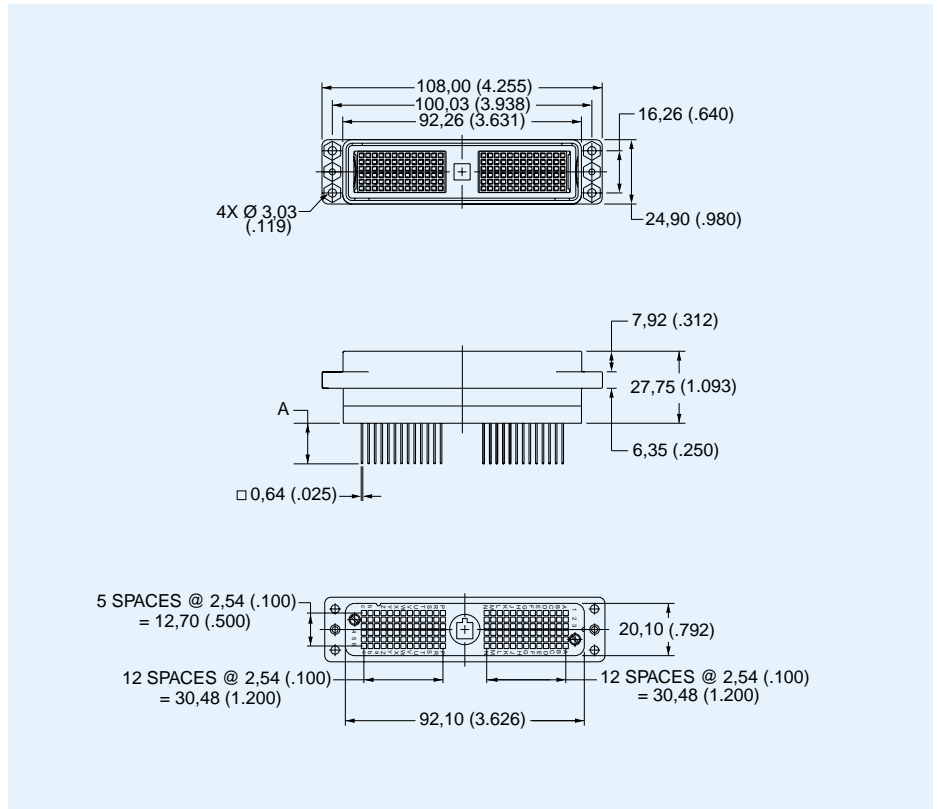
### Plug

DLD1, DLD1M1, DLD1T

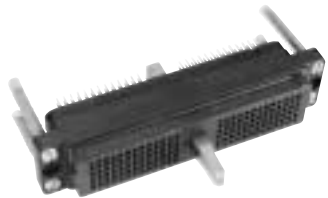


- For contact cavity arrangement, see page 68.
- For panel cutout and mounting hole pattern, see page 66.
- For PC hole pattern, see page 60.
- Front Removable 0,64 (.025) Square Posts 2,54 (.100) Centers.
- For assembly dimensions and mating sequence, see page 70.

| Part Number | Nomenclature | A            |
|-------------|--------------|--------------|
| 111496-0001 | DLD1-156PW4A | 15,37 (.605) |
| 111496-0002 | DLD1-156PW6A | 7,11 (.280)  |

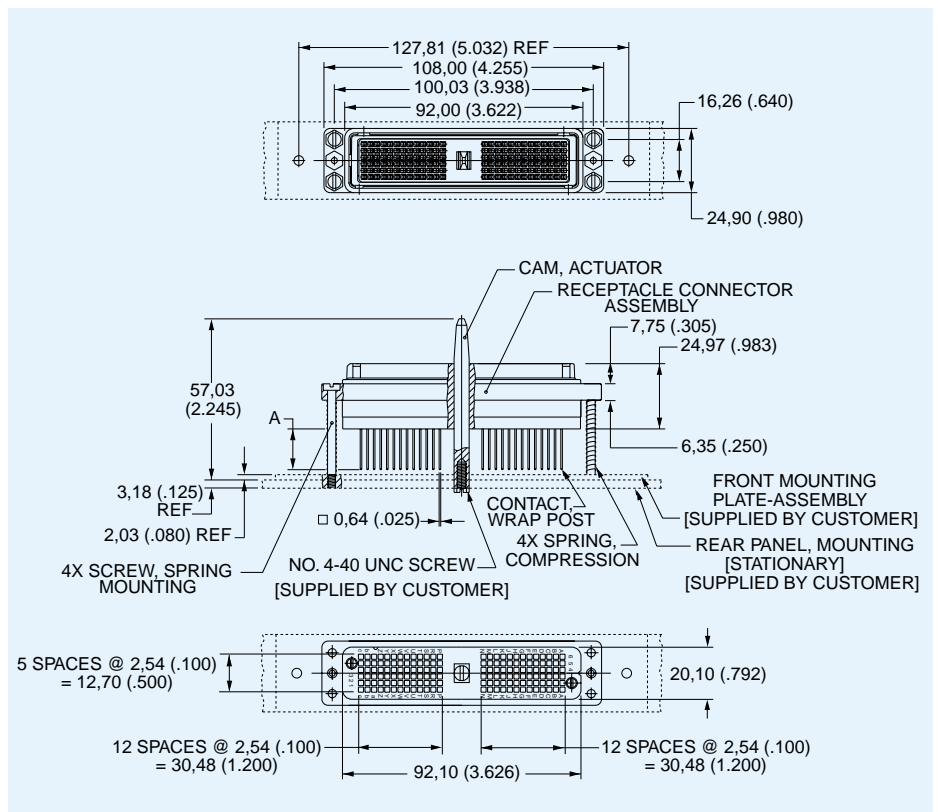


### Receptacle



- For contact cavity arrangement, see page 68.
- For panel cutout and mounting hole pattern, see page 66.
- For PC hole pattern, see page 60.
- Front Removable 0,64 (.025) Square Posts 2,54 (.100) Centers.
- For assembly dimensions and mating sequence, see page 70.

| Part Number | Nomenclature | A            |
|-------------|--------------|--------------|
| 111497-0009 | DLD1-156RW4B | 15,37 (.605) |
| 111497-0010 | DLD1-156RW6B | 7,11 (.280)  |

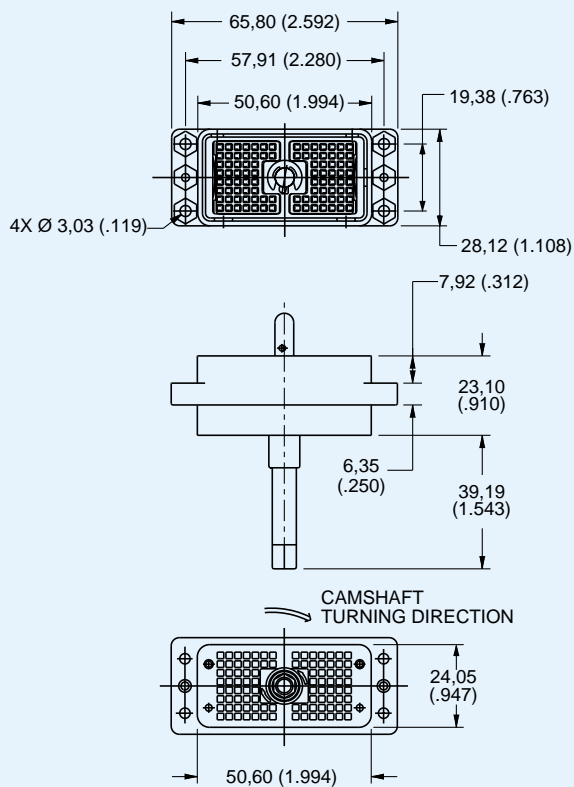


DL2 — Plastic Body — 96 Pin Connectors — Crimp Contacts

Plug



- For contact cavity arrangement, see page 68.
- For panel cutout and mounting hole pattern, see page 65.
- Crimp contacts are to be ordered separately and installed by customer, see pages 52-53.
- Order actuating handle kit separately, see page 47.

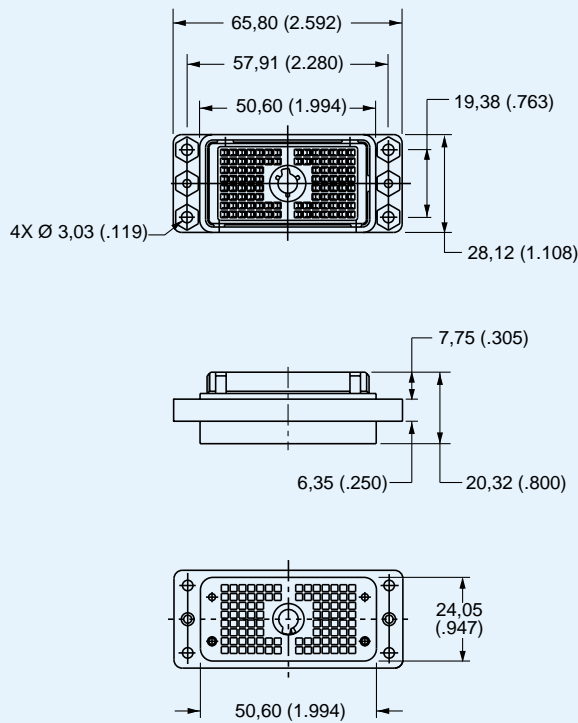


| Part Number | Nomenclature |
|-------------|--------------|
| 110777-0000 | DL2-96P      |

Receptacle



- For contact cavity arrangement, see page 68.
- For panel cutout and mounting hole pattern, see page 65.
- Crimp contacts are to be ordered separately and installed by customer, see pages 52-53.



| Part Number  | Nomenclature |
|--------------|--------------|
| 086-0031-000 | DL2-96R      |

DL2, DLW2, DLD2



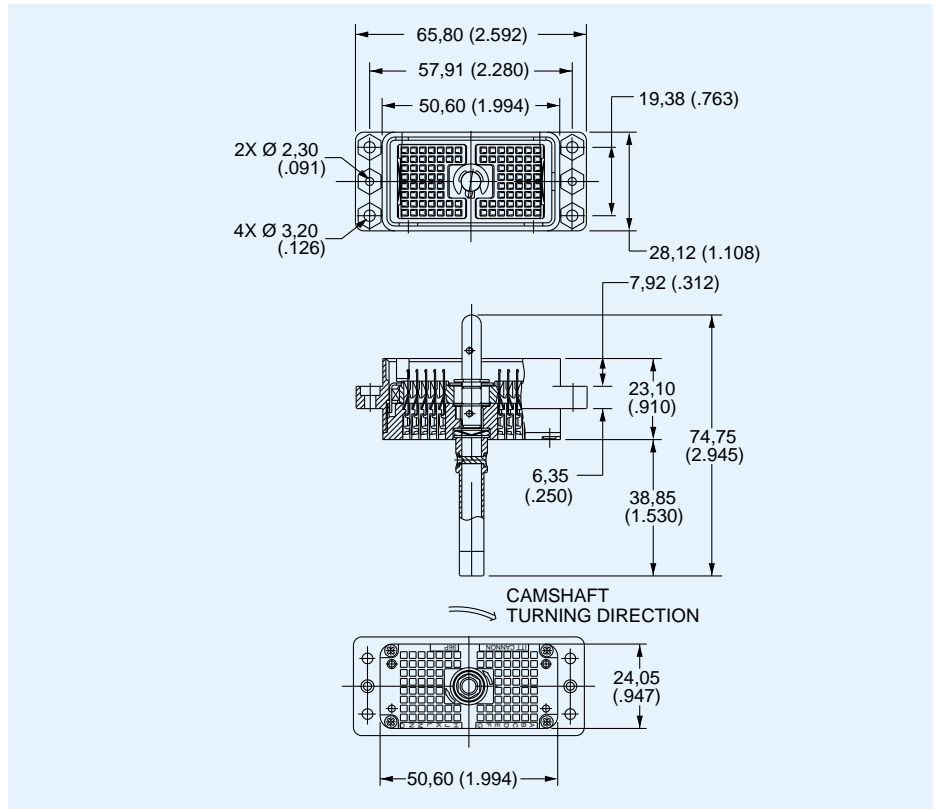
DLM2 — Metal Body — 96 Pin Connectors — Crimp Contacts

Plug



- For contact cavity arrangement, see page 68.
- For panel cutout and mounting hole pattern, see page 65.
- Crimp contacts are to be ordered separately and installed by customer, see pages 52-53.
- Order actuating handle kit separately, see page 47.

| Part Number | Nomenclature |
|-------------|--------------|
| 127050-0212 | DLM2-96P     |



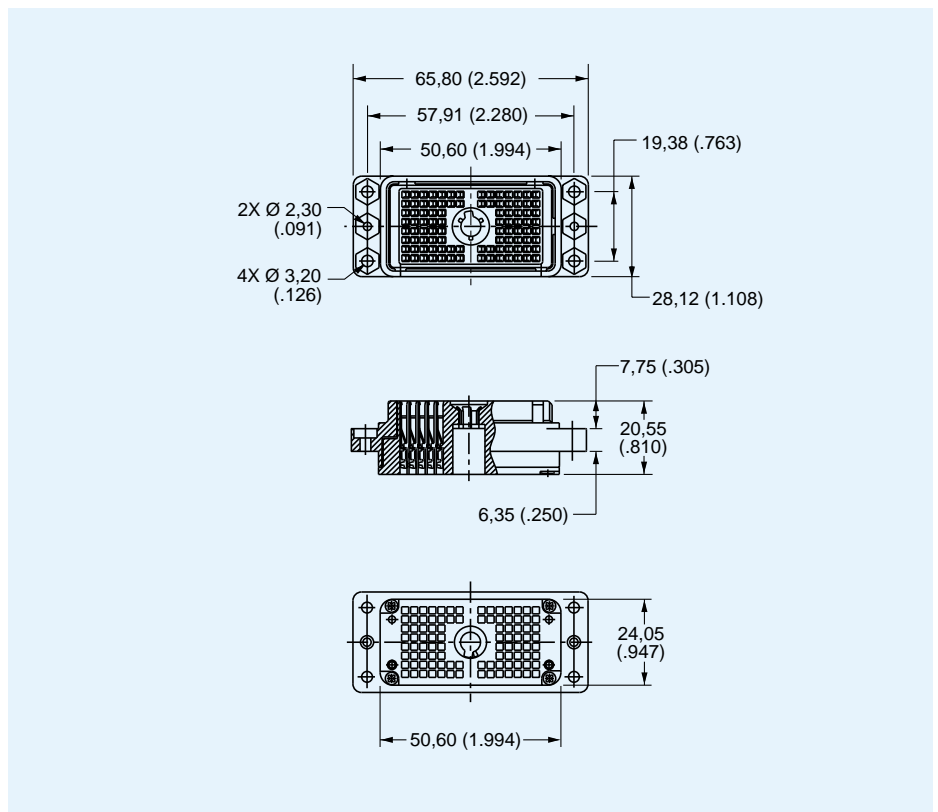
DL2, DLM2, DLD2

Receptacle



- For contact cavity arrangement, see page 68.
- For panel cutout and mounting hole pattern, see page 65.
- Crimp contacts are to be ordered separately and installed by customer, see pages 52-53.

| Part Number | Nomenclature |
|-------------|--------------|
| 127050-0216 | DLM2-96R     |





DLM2 — Metal Body — 96 Pin Connectors — Square Post Contacts

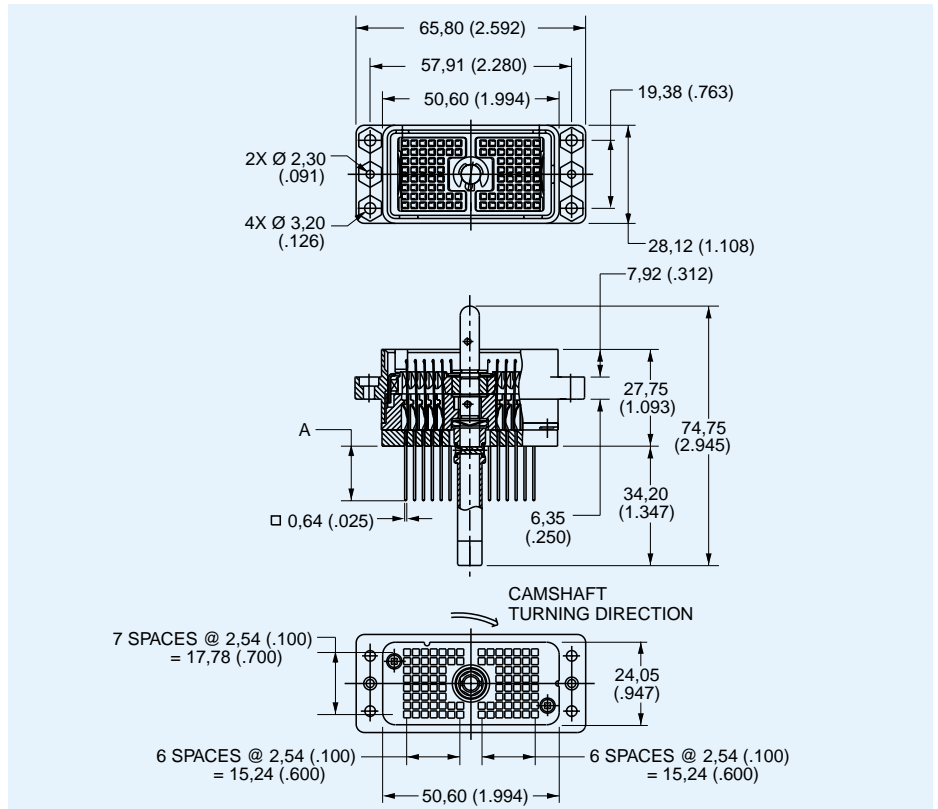
Plug



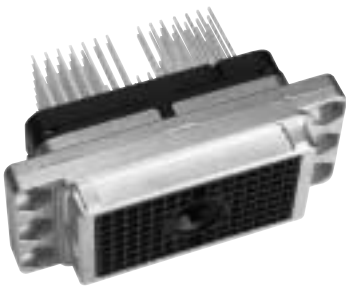
DLM2, DLM2, DLM2

- For contact cavity arrangement, see page 68.
- For panel cutout and mounting hole pattern, see page 65.
- For PC hole pattern, see page 61.
- Front Removable 0,64 (.025) Square Posts 2,54 (.100) Centers.
- Order actuating handle kit separately, see page 47.

| Part Number | Nomenclature | A            |
|-------------|--------------|--------------|
| 112136-0001 | DLM2-96PW4A  | 15,37 (.605) |
| 112136-0000 | DLM2-96PW6A  | 7,11 (.280)  |
| 112136-0002 | DLM112136-2  | 3,18 (.125)  |

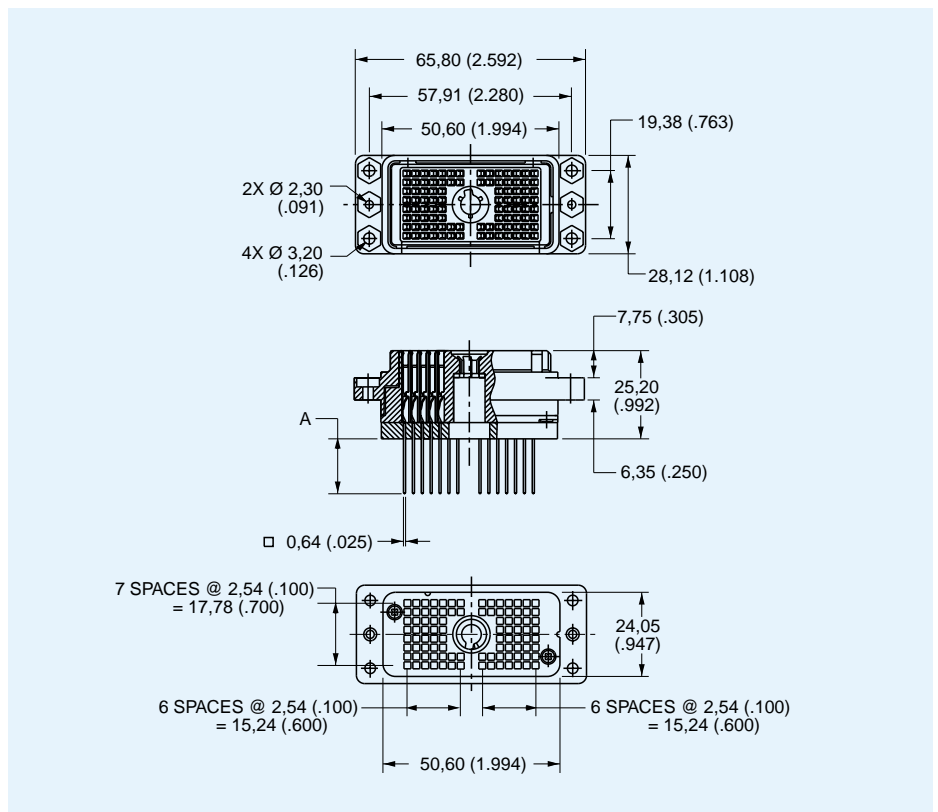


Receptacle



- For contact cavity arrangement, see page 68.
- For panel cutout and mounting hole pattern, see page 65.
- For PC hole pattern, see page 61.
- Front Removable 0,64 (.025) Square Posts 2,54 (.100) Centers.

| Part Number | Nomenclature | A            |
|-------------|--------------|--------------|
| 112137-0001 | DLM2-96RW4B  | 15,37 (.605) |
| 112137-0000 | DLM2-96RW6B  | 7,11 (.280)  |
| 112137-0002 | DLM112137-2  | 3,18 (.125)  |



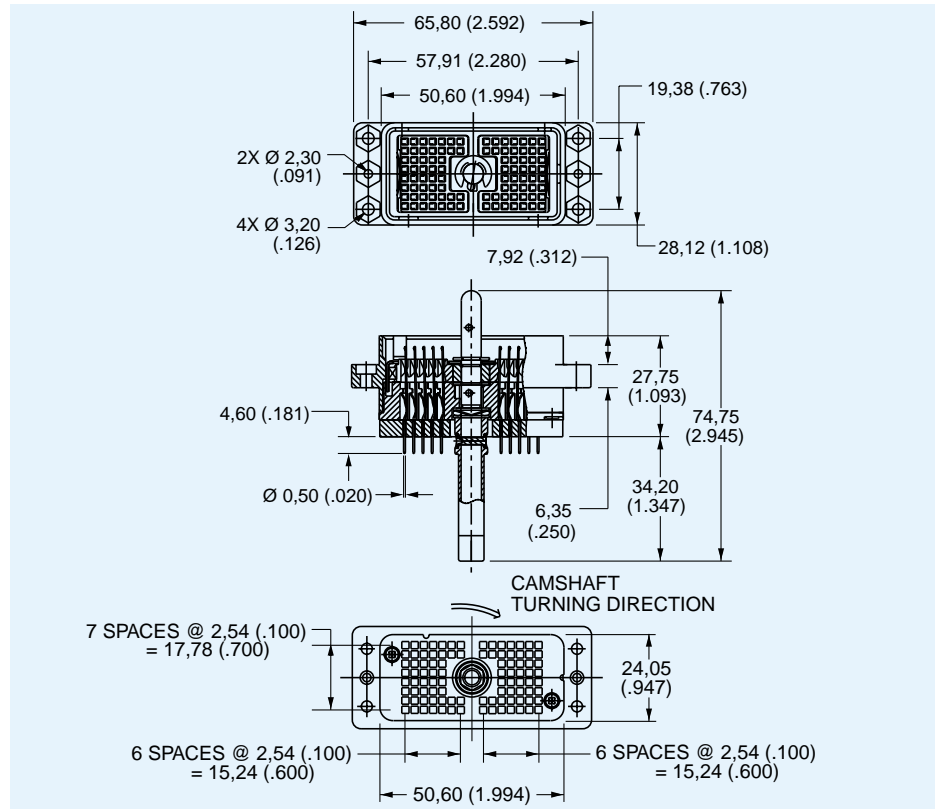
DLM2 — Metal Body — 96 Pin Connectors — PC/RC Contacts

Plug



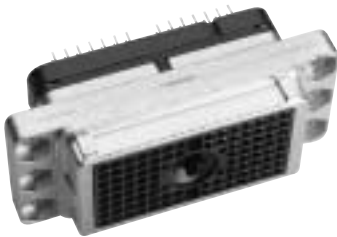
- For contact cavity arrangement, see page 68.
- For panel cutout and mounting hole pattern, see page 65.
- For PC hole pattern, see page 61.
- Order actuating handle kit separately, see page 47.

| Part Number | Nomenclature |
|-------------|--------------|
| 127050-0215 | DLM2-96PC    |



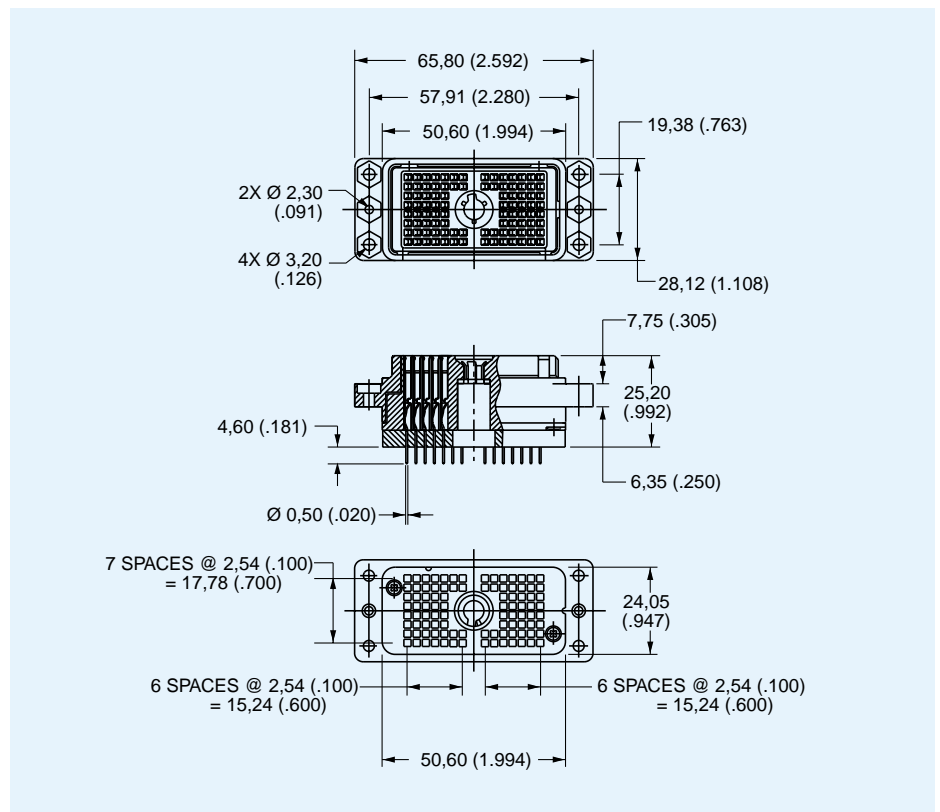
DL2, DLM2, DLD2

Receptacle



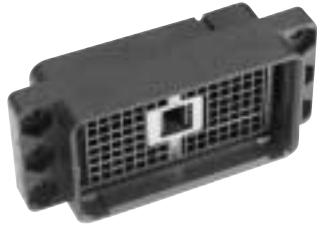
- For contact cavity arrangement, see page 68.
- For panel cutout and mounting hole pattern, see page 65.
- For PC hole pattern, see page 61.

| Part Number | Nomenclature |
|-------------|--------------|
| 127050-0219 | DLM2-96RC    |



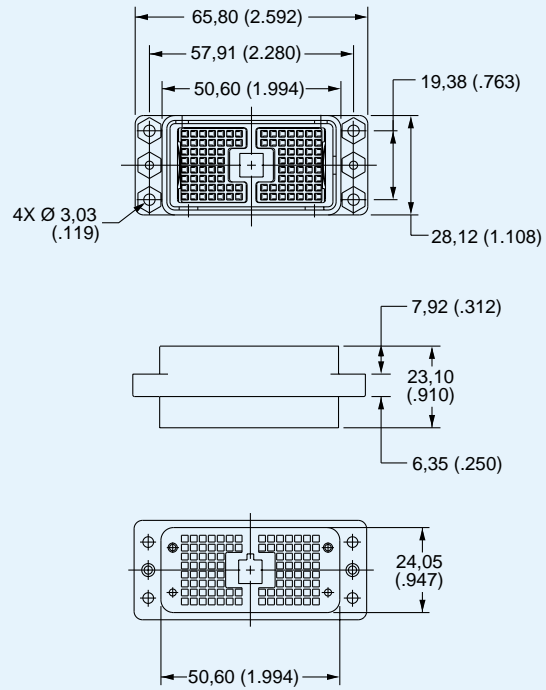
## DLD2 — Plastic Body — 96 Pin Connectors — Crimp Contacts

### Plug



DLD2, DLDM2, DLD2

- For contact cavity arrangement, see page 68.
- For panel cutout and mounting hole pattern, see page 67.
- Crimp contacts are to be ordered separately and installed by customer, see pages 52-53.
- For assembly dimensions and mating sequence, see page 70.

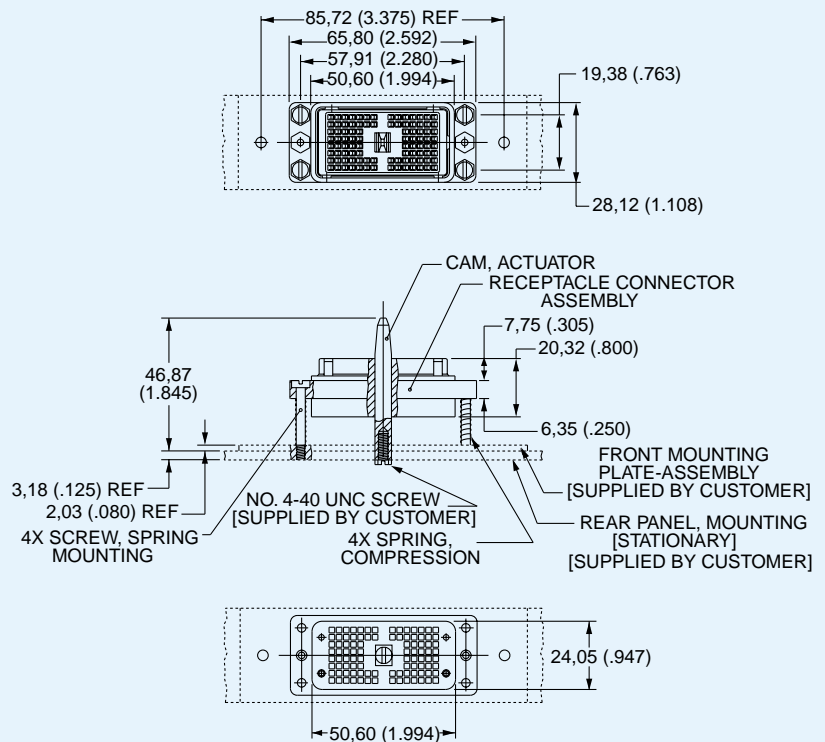


| Part Number | Nomenclature |
|-------------|--------------|
| 111922-0000 | DLD2-96P     |

### Receptacle



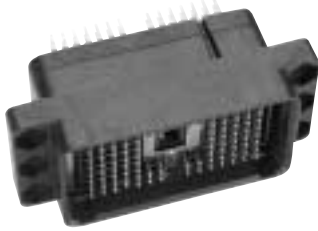
- For contact cavity arrangement, see page 68.
- For panel cutout and mounting hole pattern, see page 67.
- Crimp contacts are to be ordered separately and installed by customer, see pages 52-53.
- For assembly dimensions and mating sequence, see page 70.



| Part Number | Nomenclature |
|-------------|--------------|
| 111921-0000 | DLD2-96R     |

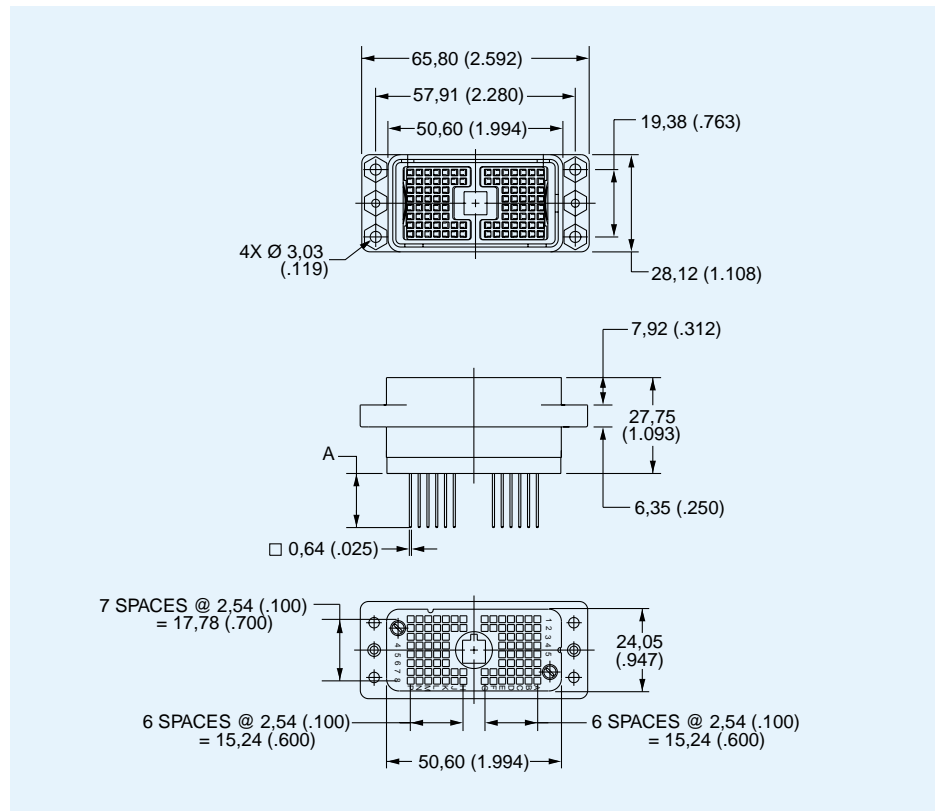
## DLD2 — Plastic Body — 96 Pin Connectors — Square Post Contacts

### Plug



- For contact cavity arrangement, see page 68.
- For panel cutout and mounting hole pattern, see page 67.
- Front Removable 0,64 (.025) Square Posts 2,54 (.100) Centers.
- For PC hole patterns, see page 61.
- For assembly dimensions and mating sequence, see page 70.

| Part Number | Nomenclature | A            |
|-------------|--------------|--------------|
| 111922-0001 | DLD2-96PW4A  | 15,37 (.605) |
| 111922-0002 | DLD2-96PW6A  | 7,11 (.280)  |



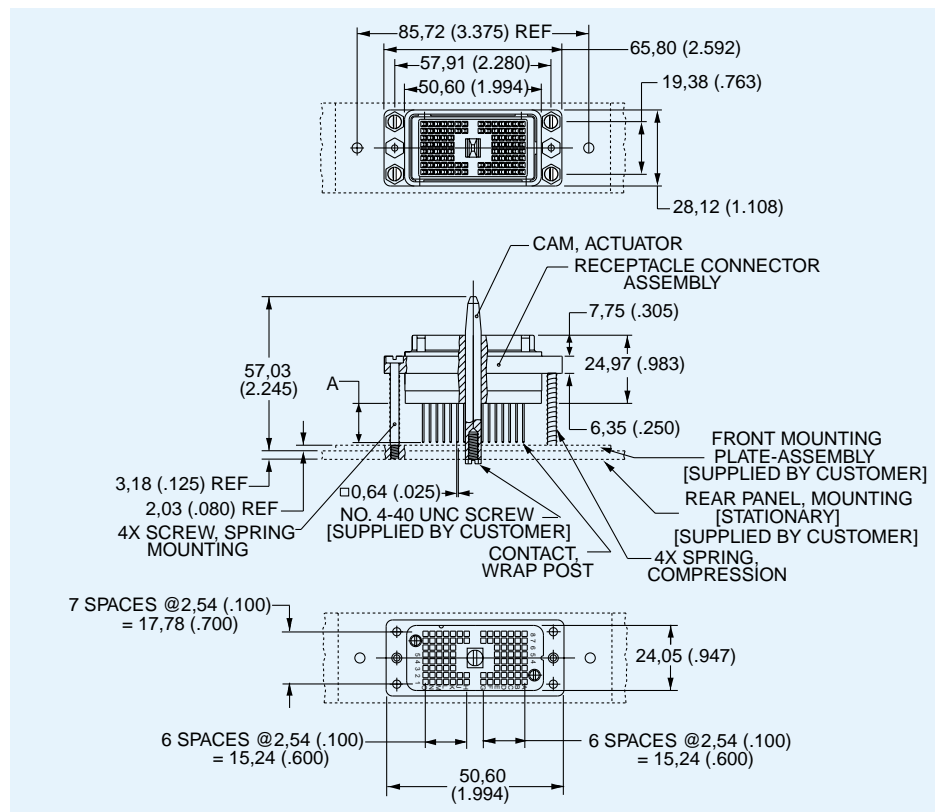
DLD2, DLM2, DLD2

### Receptacle



- For contact cavity arrangement, see page 68.
- For panel cutout and mounting hole pattern, see page 67.
- For PC hole patterns, see page 61.
- Front Removable 0,64 (.025) Square Posts 2,54 (.100) Centers.
- For assembly dimensions and mating sequence, see page 70.

| Part Number | Nomenclature | A            |
|-------------|--------------|--------------|
| 111921-0001 | DLD2-96RW4B  | 15,37 (.605) |
| 111921-0002 | DLD2-96RW6B  | 7,11 (.280)  |

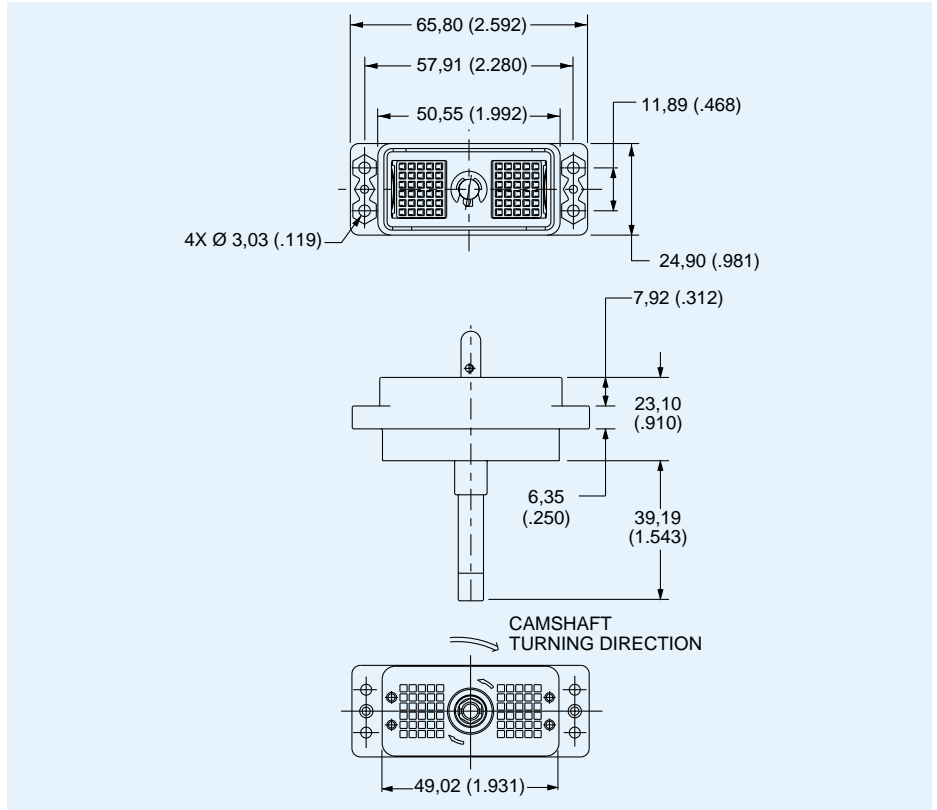


DL3 — Plastic Body — 60 Pin Connectors — Crimp Contacts

Plug



- For contact cavity arrangement, see page 68.
- For panel cutout and mounting hole pattern, see page 65.
- Crimp contacts are to be ordered separately and installed by customer, see pages 52-53.
- Order actuating handle kit separately, see page 47.

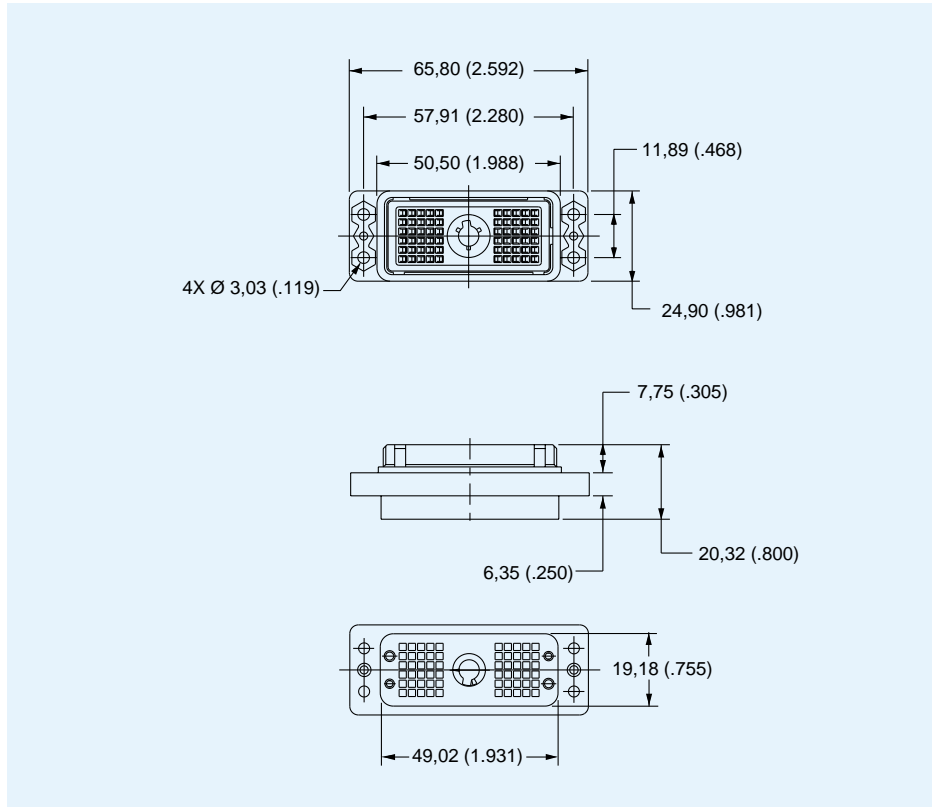


| Part Number | Nomenclature |
|-------------|--------------|
| 110900-0008 | DL3-60P      |

Receptacle



- For contact cavity arrangement, see page 68.
- For panel cutout and mounting hole pattern, see page 65.
- Crimp contacts are to be ordered separately and installed by customer, see pages 52-53.



| Part Number  | Nomenclature |
|--------------|--------------|
| 086-0032-000 | DL3-60R      |

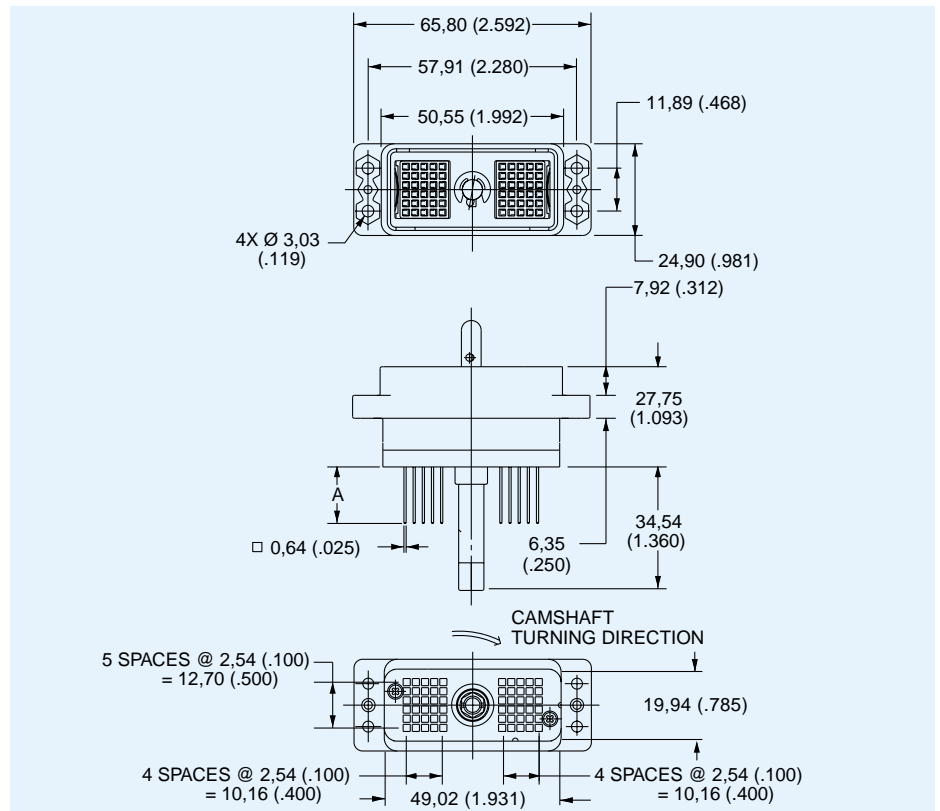
DL3 — Plastic Body — 60 Pin Connectors — Square Post Contacts

Plug



- For contact cavity arrangement, see page 68.
- For panel cutout and mounting hole pattern, see page 65.
- For PC hole pattern, see page 62.
- Front Removable 0,64 (.025) Square Posts 2,54 (.100) Centers.
- Order actuating handle kit separately, see page 47.

| Part Number | Nomenclature | A            |
|-------------|--------------|--------------|
| 110900-0006 | DL3-60PW4    | 15,37 (.605) |
| 110900-0013 | DL3-60PW4A   | 15,37 (.605) |
| 110900-0014 | DL3-60PW6A   | 7,11 (.280)  |

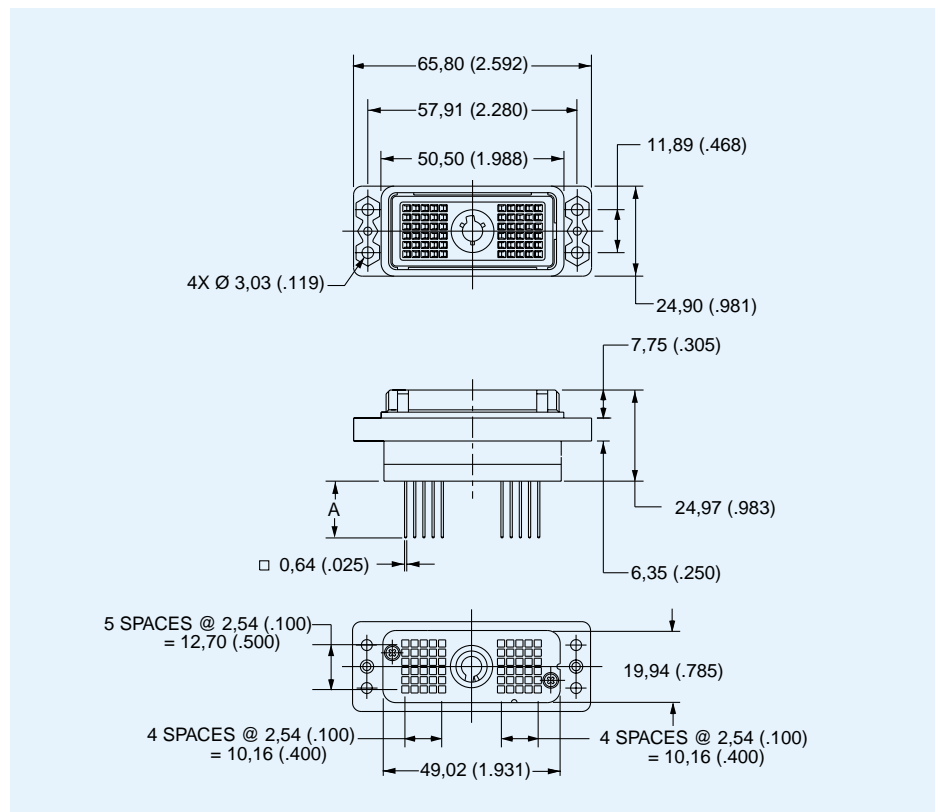


Receptacle



- For contact cavity arrangement, see page 68.
- For panel cutout and mounting hole pattern, see page 65.
- For PC hole pattern, see page 62.
- Front Removable 0,64 (.025) Square Posts 2,54 (.100) Centers.

| Part Number | Nomenclature | A            |
|-------------|--------------|--------------|
| 110901-0004 | DL3-60RW4    | 15,37 (.605) |
| 110901-0009 | DL3-60RW4B   | 15,37 (.605) |
| 110901-0010 | DL3-60RW6B   | 7,11 (.280)  |



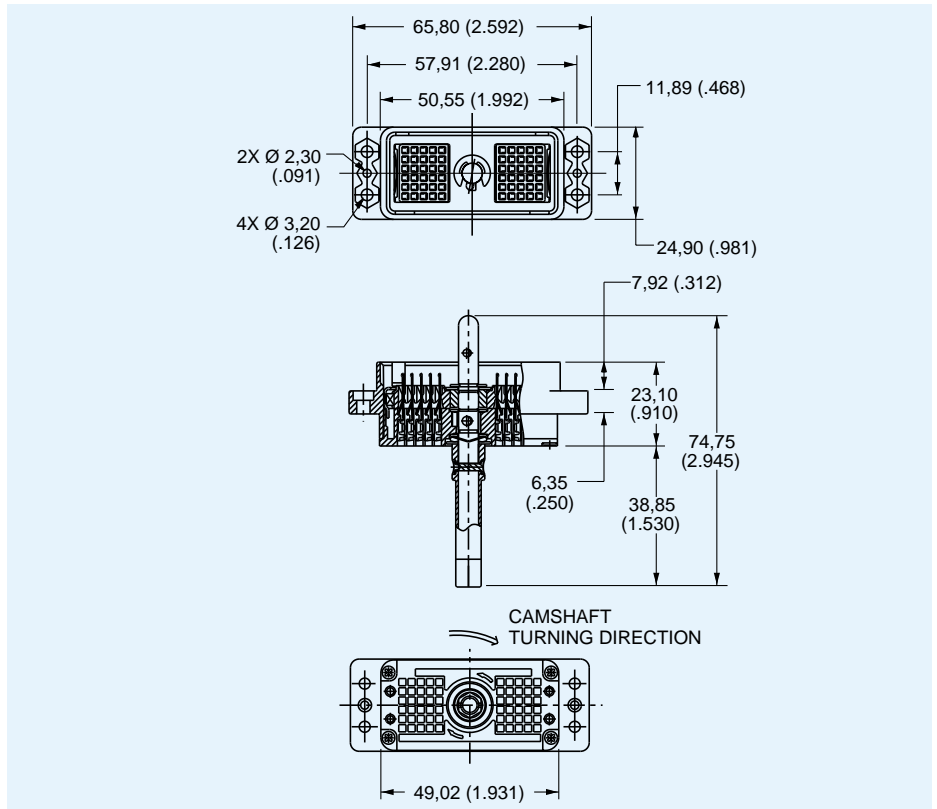
DL3, DLMS

DLM3 — Metal Body — 60 Pin Connectors — Crimp Contacts

Plug



- For contact cavity arrangement, see page 68.
- For panel cutout and mounting hole pattern, see page 65.
- Crimp contacts are to be ordered separately and installed by customer, see pages 52-53.
- Order actuating handle kit separately, see page 47.

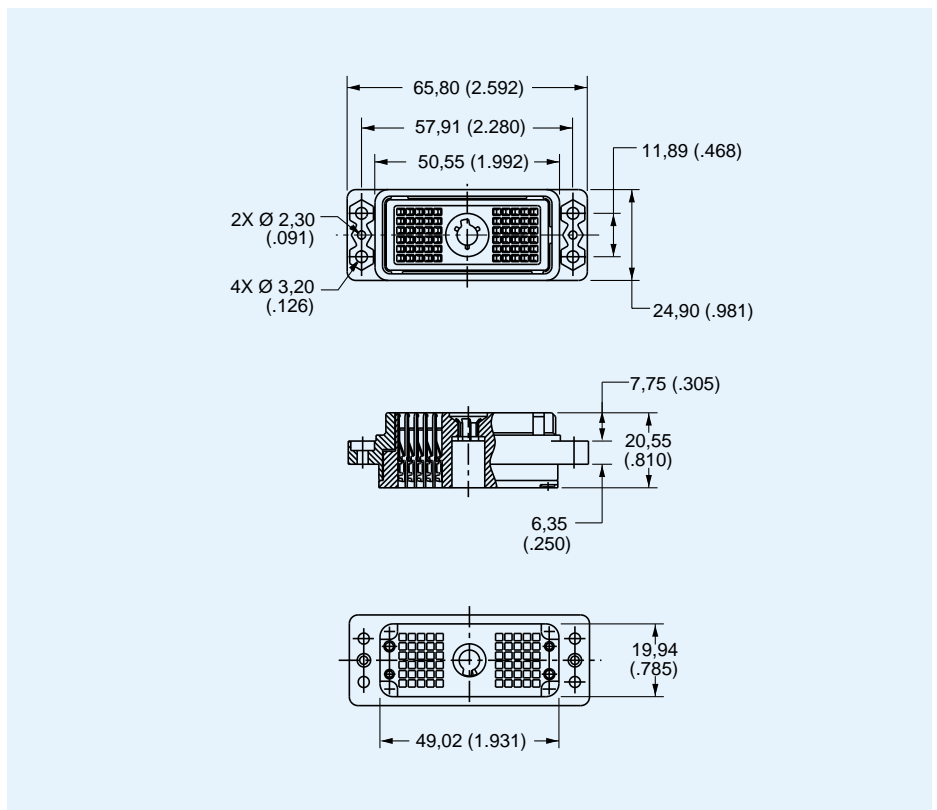


| Part Number | Nomenclature |
|-------------|--------------|
| 127050-0220 | DLM3-60P     |

Receptacle



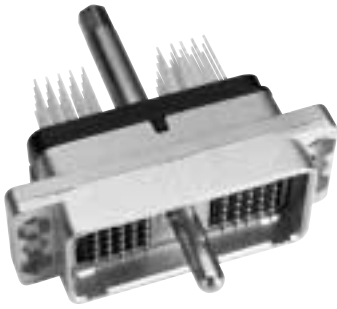
- For contact cavity arrangement, see page 68.
- For panel cutout and mounting hole pattern, see page 65.
- Crimp contacts are to be ordered separately and installed by customer, see pages 52-53.



| Part Number | Nomenclature |
|-------------|--------------|
| 127050-0224 | DLM3-60R     |

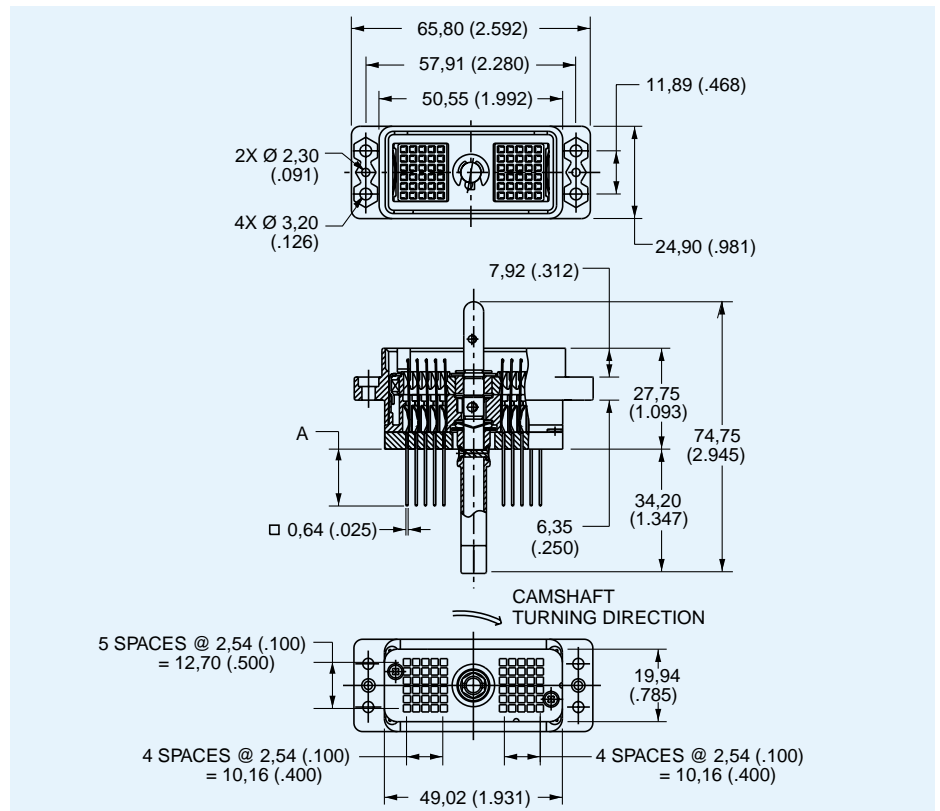
DLM3 — Metal Body — 60 Pin Connectors — Square Post Contacts

Plug



- For contact cavity arrangement, see page 68.
- For panel cutout and mounting hole pattern, see page 65.
- For PC hole pattern, see page 62.
- Front Removable 0,64 (.025) Square Posts 2,54 (.100) Centers.
- Order actuating handle kit separately, see page 47.

| Part Number | Nomenclature | A            |
|-------------|--------------|--------------|
| 112138-0001 | DLM3-60PW4A  | 15,37 (.605) |
| 112138-0000 | DLM3-60PW6A  | 7,11 (.280)  |
| 112138-0002 | DLM112138-2  | 3,18 (.125)  |

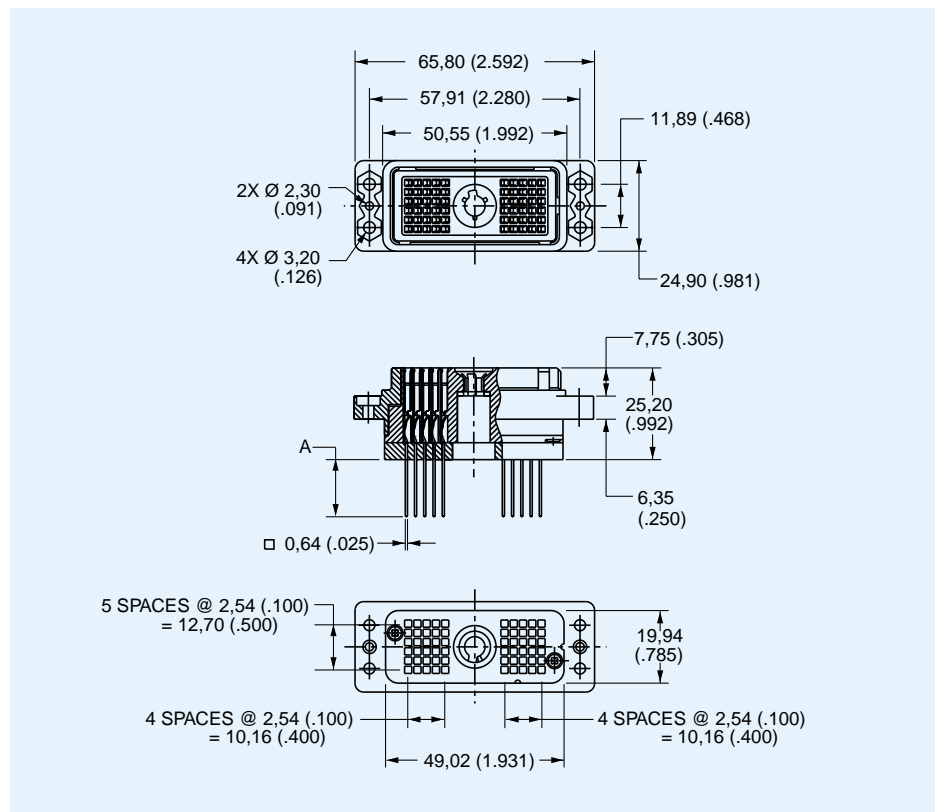


Receptacle



- For contact cavity arrangement, see page 68.
- For panel cutout and mounting hole pattern, see page 65.
- For PC hole pattern, see page 62.
- Front Removable 0,64 (.025) Square Posts 2,54 (.100) Centers.

| Part Number | Nomenclature | A            |
|-------------|--------------|--------------|
| 112139-0001 | DLM3-60RW4B  | 15,37 (.605) |
| 112139-0000 | DLM3-60RW6B  | 7,11 (.280)  |
| 112139-0002 | DLM112139-2  | 3,18 (.125)  |



DLM3, DLM3

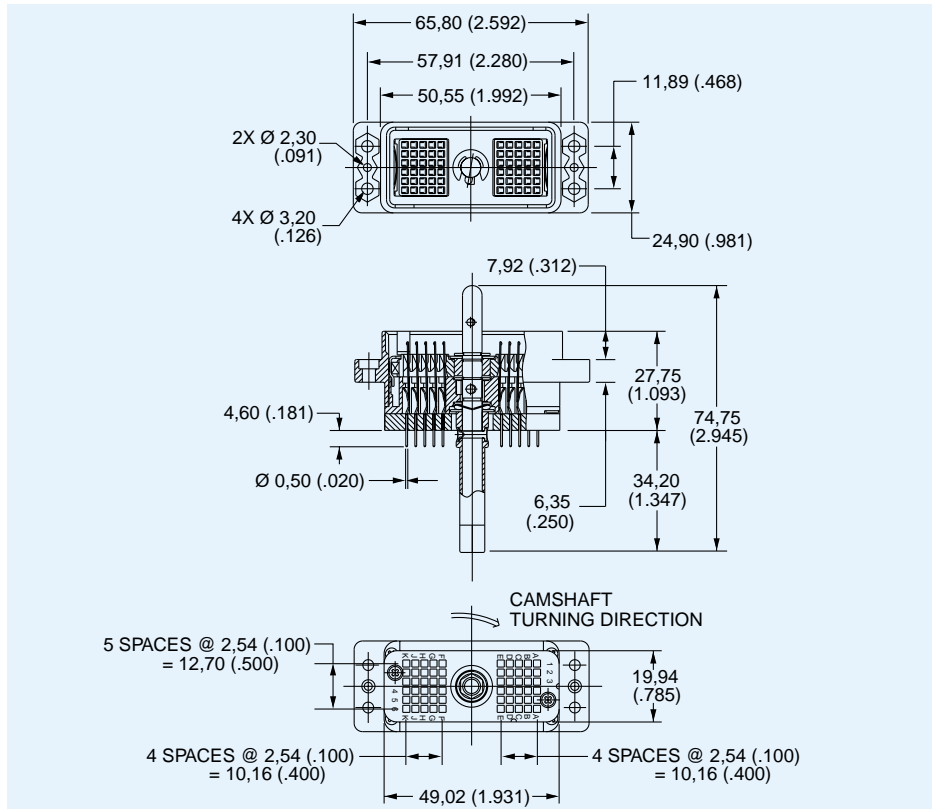


DLM3 — Metal Body — 60 Pin Connectors — PC/RC Contacts

Plug



- For contact cavity arrangement, see page 68.
- For panel cutout and mounting hole pattern, see page 65.
- For PC hole pattern, see page 62.
- Order actuating handle kit separately, see page 47.

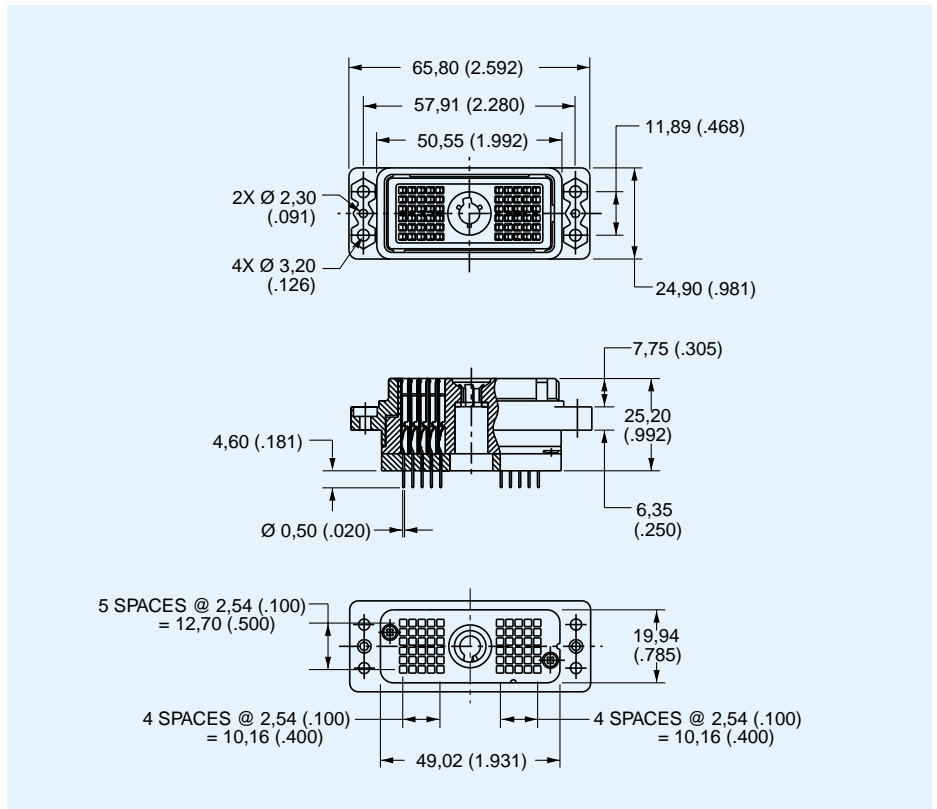


| Part Number | Nomenclature |
|-------------|--------------|
| 127050-0223 | DLM3-60PC    |

Receptacle



- For contact cavity arrangement, see page 68.
- For panel cutout and mounting hole pattern, see page 65.
- For PC hole pattern, see page 62.



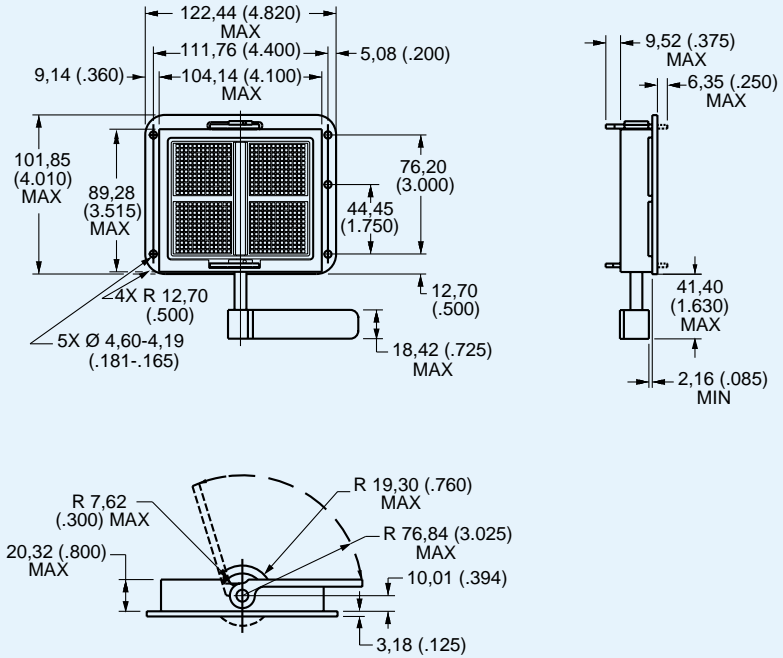
| Part Number | Nomenclature |
|-------------|--------------|
| 127050-0227 | DLM3-60RC    |

DL4 — Metal Frame — 624 Pin Connector — Crimp Contacts

Plug



- For contact cavity arrangement, see page 69.
- For panel cutout and mounting hole pattern, see page 65.
- Crimp contacts are to be ordered separately and installed by customer, see pages 52-53.
- Actuating handle is part of completed assembly.

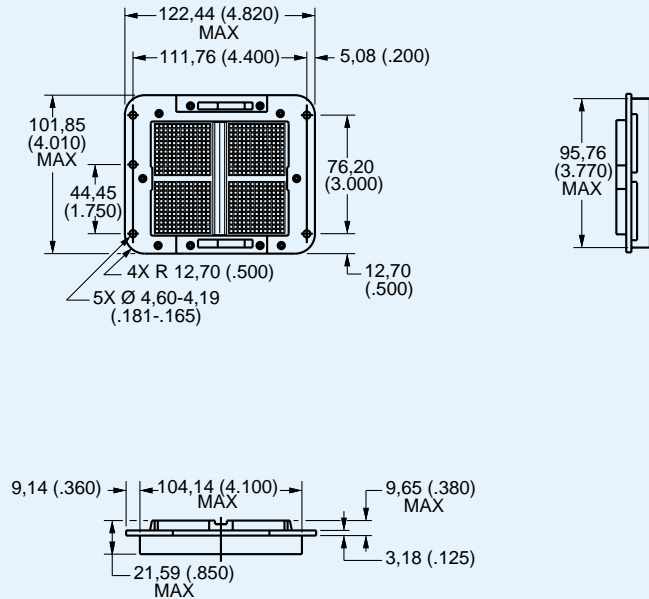


| Part Number | Nomenclature |
|-------------|--------------|
| 110959-0002 | DL4-624P     |

Receptacle



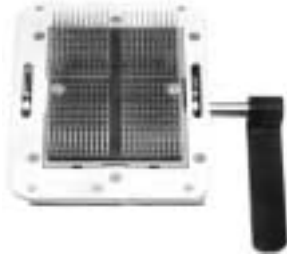
- For contact cavity arrangement, see page 69.
- For panel cutout and mounting hole pattern, see page 65.
- Crimp contacts are to be ordered separately and installed by customer, see pages 52-53.



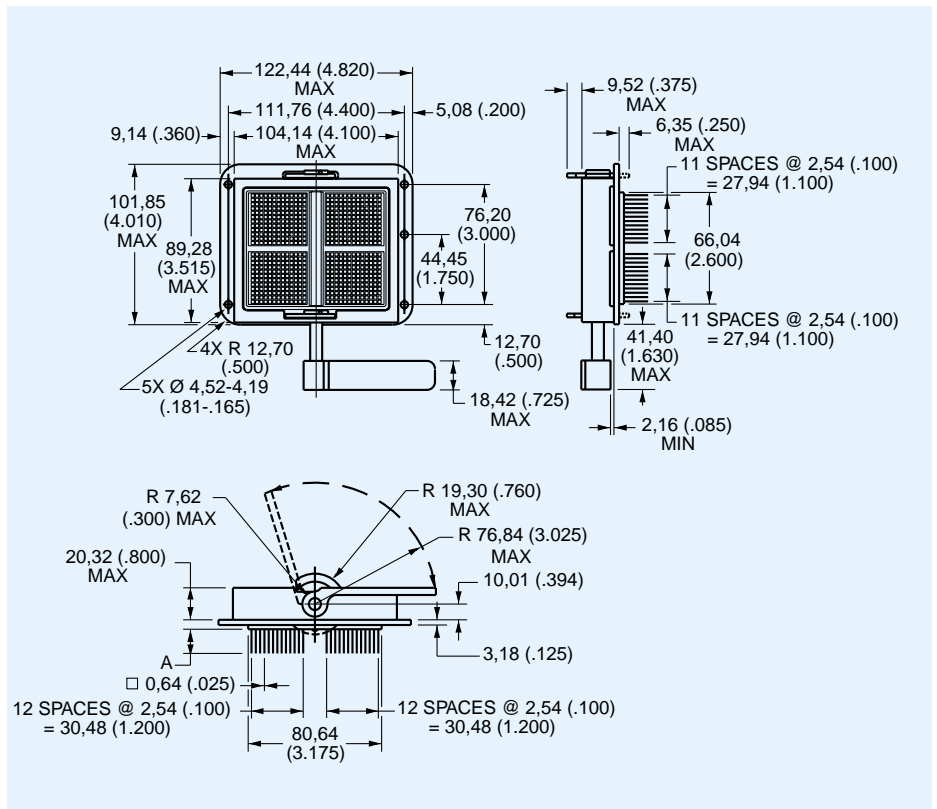
| Part Number | Nomenclature |
|-------------|--------------|
| 110960-0002 | DL4-624R     |

DL4 — Metal Frame — 624 Pin Connector — Square Post Contacts

Plug



- For contact cavity arrangement, see page 69.
- For panel cutout and mounting hole pattern, see page 65.
- Front Removable 0,64 (.025) Square Posts 2,54 (.100) Centers.
- Actuating handle is part of completed assembly.

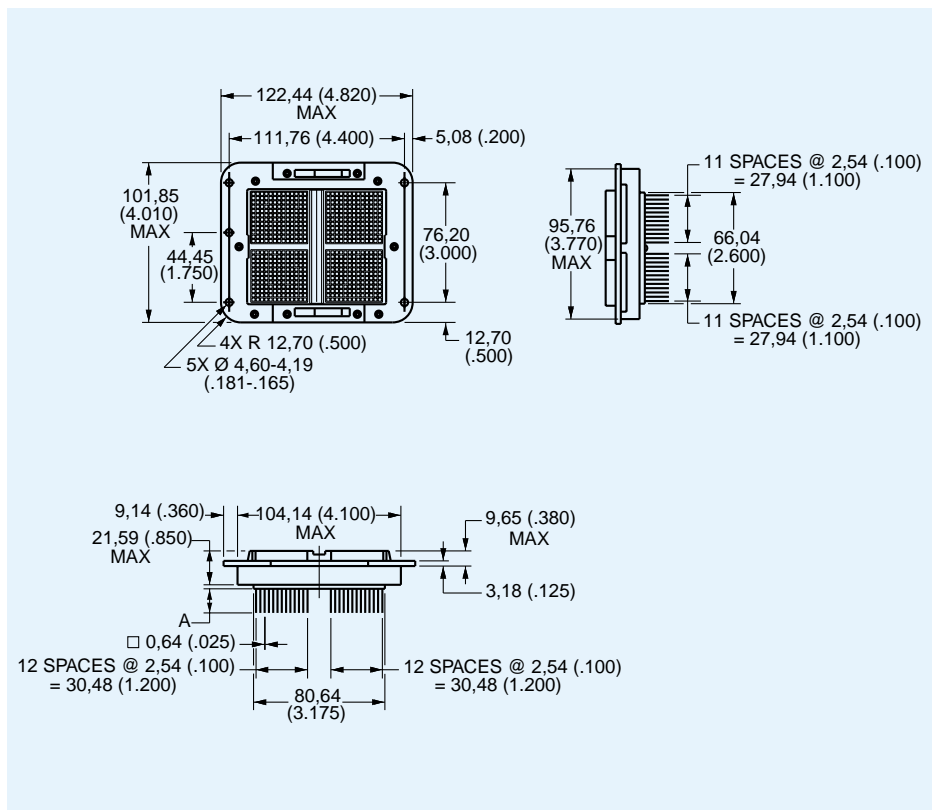


| Part Number | Nomenclature | A            |
|-------------|--------------|--------------|
| 110959-0011 | DL4-624PW4   | 15,37 (.605) |
| 110959-0035 | DL4-624PW4A  | 15,37 (.605) |
| 110959-0042 | DL4-624PW6A  | 7,11 (.280)  |

Receptacle



- For contact cavity arrangement, see page 69.
- For panel cutout and mounting hole pattern, see page 65.
- Front Removable 0,64 (.025) Square Posts 2,54 (.100) Centers.



| Part Number | Nomenclature | A            |
|-------------|--------------|--------------|
| 110960-0022 | DL4-624RW4   | 15,37 (.605) |
| 110960-0045 | DL4-624RW4B  | 15,37 (.605) |
| 110960-0048 | DL4-624RW6B  | 7,11 (.280)  |

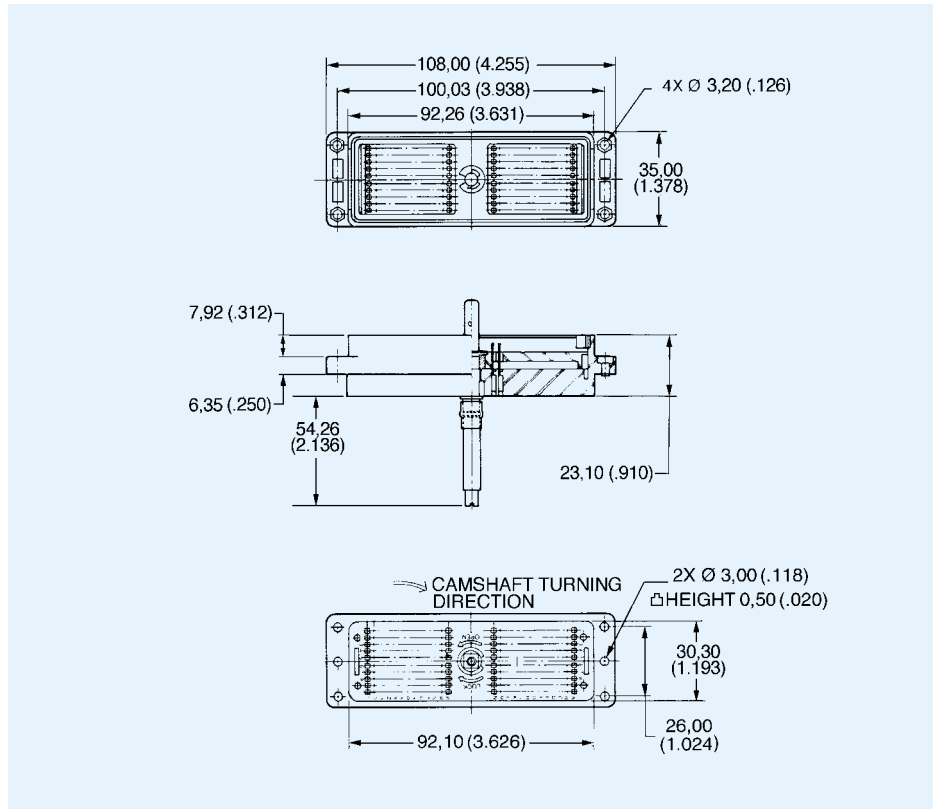
DL5 — Plastic Body — 260 Pin Connectors — Crimp Contacts

Plug



- For contact cavity arrangement, see page 69.
- For panel cutout and mounting hole pattern, see page 65.
- Crimp contacts are to be ordered separately and installed by customer, see pages 52-53.
- Order actuating handle kit separately, see page 47.

| Part Number | Nomenclature |
|-------------|--------------|
| 111986-0014 | DL5-260P     |

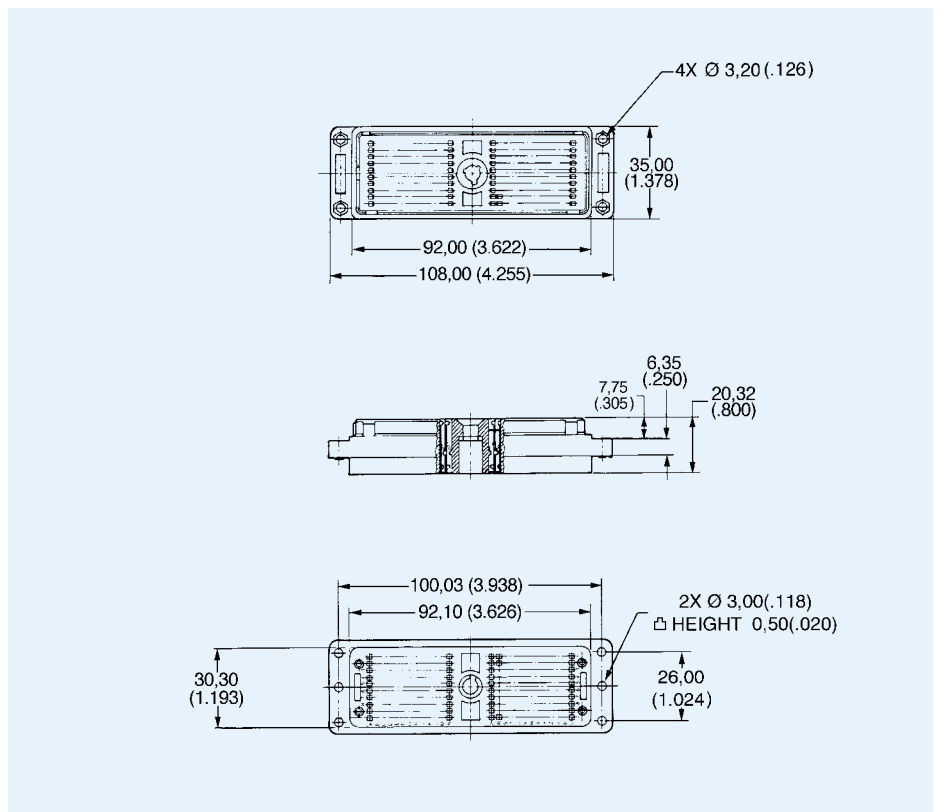


Receptacle



- For contact cavity arrangement, see page 69.
- For panel cutout and mounting hole pattern, see page 65.
- Crimp contacts are to be ordered separately and installed by customer, see pages 52-53.

| Part Number  | Nomenclature |
|--------------|--------------|
| 086-4501-000 | DL5-260R     |



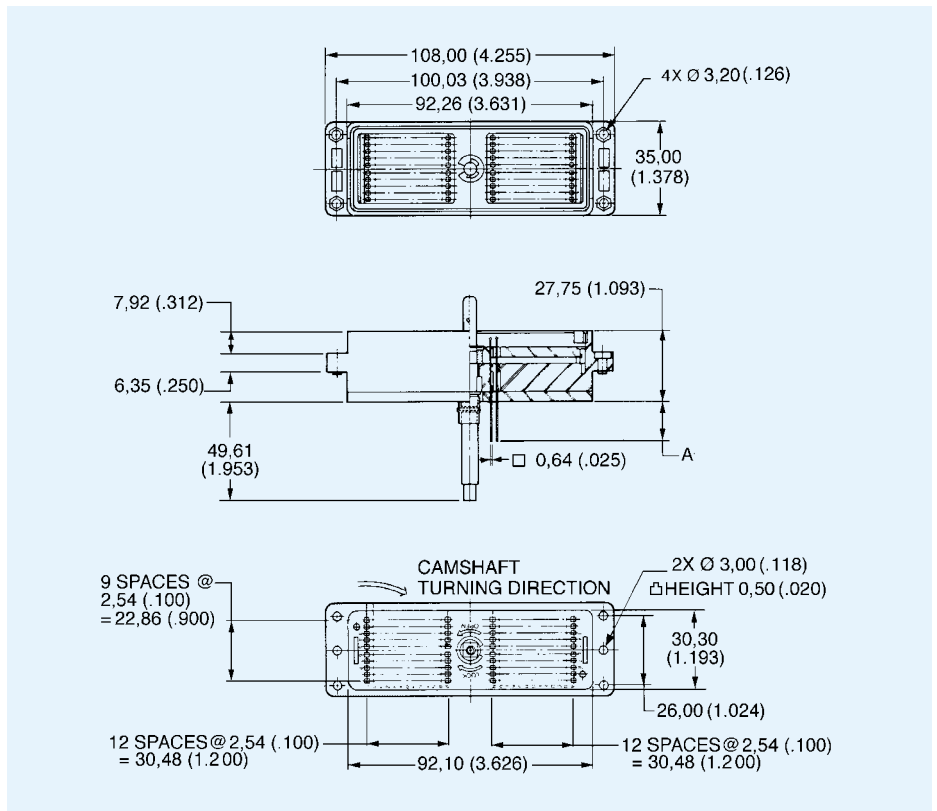
DL5, DLMS

DL5 — Plastic Body — 260 Pin Connectors — Square Post Contacts

Plug

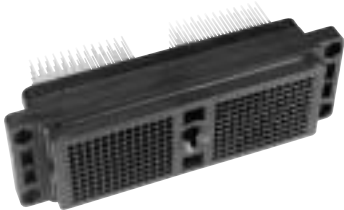


- For contact cavity arrangement, see page 69.
- For panel cutout and mounting hole pattern, see page 65.
- For PC hole pattern, see page 62.
- Front Removable 0,64 (.025) Square Posts 2,54 (.100) Centers.
- Order actuating handle kit separately, see page 47.

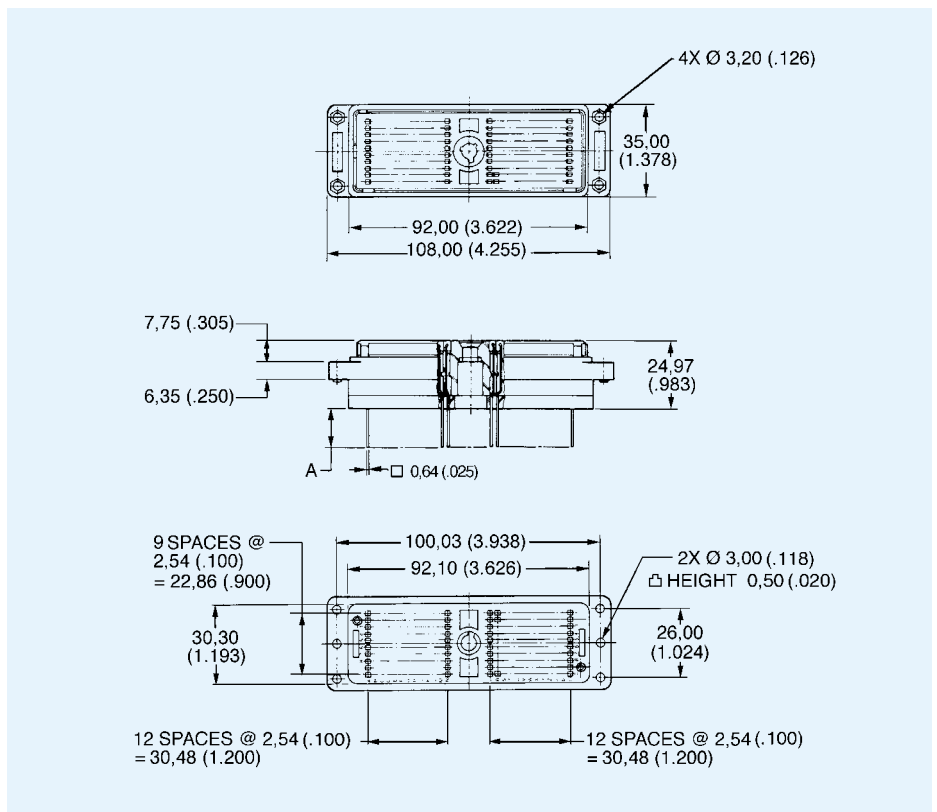


| Part Number | Nomenclature | A            |
|-------------|--------------|--------------|
| 111986-0003 | DL5-260PW4A  | 15,37 (.605) |
| 111986-0000 | DL5-260PW6A  | 7,11 (.280)  |

Receptacle



- For contact cavity arrangement, see page 69.
- For panel cutout and mounting hole pattern, see page 65.
- For PC hole pattern, see page 62.
- Front Removable 0,64 (.025) Square Posts 2,54 (.100) Centers.



| Part Number | Nomenclature | A            |
|-------------|--------------|--------------|
| 111987-0001 | DL5-260RW4B  | 15,37 (.605) |
| 111987-0000 | DL5-260RW6B  | 7,11 (.280)  |

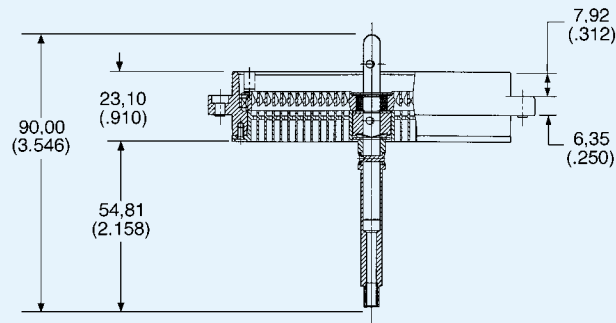
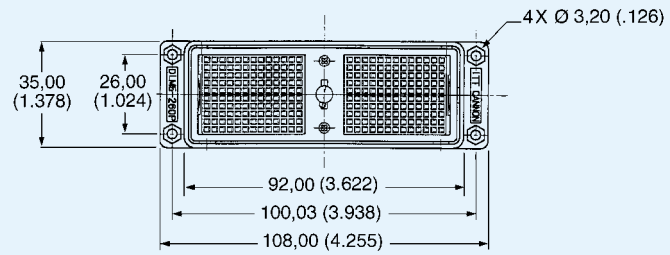
DL5, DLMS

DLM5 — Metal Body — 260 Pin Connectors — Crimp Contacts

Plug



- For contact cavity arrangement, see page 69.
- For panel cutout and mounting hole pattern, see page 65.
- Crimp contacts are to be ordered separately and installed by customer, see pages 52-53.
- Order actuating handle kit separately, see page 47.

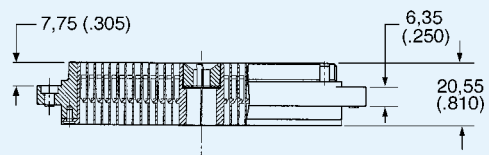
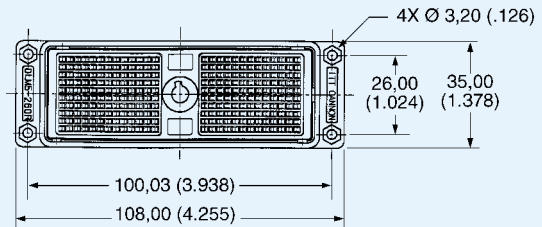


| Part Number | Nomenclature |
|-------------|--------------|
| 127050-0109 | DLM5-260P    |

Receptacle



- For contact cavity arrangement, see page 69.
- For panel cutout and mounting hole pattern, see page 65.
- Crimp contacts are to be ordered separately and installed by customer, see pages 52-53.



| Part Number | Nomenclature |
|-------------|--------------|
| 127050-0110 | DLM5-260R    |

DLM5, DLM5

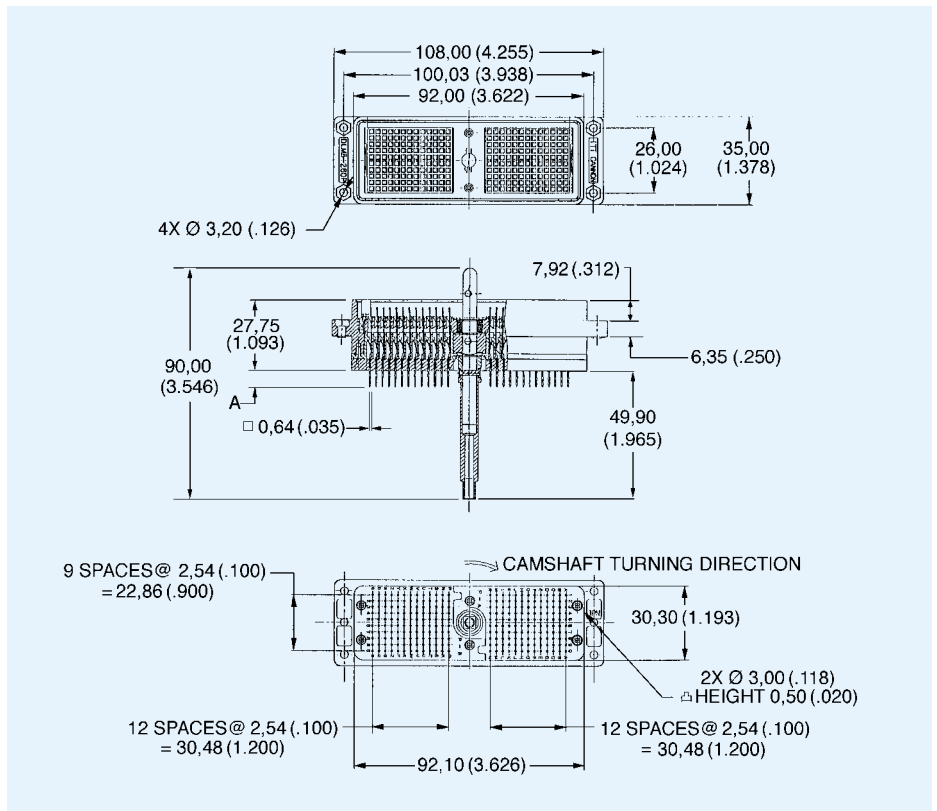
DLM5 — Metal Body — 260 Pin Connectors — Square Post Contacts

Plug



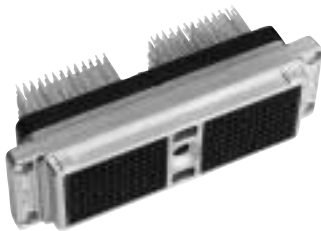
- For contact cavity arrangement, see page 69.
- For panel cutout and mounting hole pattern, see page 65.
- For PC hole pattern, see page 62.
- Front Removable 0,64 (.025) Square Posts 2,54 (.100) Centers.
- Order actuating handle kit separately, see page 47.

| Part Number | Nomenclature | A            |
|-------------|--------------|--------------|
| 112086-0002 | DLM5-260PW4A | 15,37 (.605) |
| 112086-0000 | DLM5-260PW6A | 7,11 (.280)  |
| 112086-0003 | DLM112086-3  | 3,18 (.125)  |



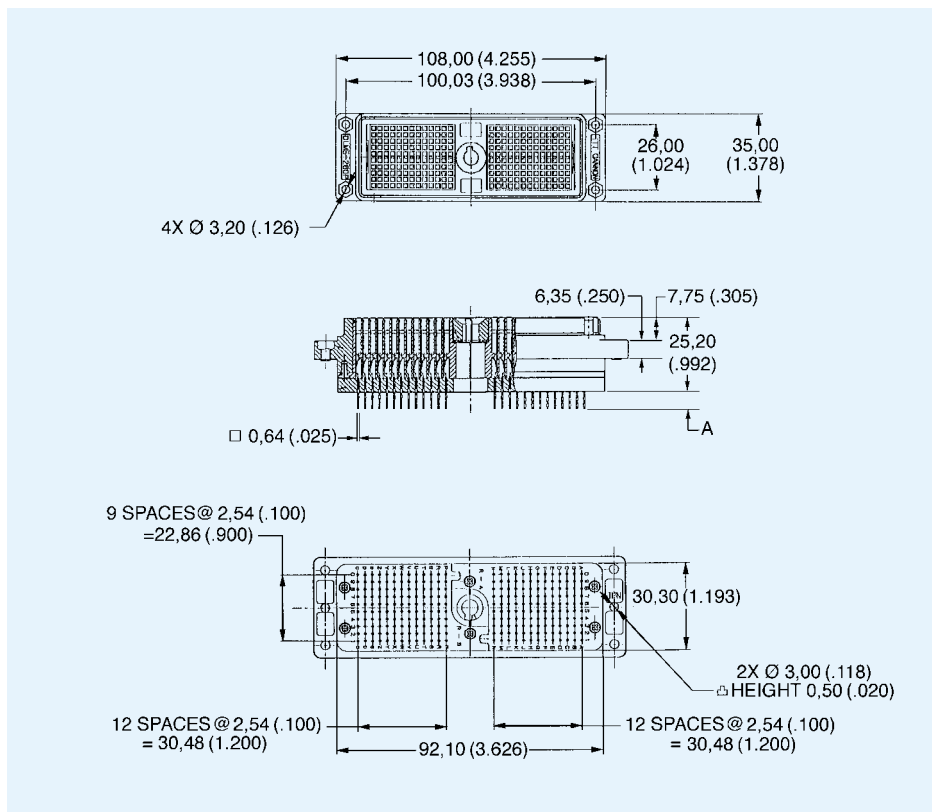
DLM5, DLM5

Receptacle



- For contact cavity arrangement, see page 69.
- For panel cutout and mounting hole pattern, see page 65.
- For PC hole pattern, see page 62.
- Front Removable 0,64 (.025) Square Posts 2,54 (.100) Centers.

| Part Number | Nomenclature | A            |
|-------------|--------------|--------------|
| 112087-0001 | DLM5-260RW4B | 15,37 (.605) |
| 112087-0000 | DLM5-260RW6B | 7,11 (.280)  |
| 112087-0003 | DLM112087-3  | 3,18 (.125)  |



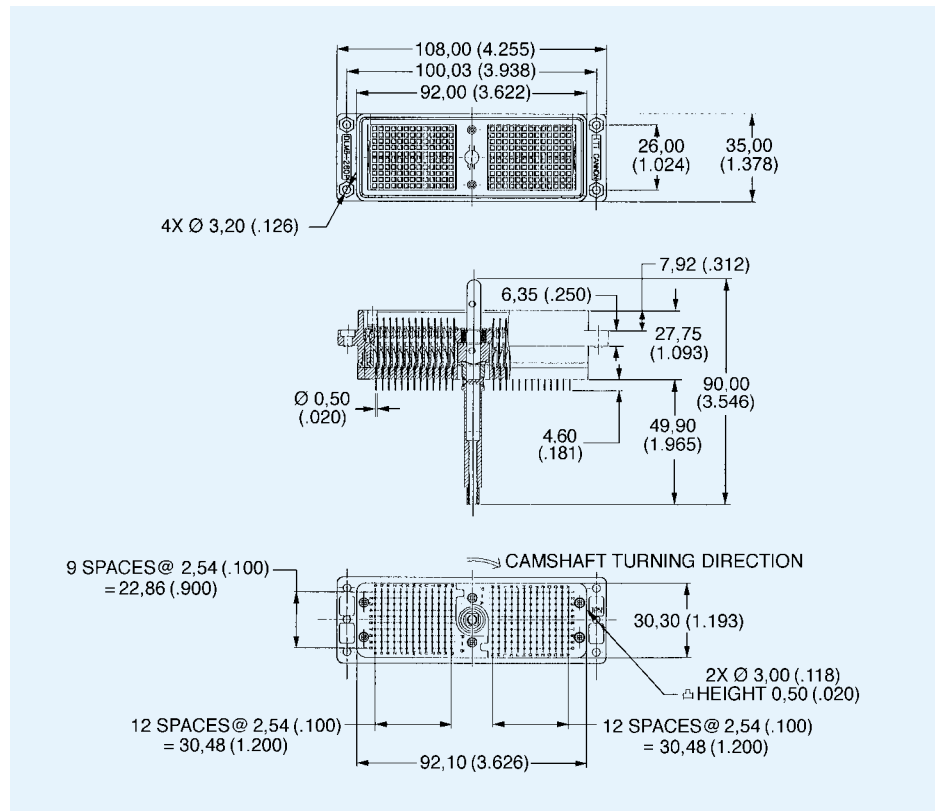
DLM5 — Metal Body — 260 Pin Connectors — PC/RC Contacts

Plug



- For contact cavity arrangement, see page 69.
- For panel cutout and mounting hole pattern, see page 65.
- For PC hole pattern, see page 62.
- Order actuating handle kit separately, see page 47.

| Part Number | Nomenclature |
|-------------|--------------|
| 127050-0111 | DLM5-260PC   |

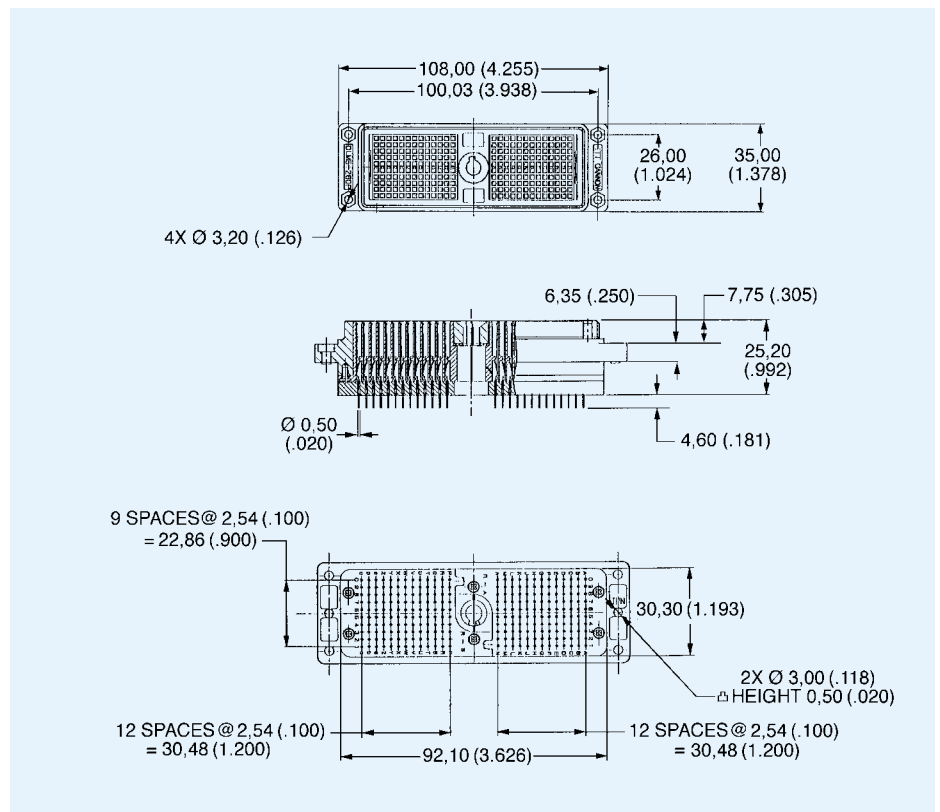


Receptacle



- For contact cavity arrangement, see page 69.
- For panel cutout and mounting hole pattern, see page 65.
- For PC hole pattern, see page 62.

| Part Number | Nomenclature |
|-------------|--------------|
| 127050-0112 | DLM5-260RC   |



DLM5, DLM5



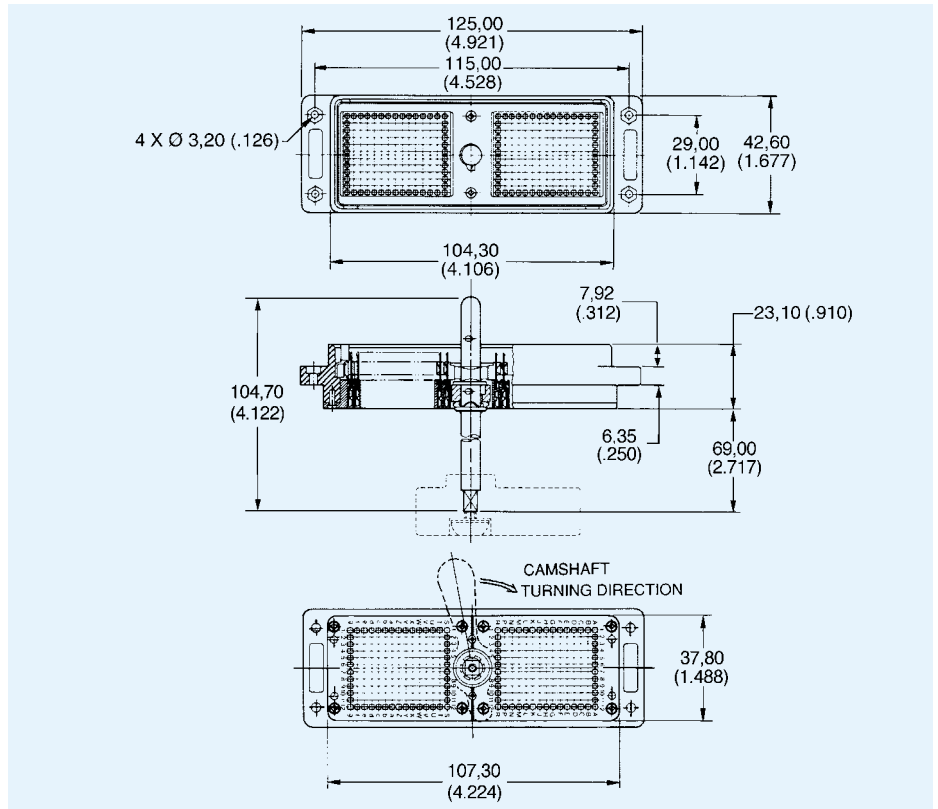
DLM6 — Metal Body — 360 Pin Connectors — Crimp Contacts

Plug



- For contact cavity arrangement, see page 69.
- For panel cutout and mounting hole pattern, see page 65.
- Crimp contacts are to be ordered separately and installed by customer, see pages 52-53.
- Order actuating handle kit separately, see page 47.

| Part Number | Nomenclature |
|-------------|--------------|
| 127050-0034 | DLM6-360P    |

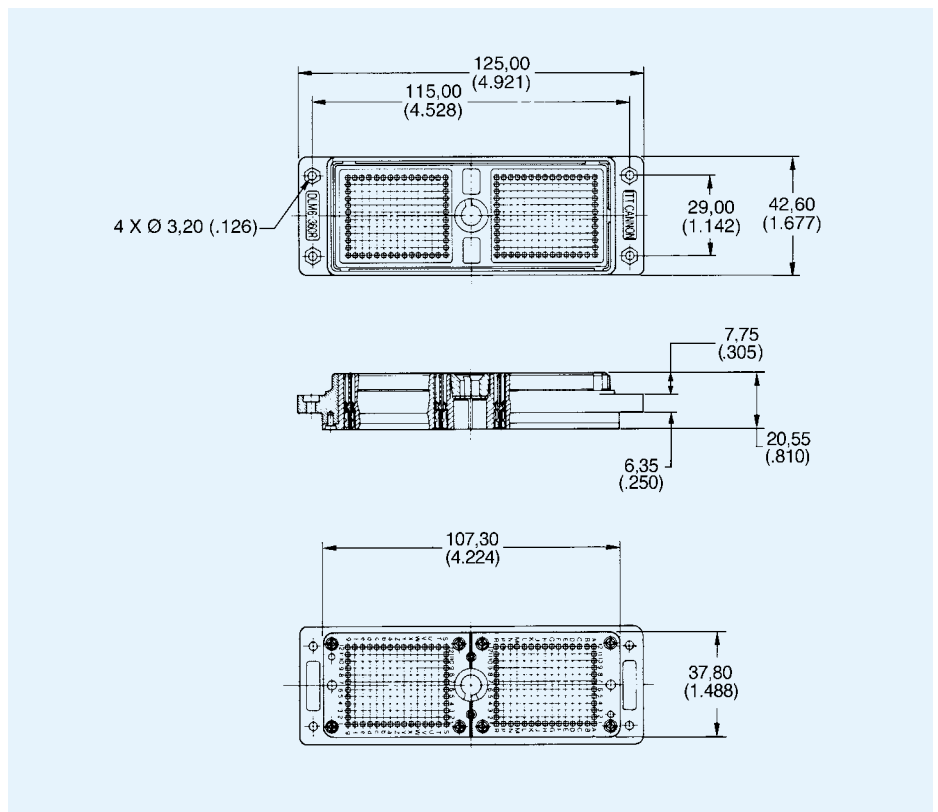


Receptacle



- For contact cavity arrangement, see page 69.
- For panel cutout and mounting hole pattern, see page 65.
- Crimp contacts are to be ordered separately and installed by customer, see pages 52-53.

| Part Number | Nomenclature |
|-------------|--------------|
| 127050-0045 | DLM6-360R    |



DLM6

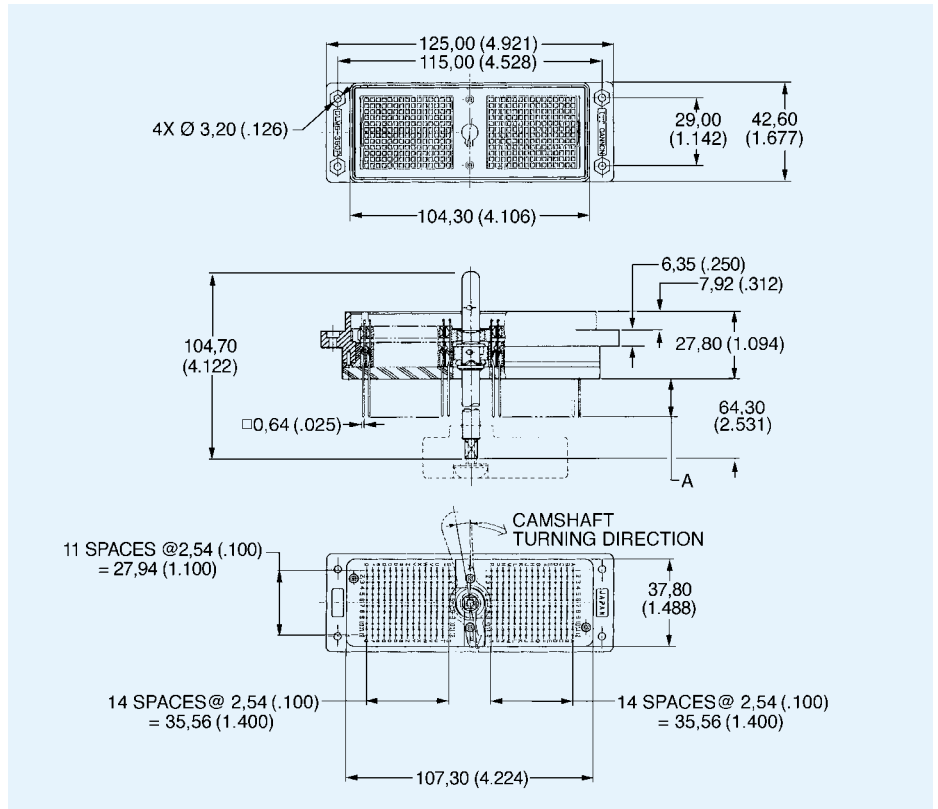
DLM6 — Metal Body — 360 Pin Connectors — Square Post Contacts

Plug



- For contact cavity arrangement, see page 69.
- For panel cutout and mounting hole pattern, see page 65.
- For PC hole pattern, see page 63.
- Front Removable 0,64 (.025) Square Posts 2,54 (.100) Centers.
- Order actuating handle kit separately, see page 47.

| Part Number | Nomenclature | A            |
|-------------|--------------|--------------|
| 111995-0001 | DLM6-360PW4A | 15,37 (.605) |
| 111995-0000 | DLM6-360PW6A | 7,11 (.280)  |
| 111995-0007 | DLM111995-7  | 3,18 (.125)  |

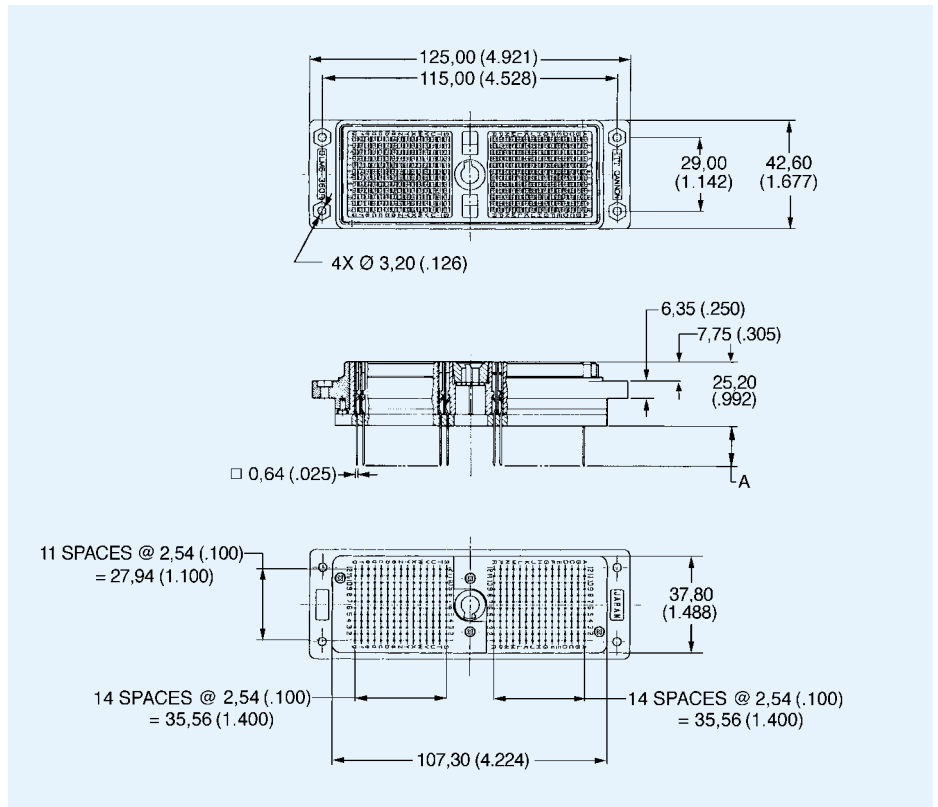


Receptacle



- For contact cavity arrangement, see page 69.
- For panel cutout and mounting hole pattern, see page 65.
- For PC hole pattern, see page 63.
- Front Removable 0,64 (.025) Square Posts 2,54 (.100) Centers.

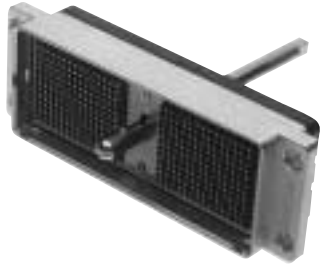
| Part Number | Nomenclature | A            |
|-------------|--------------|--------------|
| 111996-0000 | DLM6-360RW4B | 15,37 (.605) |
| 111996-0001 | DLM6-360RW6B | 7,11 (.280)  |
| 111996-0005 | DLM111996-5  | 3,18 (.125)  |



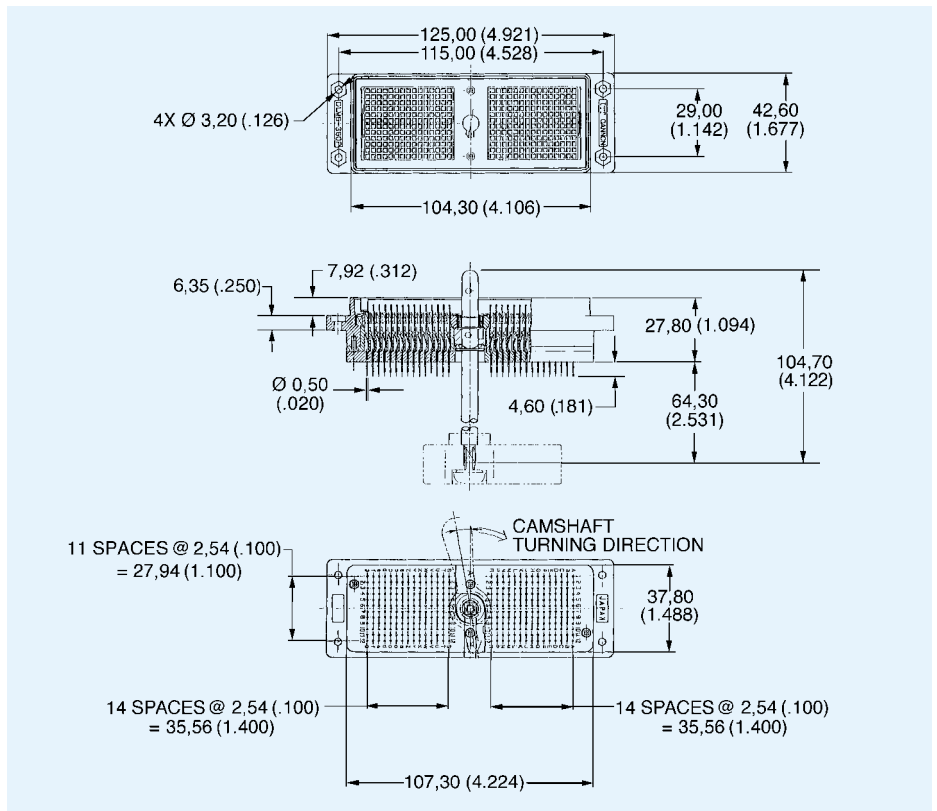
DLM6

DLM6 — Metal Body — 360 Pin Connectors — PC/RC Contacts

Plug

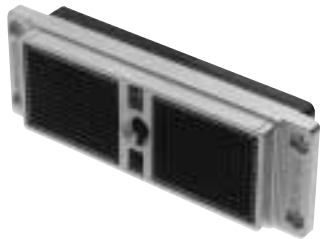


- For contact cavity arrangement, see page 69.
- For panel cutout and mounting hole pattern, see page 65.
- For PC hole pattern, see page 63.
- Order actuating handle kit separately, see page 47.

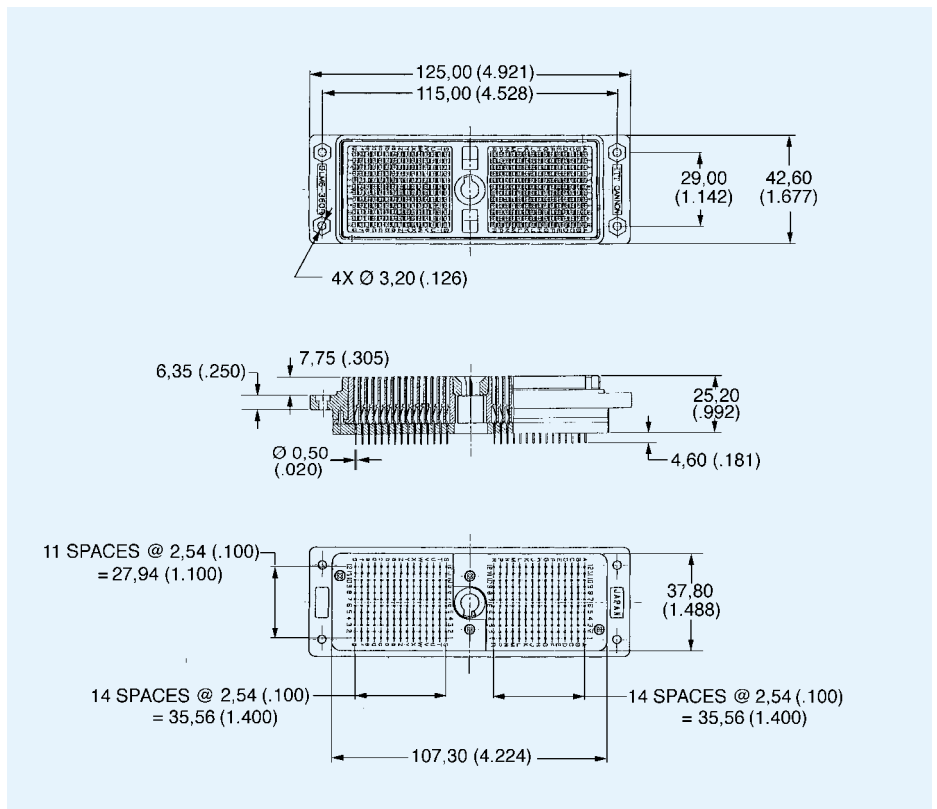


| Part Number | Nomenclature |
|-------------|--------------|
| 127050-0097 | DLM6-360PC   |

Receptacle



- For contact cavity arrangement, see page 69.
- For panel cutout and mounting hole pattern, see page 65.
- For PC hole pattern, see page 63.



| Part Number | Nomenclature |
|-------------|--------------|
| 127050-0098 | DLM6-360RC   |

DLM6

Accessories

Cannon offers a wide selection of accessories that allow the design engineers to configure the product for their exacting needs. The accessories range from the simple actuating handle to junction and backshells, as well as polarizing posts and protective covers for the contacts.

**Actuating handles** are the same for the DL1/2/3 and DLM1/2/3 series. The DL5/DLM5 and DLM6 series have specific handles. Handles are sold separately since many applications require the connector to be attached or removed only by an authorized technician.

**Plastic junction shells** are available for the DL1/2/3 series for encasement of the crimp contacts after complete installation into the connector. These shells also make it possible for the DL to be used as a cable-to-cable mating connector as they can be used both on the plug and the receptacle. The DL1/2/3 plastic junction shells have optional secondary cable entry capability by removing the molded in cable entry plugs. Cable clamp kits are available to affix the cable to the second entry. This second entry option is very useful in applications where the large wire sizes make the cable diameter too large to be handled from a single entry port.

**Metal Backshells** are available for the entire DL/DLM series. The metal backshells are constructed from die cast aluminum with a nickel plating to facilitate in EMI/RFI shielding of the connector system. Shielding has become a driving force because of ever increasing stringent EMI/RFI regulations.



**Polarizing posts** are available to offer a keying feature for both the DL and DLM connectors. The polarizing posts can be installed in specific orientation so that plugs of the same size connectors can only be mated in predetermined receptacles. This feature offers the designer the ability to fool-proof the attachment possibilities to protect accidental damage to the system.

**Protective covers** of plastic and anti-static rubber are available to offer contact protection from physical damage or dust. Since the DL series has a high density of contacts in an exposed area, these covers are very useful for many applications. For example: where systems have multiple connectors; when the connections are often left unattached; or when the system parts are put into storage.

Accessories Selection Guide

| Connector Series | Actuating Handles<br>see page 47 | Protective Covers     |                        | Metal Shell EMI/RFI Shielding<br>see page 49 | Plastic Junction Shell<br>see page 46 | Cable Clamps<br>see page 46 | Metal Backshell<br>see pages 44-45 | Polarizing Posts<br>see page 48 |
|------------------|----------------------------------|-----------------------|------------------------|--|---------------------------------------|-----------------------------|------------------------------------|---------------------------------|
|                  |                                  | Rubber<br>see page 47 | Plastic<br>see page 47 |  |                                       |                             |                                    |                                 |
| DL1-156          | ●                                | ●                     | ●                      | -  | ●                                     | ●                           | ●                                  | ●                               |
| DL2-96           | ●                                | ●                     | ●                      | -  | ●                                     | ●                           | ●                                  | ●                               |
| DL3-60           | ●                                | ●                     | ●                      | -  | ●                                     | ●                           | ●                                  | ●                               |
| DL4-624          | -                                | ●                     | -                      | -  | -                                     | -                           | -                                  | -                               |
| DL4-1248         | -                                | ●                     | -                      | -  | -                                     | -                           | -                                  | -                               |
| DL4-2496         | -                                | ●                     | -                      | -  | -                                     | -                           | -                                  | -                               |
| DL5-260          | ●                                | -                     | -                      | ●  | -                                     | -                           | ●                                  | ●                               |
| DLM1-156         | ●                                | ●                     | ●                      | -  | ●                                     | ●                           | ●                                  | ●                               |
| DLM2-96          | ●                                | ●                     | ●                      | -  | ●                                     | ●                           | ●                                  | ●                               |
| DLM3-60          | ●                                | ●                     | ●                      | -  | ●                                     | ●                           | ●                                  | ●                               |
| DLM5-260         | ●                                | -                     | -                      | -  | -                                     | -                           | ●                                  | ●                               |
| DLM6-360         | ●                                | -                     | -                      | -  | -                                     | -                           | ●                                  | ●                               |
| DL1-156          | -                                | -                     | -                      | -  | -                                     | -                           | -                                  | -                               |
| DL2-96           | -                                | -                     | -                      | -  | -                                     | -                           | -                                  | -                               |

●Compatible  
-Not Compatible

Metal Backshell

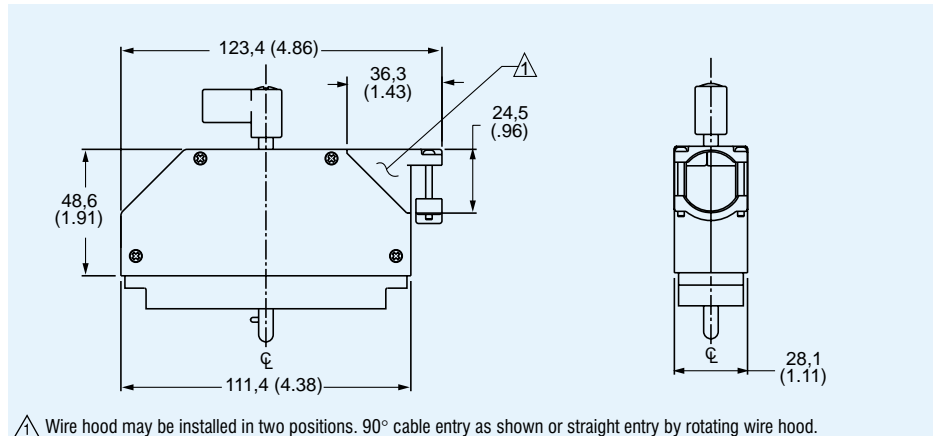
DL1, DLM1



- DL1, DLM1 is a two piece shell design.
- Kit consists of 2 shells, 10 screws, 1 wire hood, 1 wire clamp, 1 lock/open indication seal.

Materials and Finishes

|           |                               |
|-----------|-------------------------------|
| Shell:    | Nickel over die cast aluminum |
| Hardware: | Stainless Steel               |



| Used On   | Part Number  | Mounting        | Max Cable Entry |
|-----------|--------------|-----------------|-----------------|
| DL1, DLM1 | 249-4516-000 | Straight or 90° | 19,05 (.750)    |

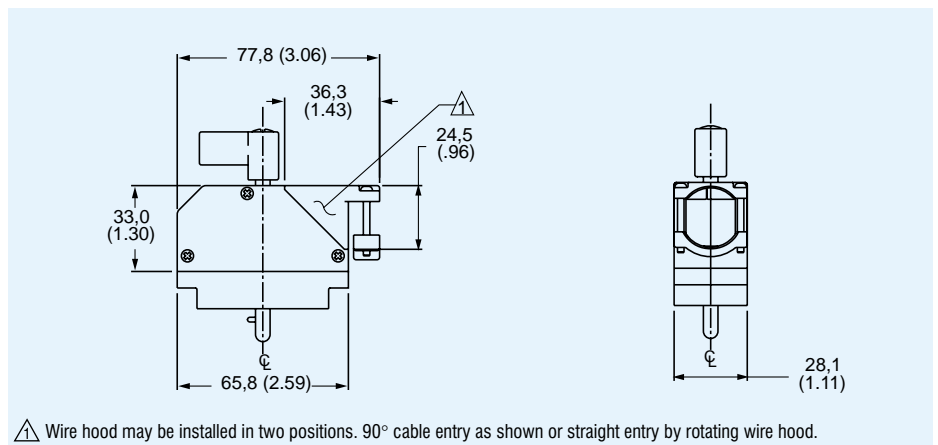
DL2, DLM2



- DL2, DLM2 is a two piece shell design.
- Kit consists of 2 shells, 9 screws, 1 wire hood, 1 wire clamp, 1 lock/open indication seal.

Materials and Finishes

|           |                               |
|-----------|-------------------------------|
| Shell:    | Nickel over die cast aluminum |
| Hardware: | Stainless Steel               |



| Used On   | Part Number  | Mounting        | Max Cable Entry |
|-----------|--------------|-----------------|-----------------|
| DL2, DLM2 | 249-4517-000 | Straight or 90° | 19,05 (.750)    |

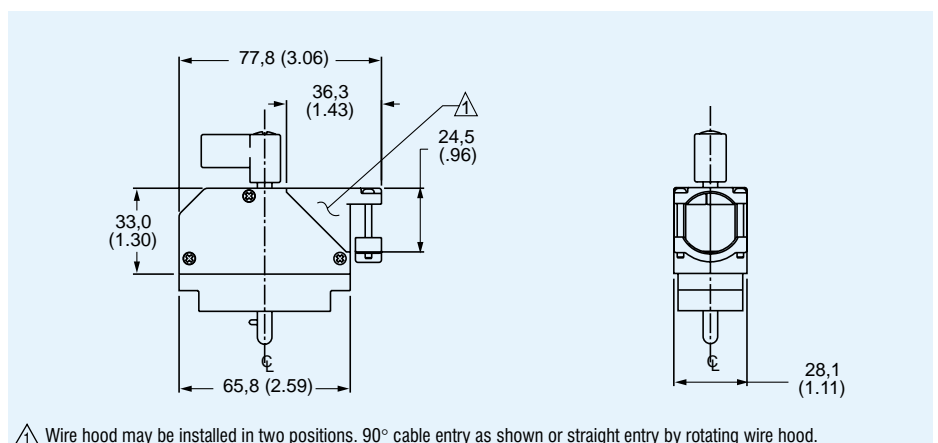
DL3, DLM3



- DL3, DLM3 is a two piece shell design.
- Kit consists of 2 shells, 9 screws, 1 wire hood, 1 wire clamp, 1 lock/open indication seal.

Materials and Finishes

|           |                               |
|-----------|-------------------------------|
| Shell:    | Nickel over die cast aluminum |
| Hardware: | Stainless Steel               |



| Used On   | Part Number  | Mounting        | Max Cable Entry |
|-----------|--------------|-----------------|-----------------|
| DL3, DLM3 | 249-4518-000 | Straight or 90° | 19,05 (.750)    |

Accessories

Metal Backshell

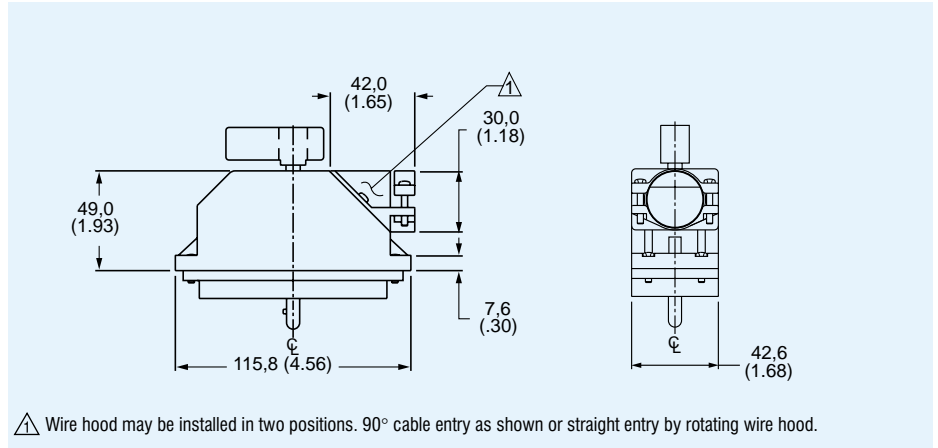
DL5, DLM5



- DL5, DLM5 is a one piece shell design.
- Kit consists of 1 shell, 8 screws, 1 wire hood, 1 wire clamp, 4 nuts.

Materials and Finishes

|           |                               |
|-----------|-------------------------------|
| Shell:    | Nickel over die cast aluminum |
| Hardware: | Stainless Steel               |



| Used On   | Part Number  | Mounting        | Max Cable Entry |
|-----------|--------------|-----------------|-----------------|
| DL5, DLM5 | 249-4501-000 | Straight or 90° | 22,23 (.875)    |

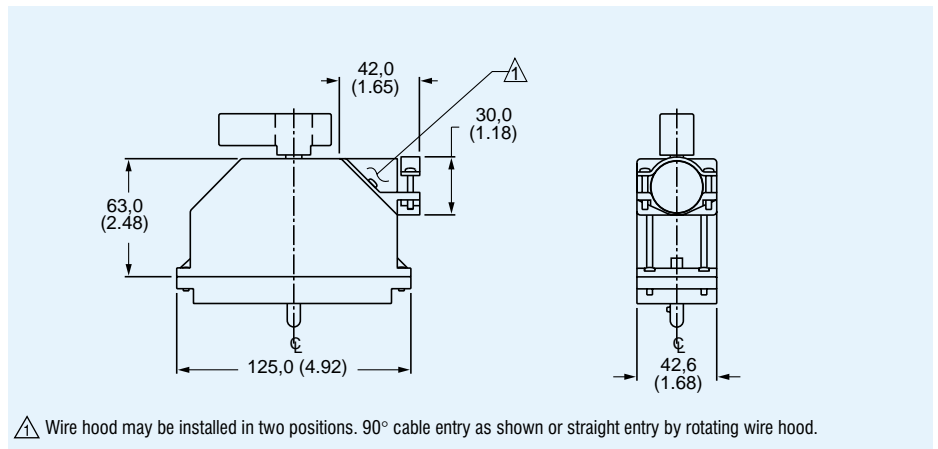
DLM6



- DLM6 is a one piece shell design.
- Kit consists of 1 shell, 8 screws, 1 wire hood, 1 wire clamp, 4 nuts.

Materials and Finishes

|           |                               |
|-----------|-------------------------------|
| Shell:    | Nickel over die cast aluminum |
| Hardware: | Stainless Steel               |



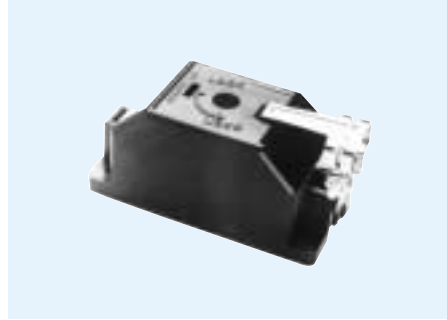
| Used On | Part Number  | Mounting        | Max Cable Entry |
|---------|--------------|-----------------|-----------------|
| DLM6    | 249-4515-000 | Straight or 90° | 28,00 (1.102)   |

Plastic Junction Shell Kits DL1, DL2, DL3

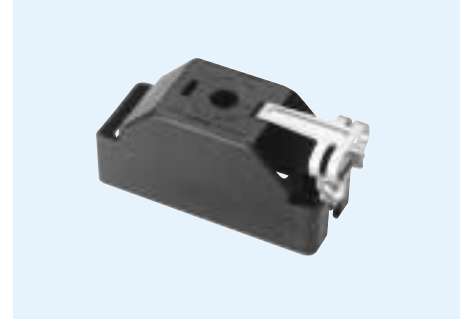
DL1-J/S



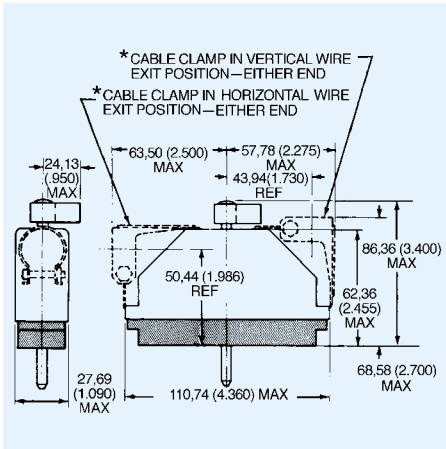
DL2-J/S



DL3-J/S

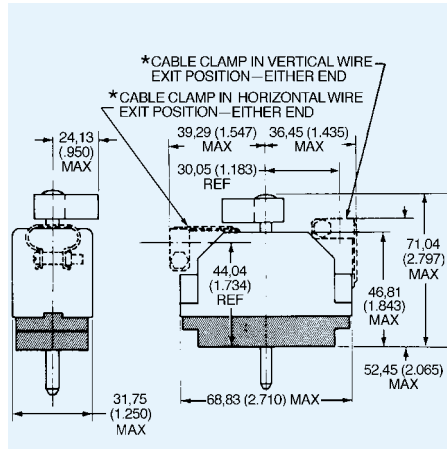


DL1 – Dimensions



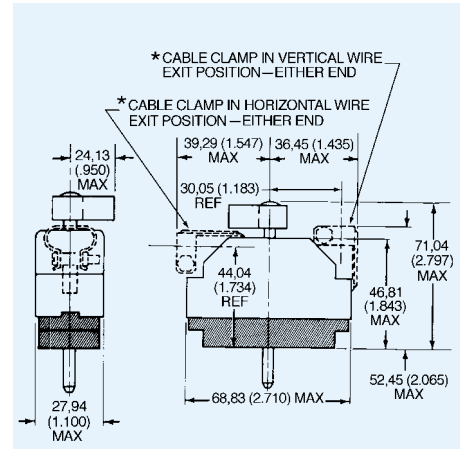
Note: DL1 shell is single piece.

DL2 – Dimensions



Note: DL2 is two piece shell.

DL3 – Dimensions



Note: DL3 is two piece shell.

- Stainless steel cable clamps.
- Thermoplastic UL 94V-1 rated.
- Straight, 90° or 45° cable entry.
- Accommodates up to 22,22 (.875) cable.
- For use with crimp contact connectors.
- Knockout plug provides alternate second entry.
- Complete with 4 attaching screws and nuts.
- Complete with one cable clamp kit.

Junction Shell Kit

| Used On   | J/S Kit   | Part Number  | Mounting        | Max. Cable Entry |
|-----------|-----------|--------------|-----------------|------------------|
| DL1, DLM1 | DL1-J/S   | 249-1950-000 | Straight or 90° | 22,23 (.875)     |
| DL2, DLM2 | DL2-J/S   | 249-1985-000 | Straight or 90° | 14,20 (.560)     |
| DL2, DLM2 | DL2-2-J/S | 249-2238-000 | Straight or 90° | 15,90 (.625)     |
| DL2, DLM2 | DL2-4-J/S | 249-2238-001 | Straight or 90° | 22,23 (.875)     |
| DL2, DLM2 | DL2-1-J/S | 249-1985-001 | 45°             | 15,90 (.625)     |
| DL3, DLM3 | DL3-J/S   | 249-2060-000 | Straight or 90° | 14,20 (.560)     |
| DL3, DLM3 | DL3-3-J/S | 249-2237-000 | Straight or 90° | 15,90 (.625)     |
| DL3, DLM3 | DL3-4-J/S | 249-2237-001 | Straight or 90° | 22,23 (.875)     |
| DL3, DLM3 | DL3-2-J/S | 249-2060-001 | 45°             | 15,90 (.625)     |

Cable Clamp Kit (For optional second entry)

| Used On  | C/C Kit   | Part Number  | Mounting        | Max. Cable Entry |
|----------|-----------|--------------|-----------------|------------------|
| DL1      | DL1-C/C   | 218-0179-000 | Straight or 90° | 22,23 (.875)     |
| DL2, DL3 | DL2-C/C   | 218-0180-000 | Straight or 90° | 14,20 (.560)     |
| DL2, DL3 | DL2-1-C/C | 218-0181-000 | 45°             | 15,90 (.625)     |
| DL2, DL3 | DL2-2-C/C | 218-0181-001 | Straight or 90° | 15,90 (.625)     |
| DL2, DL3 | DL2-3-C/C | 218-0200-000 | Straight or 90° | 22,23 (.875)     |

Actuating Handle Kit

DL1/2/3 & DLM1/2/3



- Provides a convenient method of actuating the contacts and cam for locking the connector.
- Kit provides actuating handle and attaching screw.
- Pointer on handle denotes “locked” and “open” positions.

DL5, DLM5



Handle Material: Glass-filled thermoplastic

DLM6



| Handle for:       | Part Number  |
|-------------------|--------------|
| DL1/2/3, DLM1/2/3 | 204-0016-000 |
| DL5, DLM5         | 204-4501-000 |
| DLM6              | 204-4500-000 |

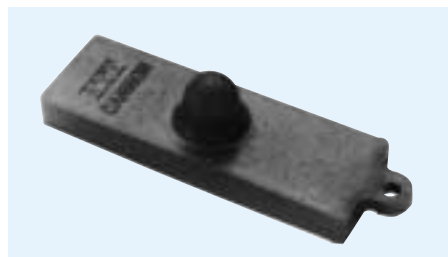
Protective Covers

Protective Covers – Rubber

- Fits snugly over mating faces.
- Prevents foreign matter from permeating contact cavities.

Material: Anti-static synthetic rubber – ASTM2BC520A14B14Z1.

DL, DLM Plug



| Description | Part Number  |
|-------------|--------------|
| DL1-156P    | 039-0242-000 |
| DL2-96P     | 039-0244-000 |
| DL3-60P     | 039-0246-000 |
| DL4-624P    | 039-0239-000 |
| DL4-1248P   | 039-0235-000 |
| DL4-2496P   | 039-0237-000 |

DL, DLM Receptacle



| Description | Part Number  |
|-------------|--------------|
| DL1-156R    | 039-0243-000 |
| DL2-96R     | 039-0245-000 |
| DL3-60R     | 039-0247-000 |
| DL4-624R    | 039-0240-000 |
| DL4-1248R   | 039-0236-000 |
| DL4-2496R   | 039-0238-000 |

Protective Covers – Plastic

- Fits snugly over mating faces.
- Prevents foreign matter from permeating contact cavities.

Material: Polyethylene.

DL, DLM Plug



| Description | Part Number  |
|-------------|--------------|
| DL1-156P    | 025-0852-000 |
| DL2-96P     | 025-0857-000 |
| DL3-60P     | 025-0850-000 |



Polarizing Posts

Corner Mounting\* for DL1/2/3, DLM6



Kit Number: 320-0021-006

- Kit contains 2 posts and 2 No. 4-40x9/32 pan head screws.
- Order 1 kit per connector.

| Description | Material        | Finish/Treatment             |
|-------------|-----------------|------------------------------|
| Post        | Zinc            | Yellow chromate over cadmium |
| Screw       | Stainless Steel | Passivated                   |

\* Corner mounting polarization is accomplished by replacing the nut with polarizing posts.

Corner Mounting\* for DL5, DLM5



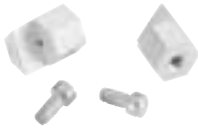
Kit Number: 320-4502-000

- Kit contains 4 posts and 4 M3x8 screws.
- Order 1 kit per connector.

| Description | Material        | Finish/Treatment |
|-------------|-----------------|------------------|
| Post        | Zinc            | Nickel           |
| Screw       | Stainless Steel | Passivated       |

\* Corner mounting polarization is accomplished by replacing the nut with polarizing posts.

Center Mounting for DL1/2, DLM1/2



Kit Number: 320-0021-005

- Kit contains 2 posts and 2 No. 2-56x3/16 fil. head screws.
- Order 1 kit per connector.

| Description | Material | Finish/Treatment            |
|-------------|----------|-----------------------------|
| Post        | Zinc     | Clear chromate over cadmium |
| Screw       | Steel    | Clear chromate over cadmium |

Corner Mounting\* for DLM1/2/3



Kit Number: 320-4505-000

- Kit contains 4 posts and 4 M2.5x12 screws.
- Order 1 kit per connector.
- For metal backshells.

| Description | Material        | Finish/Treatment |
|-------------|-----------------|------------------|
| Post        | Zinc            | Nickel           |
| Screw       | Stainless Steel | Passivated       |

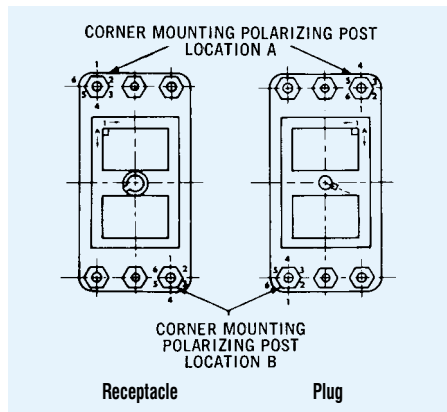
\* Corner mounting polarization is accomplished by replacing the nut with polarizing posts.

Recommended Key Nomenclature

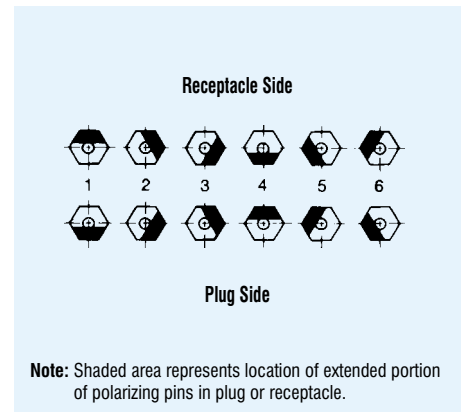
- Polarizing posts are a customer installed option.
- Recommended key nomenclature can be used for simple, opposite corner polarization.
- It is recommended that customers use their own configuration drawings.

Example:  
DL1-156RW4B32C describes a Size 1 receptacle connector with 156 front insertable/removable square post 50µ in. gold contacts with polarization position 3 at location A and position 2 at location B. (C ⇒ corner polarization). Receptacle DL1-156RW4B32C would mate with plug DL1-156PW4A32C

Corner Polarizing Post Layouts (for customer reference only)

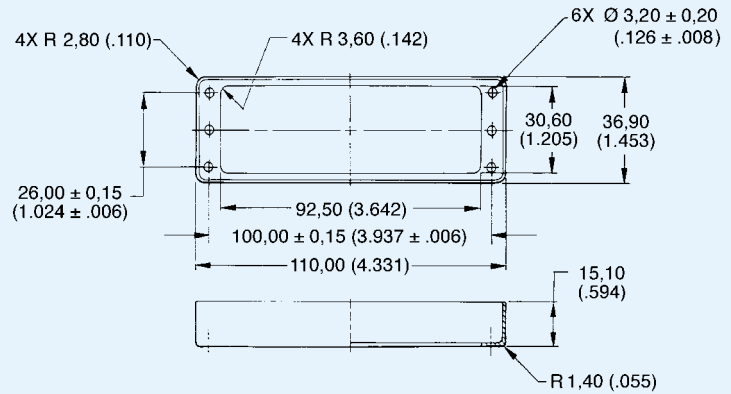


Reference views for Polarizing Arrangements



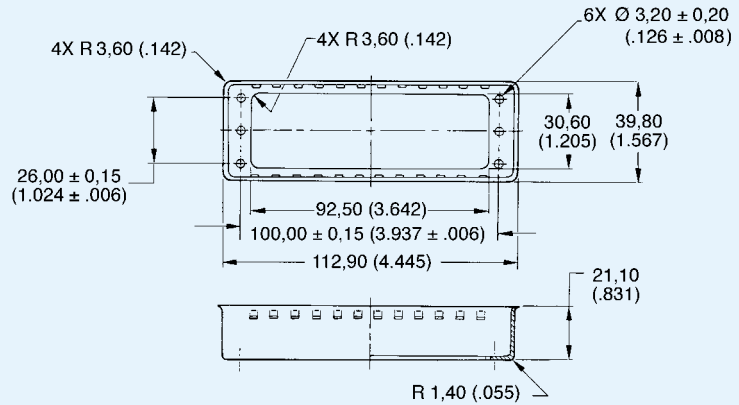
Metal Shells for EMI/RFI Shielding (Optional for DL5-260 Connector)

Plug



| Description | Part Number  | Material | Finish |
|-------------|--------------|----------|--------|
| Plug Shell  | 248-4500-000 | Steel    | Nickel |

Receptacle



| Description      | Part Number  | Material | Finish |
|------------------|--------------|----------|--------|
| Receptacle Shell | 248-4501-000 | Steel    | Nickel |

Accessories

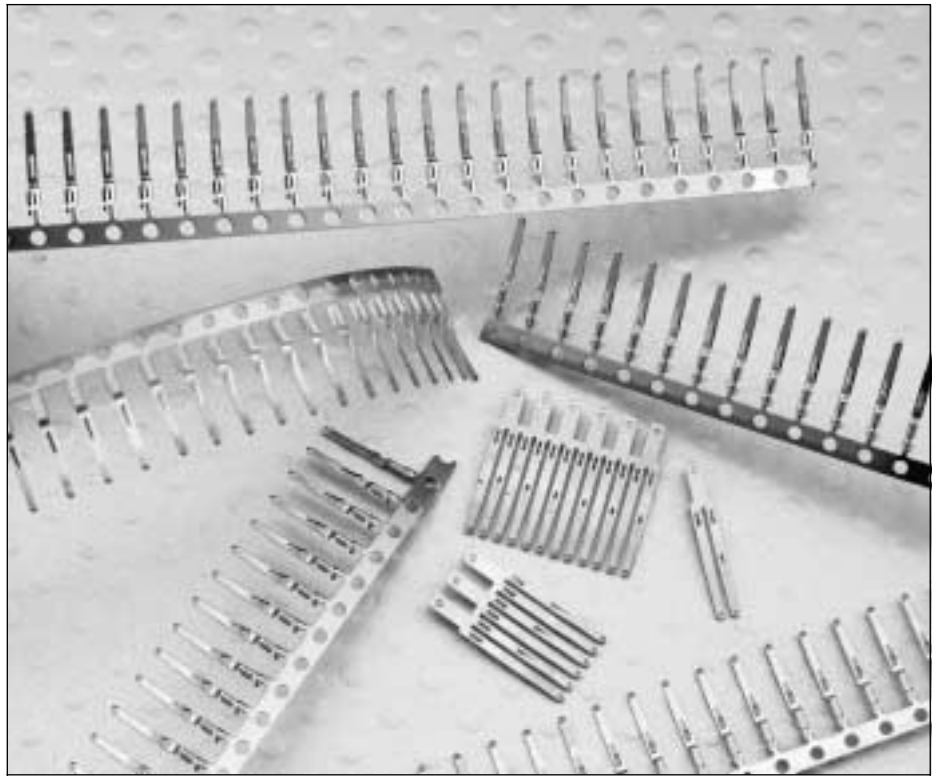
Contacts

The Cannon DL Crimp and Buss contacts are available in addition to the factory installed Square Post/PCB mount version contacts. Crimp contacts are available loose or reeled, where as Buss contacts are available loose only.

The **Buss contacts** make the DL series capable of providing higher than 5 amps per line. The Buss contacts are pairs of contact lines which increase the amperage capability in increments of 10 amps up to 60 amps. The contacts have solder holes at the tail section for soldering #30-#18 AWG. The tail is also designed to accommodate a 1/8" crimp lug for wire sizes larger than #18.

The **Crimp contacts** are available in two plating types. The 20µ inch gold hermaphroditic version which is the economical choice for applications requiring over 100 milliamps to 5 amps. And the **50µ inch gold BUMP to FLAT** version which offers the most versatile range of application requirements from micro-amps to 5 amps.

The **BUMP to FLAT** version was developed specifically to handle "dry circuit" requirements where the signal amperage is not enough to ensure a clean contact point. The **50µ inch gold BUMP to FLAT** version is mandatory for applications with signals below 100 milliamps. The Bump contact is installed in the Plug and the Flat contact is installed in the Receptacle. This combination increases the contact force and



ensures that the wiping point becomes the current carrying point after mating. The **50µ inch gold BUMP to FLAT** version has become the standard for all modern applications where power and low voltage signals are combined into one connector.

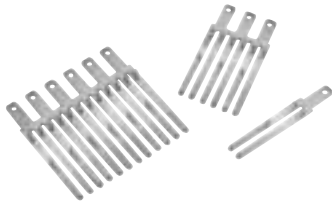
Materials and Finishes

| Description    | Material     | Finish  |
|----------------|--------------|---|
| Crimp Contact* | Copper Alloy | Gold over nickel or Selective gold/tin lead over nickel |
| Buss Contact   | Copper Alloy | Gold over nickel  |

\*Order crimp contacts separately. See pages 52-53.

## Buss Contacts

### 6 Pair/3Pair/1 Pair

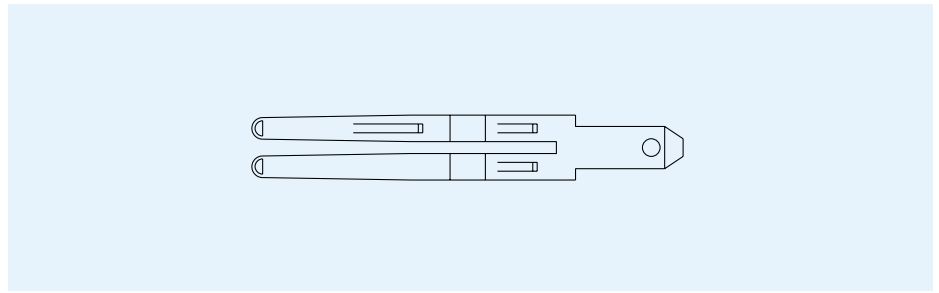


- Designed for power distribution of more than 5 amps.
- Accommodates #30-#18 AWG in hole  $\varnothing$  1,29-1,14 (.051-.045) for wire soldering.
- Accommodates 1/8" crimp lugs for larger wire sizes.

Material: Copper Alloy

Finish: 20 $\mu$  inch in mating area/  
gold flash on balance (terminating end)

### 1 Pair

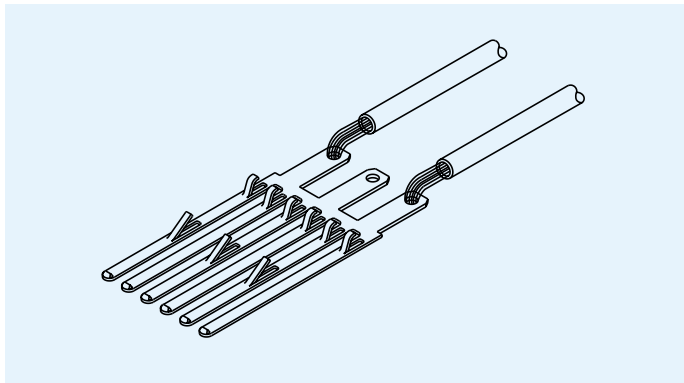


### Buss Contact

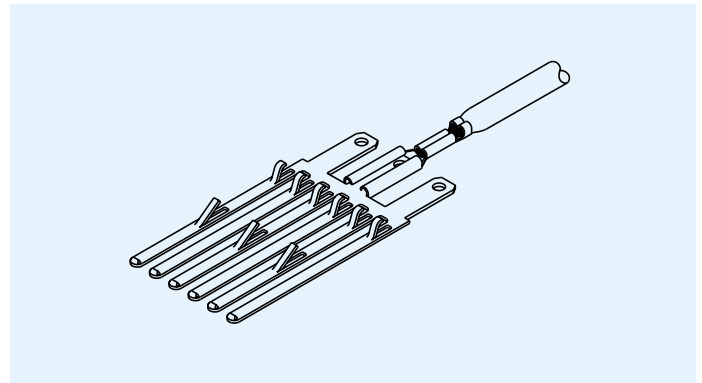
| Description | Part Number  |
|-------------|--------------|
| 1 Pair      | 030-7380-001 |
| 2 Pair      | 030-7380-002 |
| 3 Pair      | 030-7380-003 |
| 4 Pair      | 030-7380-004 |
| 5 Pair      | 030-7380-005 |
| 6 Pair      | 030-7380-006 |

Note: For more information on tools and assembly, see pages 54-59.

### Wire Termination — Solder



### Wire Termination — Crimp Lug



Crimp Contacts — Loose

Loose

50µ inch gold contacts:

- Recommended for all applications.
- Offer the broadest amperage range.
- Mandatory for low current applications (less than 100 milliamps).

|                  |                  |
|------------------|------------------|
| Material:        | Copper Alloy     |
| Finish:          | Gold over nickel |
| Extraction Tool: | 274-7029-007     |
| Insertion Tool:  | None Required    |

Plug (Bump)



Receptacle (Flat)

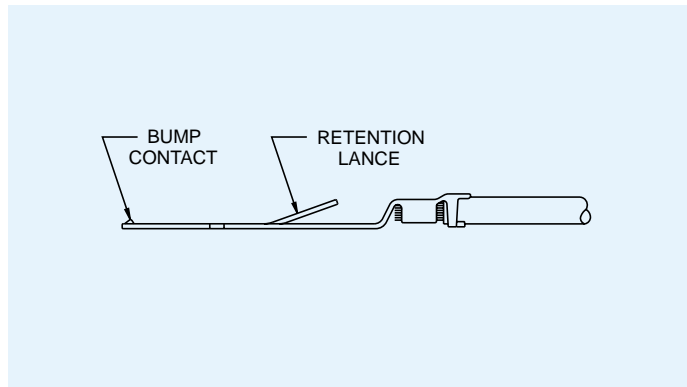


| Wire Accommodation | Plug 50µInch Gold Bump● | Receptacle 50µInch Gold Flat● | Plug and Receptacle 20µInch Gold | Hand Tool (Page 55) |
|--------------------|-------------------------|-------------------------------|----------------------------------|---------------------|
| 36 thru 38 AWG     | —                       | —                             | 127000-2207 + *                  | ▲                   |
| 28 thru 32 AWG     | 030-2416-003            | 030-2494-001                  | 030-2416-001 ■                   | 1                   |
| 24 thru 26 AWG     | 030-2410-003            | 030-2492-001                  | 030-2410-001 ■                   | 2                   |
| 20 thru 22 AWG     | 030-2409-003            | 030-2491-001                  | 030-2409-001 ■                   | 2                   |
| 18 thru 20 AWG ◆   | 030-2415-003            | 030-2493-001                  | 030-2415-001 ■                   | 3                   |

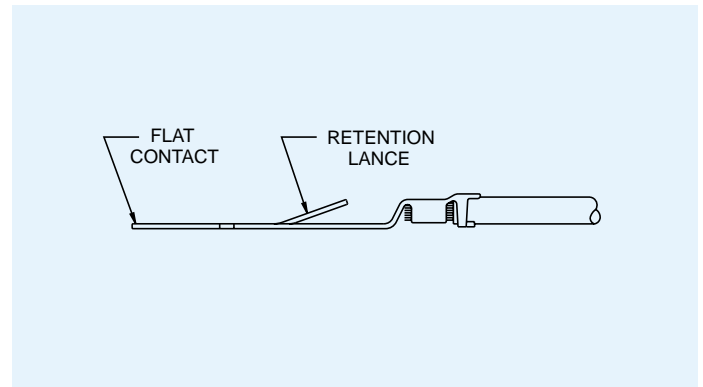
Note: For more information on tools and assembly, see pages 54-59.

- ◆ Non Insulation Support
- + Sold in lots of 100 pieces.
- For low current applications (less than 100 milliamps) use 50µ inch gold (bump) contact on plug side and 50µ inch flat gold (flat) contact on receptacle side.
- ▲ Contact Factory for tool.
- \* Finish: 20µ inch gold in mating area/Gold flash on balance (terminating end).
- Finish: 20µ inch gold in mating area/Tin lead on balance (terminating end).

Plug (Bump)



Receptacle (Flat)



## Crimp Contacts — Reeled

### Reeled

50 $\mu$  inch gold contacts:

- Recommended for all applications.
- Offer the broadest amperage range.
- Mandatory for low current applications (less than 100 milliamps).

Material: Copper Alloy

Finish: Gold over nickel

Extraction Tool: 274-7029-007

Insertion Tool: None Required

Note: Automatic tooling is recommended for volume over 50K per year, see page 59.

### Plug (Bump)



### Receptacle (Flat)



| Wire Accommodation | Plug 50 $\mu$ Inch Gold Bump ● | Receptacle 50 $\mu$ Inch Gold Flat ● | Plug and Receptacle 20 $\mu$ Inch Gold | Hand Tool (Page 55) |
|--------------------|--------------------------------|--------------------------------------|--|---------------------|
| 40 thru 42 AWG     | —                              | —                                    | 127000-2278*                           | ▲                   |
| 36 thru 38 AWG     | —                              | —                                    | 127000-1271*                           | ▲                   |
| 28 thru 32 AWG     | 110238-0482                    | 110238-0486                          | 110238-0403 ■                          | 1                   |
| 24 thru 26 AWG     | 110238-0480                    | 110238-0484                          | 110238-0401 ■                          | 2                   |
| 20 thru 22 AWG     | 110238-0479                    | 110238-0483                          | 110238-0400 ■                          | 2                   |
| 18 thru 20 AWG ◆   | 110238-0481                    | 110238-0485                          | 110238-0402 ■                          | 3                   |

Note: For more information on tools and assembly, see pages 54-59.

- ◆ Non Insulation Support
- For low current applications (less than 100 milliamps) use 50 $\mu$  inch gold (bump) contact on plug side and 50 $\mu$  inch gold (flat) contact on receptacle side.
- ▲ Contact Factory for tool.
- \* Finish: 20 $\mu$  inch gold in mating area/Gold flash on balance (terminating end).
- Finish: 20 $\mu$  inch gold in mating area/Tin lead on balance (terminating end).

Tooling

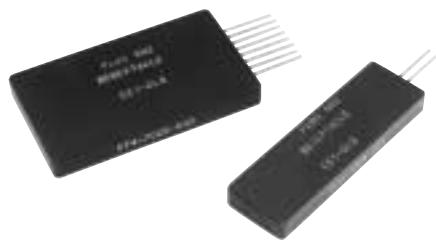
A key feature of the Cannon DL connector series is easy contact termination, both in the field and in high-volume production. An ergonomically designed hand crimp tool is available for the low volume (loose contact) applications and will accommodate two different crimp contact sizes. To reduce overall costs, the crimp jaws are replaceable.

Automatic crimp and strip/crimp machines are available for high volume applications requiring a large number of crimps (50,000 crimps per year or more). These machines are leased to customers to eliminate the need for heavy investment. They also improve productivity for large pin count applications.

DL Crimp contacts are designed to be hand installed into the connector, no tooling is needed for the insertion process. Extraction tools are available for the removal of Crimp contacts for easy repair even in field applications. Extraction tools are also available for the Buss contacts, as well as the factory installed Square Post contacts.



Extraction Tool — Buss Contacts



Extraction Tool for Buss Contact

| Description | Part Number  |
|-------------|--------------|
| CET-DL3     | 274-7029-003 |
| CET-DL4     | 274-7029-004 |
| CET-DL4     | 274-7029-004 |
| CET-DL5     | 274-7029-005 |
| CET-DL6     | 274-7029-006 |
| CET-DL6     | 274-7029-006 |

Buss Contact

| Description | Part Number  |
|-------------|--------------|
| 1 Pair      | 030-7380-001 |
| 2 Pair      | 030-7380-002 |
| 3 Pair      | 030-7380-003 |
| 4 Pair      | 030-7380-004 |
| 5 Pair      | 030-7380-005 |
| 6 Pair      | 030-7380-006 |

Hand Crimp Tool



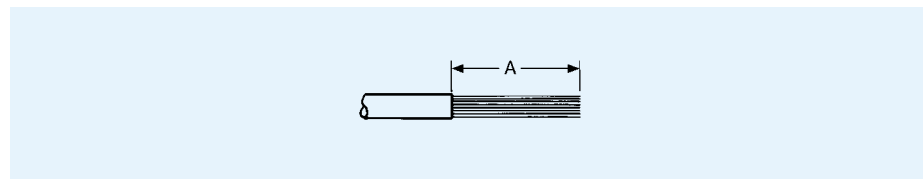
Hand Crimp Tool with Replaceable Jaw Set

| Hand Tool | Description  | Part Number |
|-----------|--------------|-------------|
| 1         | CHTDLT 28-32 | 112108-0002 |
| 2         | CHTDLT 20-26 | 112108-0001 |
| 3         | CHTDLT 18-20 | 112108-0000 |

Crimp Tensile Strength

Crimp tensile strength is a measure of how hard a wire can be pulled without breaking or separating from the contact. This is the best way to verify that the wire is properly terminated to the contact. Periodic crimp tensile measurements are recommended to insure the integrity of the crimp. The table below contains the appropriate values for DL crimp contacts.

Wire Trim Dimension



| Wire Size (AWG)         | 32          | 30          | 28          | 26          | 24          | 22          | 20          | 18          |
|-------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Tensile Min. (lbs)      | 1           | 1.5         | 3           | 7           | 10          | 15          | 19          | 30          |
| Wire Trim Dimension "A" | 3,30 (.130) | 3,30 (.130) | 3,30 (.130) | 3,30 (.130) | 3,30 (.130) | 3,30 (.130) | 4,06 (.160) | 4,06 (.160) |
| Insulation Dia. Max.    | 1,35 (.053) | 1,35 (.053) | 1,35 (.053) | 1,65 (.065) | 1,65 (.065) | 1,88 (.074) | 1,88 (.074) | 1,88 (.074) |

Extraction Tool — Crimp, Square Post, PC/RC Contacts

CET-DL10



CET-ECP



CET-ECP-1



| Description | Part Number  | Contact Type | PC Tail Extension |
|-------------|--------------|--------------|-------------------|
| CET-DL10    | 274-7029-007 | Crimp        | —                 |
| CET-ECP     | 274-7045-000 | Wrap Post    | 15,37 (.605)      |
| CET-ECP-1   | 274-7045-001 | Square Post  | 7,11 (.280)       |



## Assembly Instructions for Crimp Contacts

### Contact Insertion:

All crimp contacts are inserted by hand. No tooling is required for either the plug or receptacle.

**Caution:** Do not force contacts into contact cavities. If contact encounters excessive resistance during installation remove and re-insert using a slight up and down motion. This will assure positive cavity alignment. *Do not* install contact if plug is in the *closed* or actuated position.

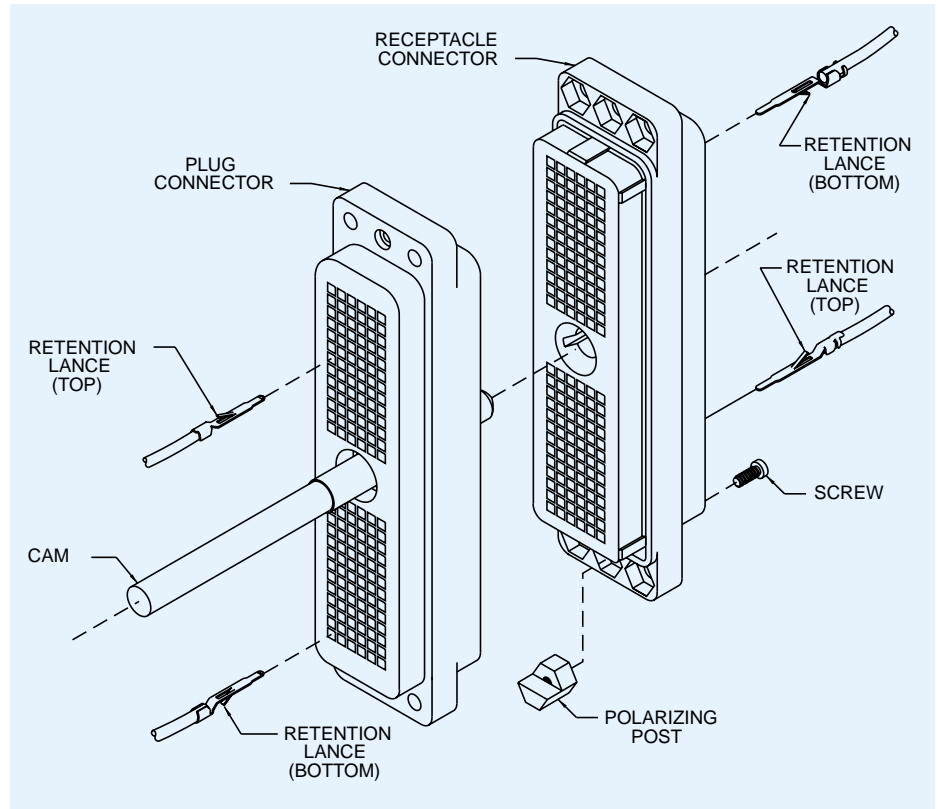
### Plug:

Step 1. Prior to inserting contacts, turn the shaft counter-clockwise to its maximum *open* position.

Step 2. With the retention lance positioned *away* from the shaft, insert contacts from the rear of the plug.

### Receptacle:

Step 1. With the retention lance positioned *toward* the shaft hole, insert contacts from the rear of the receptacle.

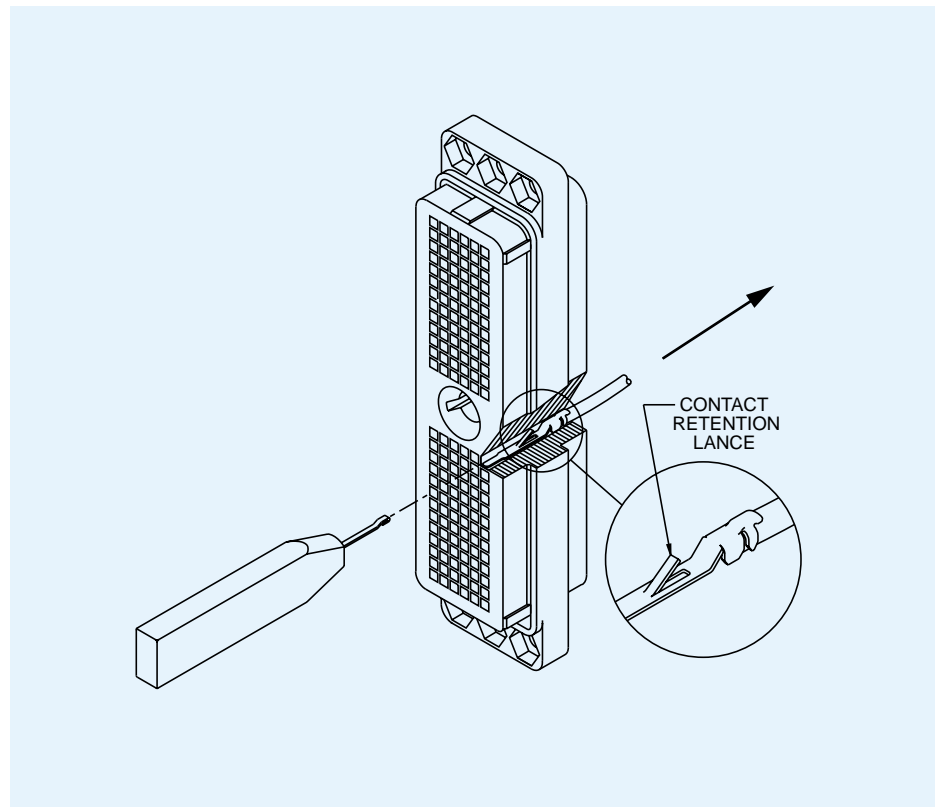


## Contact Removal for Crimp Contacts

### Tool: CET-DL10



Release retention lance by inserting tip of extraction tool into cavity until it bottoms on insulator shoulder. Gently pull wire in direction of arrow, see illustration, to remove contact from insulator.



## Assembly Instructions for Buss Contacts

### Contact Insertion:

All buss contacts are inserted by hand. No tooling is required for either the plug or receptacle.

**Caution:** Do not force contacts into contact cavities. If contact encounters excessive resistance during installation remove and re-insert using a slight up and down motion. This will assure positive cavity alignment. *Do not* install contact if plug is in the *closed* or actuated position.

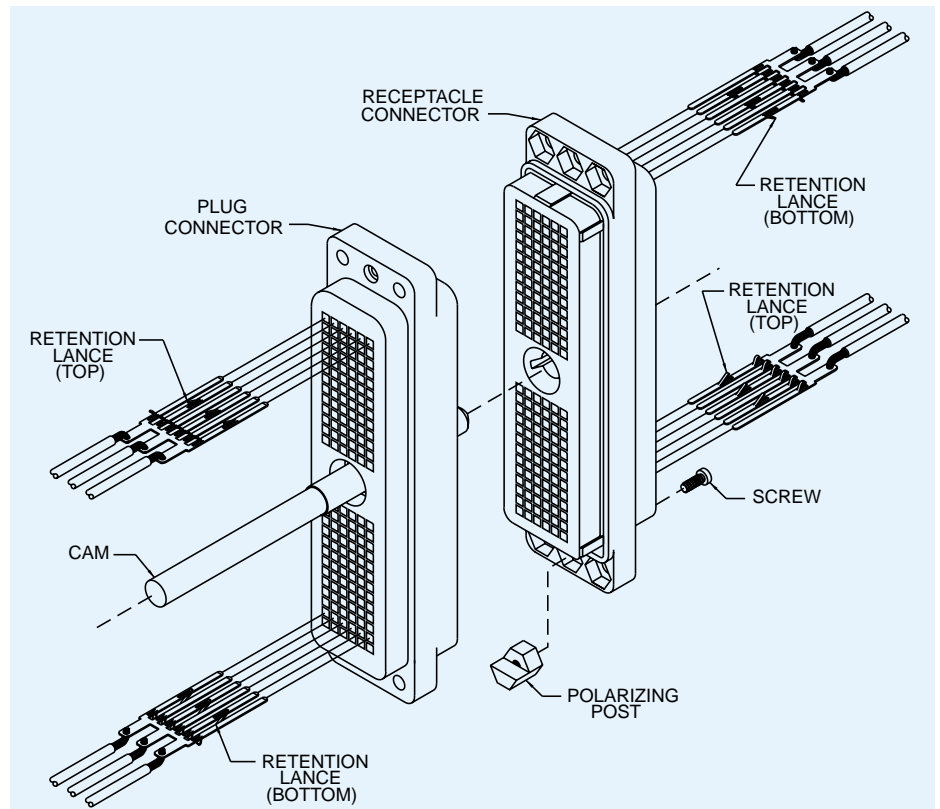
### Plug:

Step 1. Prior to inserting contacts, turn the shaft counter-clockwise to its maximum *open* position.

Step 2. With the retention lance positioned *away* from the shaft, insert contacts from the rear of the plug.

### Receptacle:

Step 1. With the retention lance positioned *toward* the shaft hole, insert contacts from the rear of the receptacle.

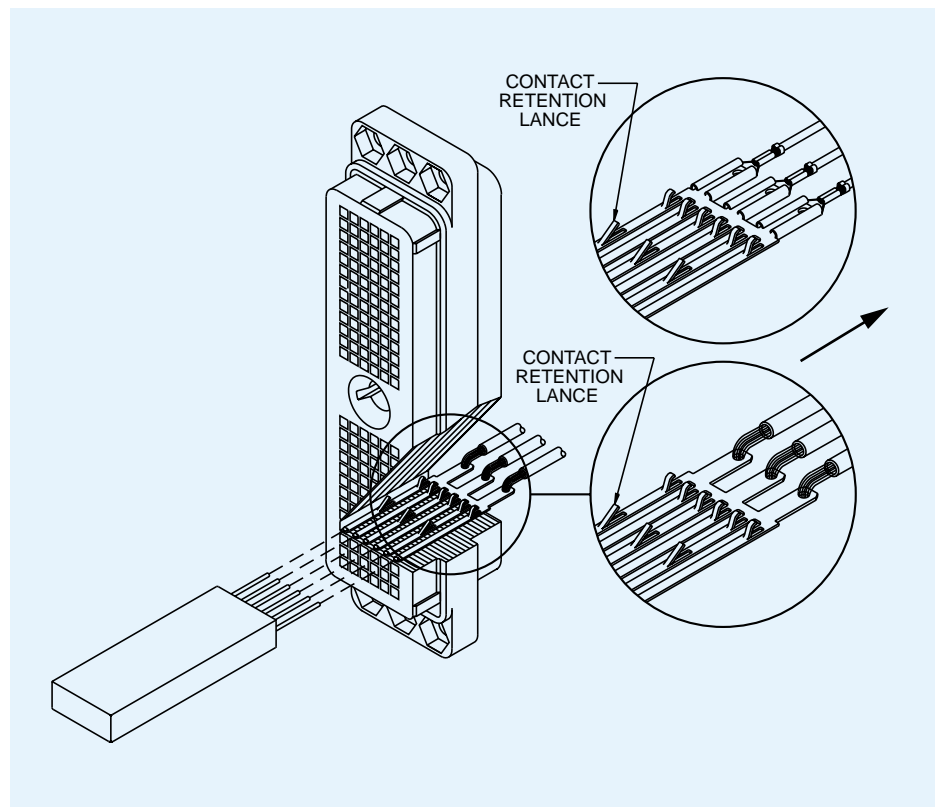


## Contact Removal for Buss Contacts

Tool: CET-DL3/4/5/6



Release retention lance by inserting tip of extraction tool into cavity until it bottoms on insulator shoulder. Gently remove buss contact in direction of arrow, see illustration, to remove contact from insulator.



Assembly Instructions for Square Post Contacts

Contact Insertion:

Square Post Contacts are factory installed but can be removed and replaced if damaged in service.

Step 1. Prior to inserting contacts, actuating handle must be in the maximum *open* position. Actuating handle will be facing toward connector front face, see Figure 1.

Step 2. Contacts are inserted from the insulator front face by hand and are seated and clicked in the cavity by pulling on the terminal post with flat nose pliers, see Figure 2.

Figure 1

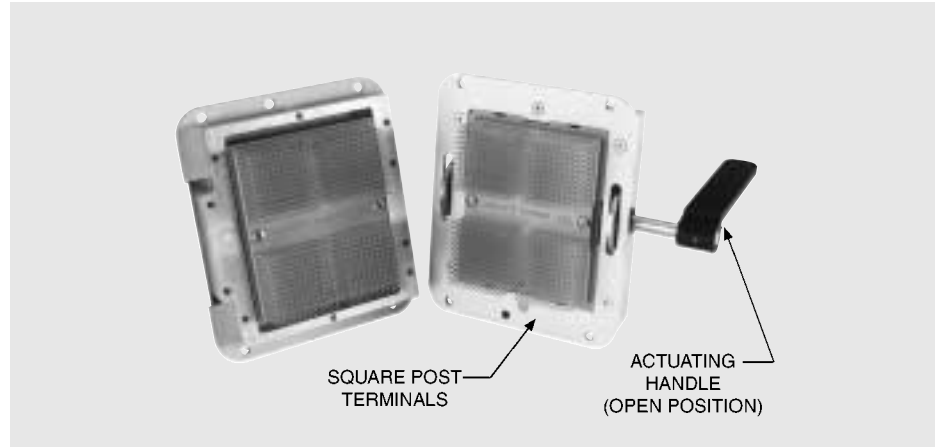
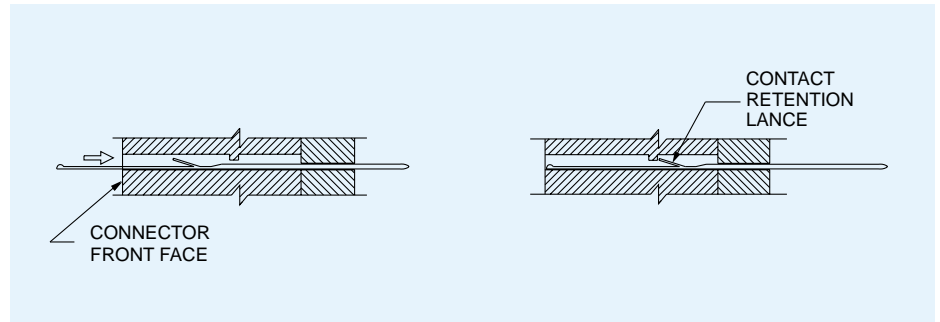


Figure 2

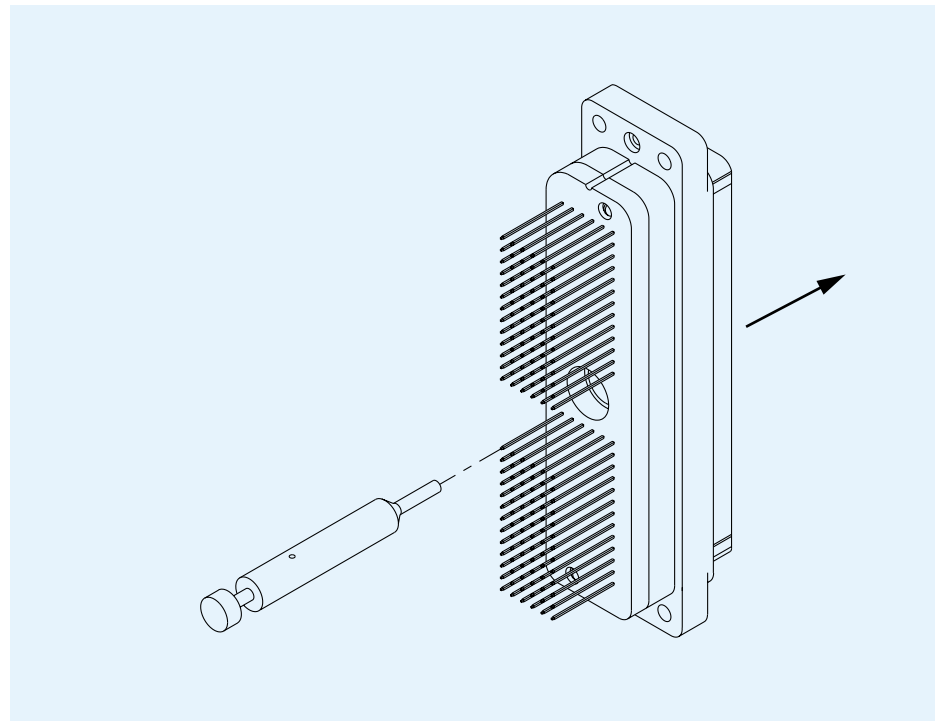
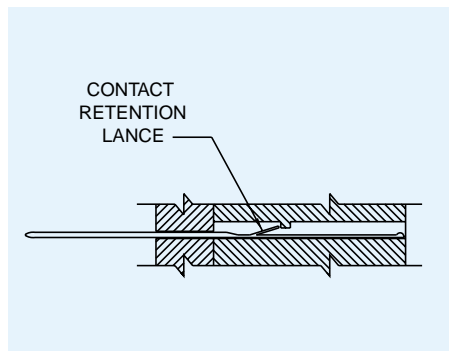


Contact Removal for Square Post Contacts

Tool: CET-ECP and CET-ECP-1



Place tool over square post terminal and impact tool. Apply sufficient force to collapse retention lance and push contact out of insulator. This process destroys the retention lance.



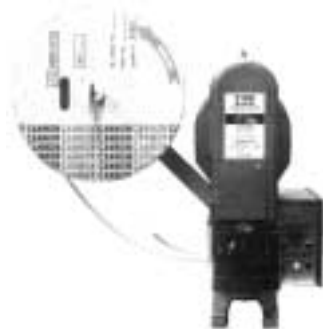
## Lease Automatic Tooling — North America\*

**ABT-607 Pneumatic Crimper**

The ABT-607 is a pneumatic powered and controlled machine. It is designed for customers with moderate volume. This machine is designed to semi-automatically crimp stamped and formed contacts onto pre-stripped stranded or single conductor electrical wire. This machine will accommodate size 34 thru 12 AWG wire and is actuated by the use of a foot pedal.

**Machine Crimp Rate:**  
800 per hour

**Power Requirements:**  
Pneumatic = 100 psi, 2 cu. ft. per min.

**ABT-500 UCCD**

The ABT-500 Universal Cannon Crimp Die, is a flywheel driven, electronically controlled machine that is designed to semi-automatically crimp stamped and formed contacts on stranded or single conductor, pre-stripped wire. This machine will accommodate size 34 thru 12 AWG wire. The primary application of this machine is for terminating discrete, pre-stripped, wire. The machine is actuated by the use of a foot pedal.

**Machine Crimp Rate:**  
1300 per hour

**Power Requirements:**  
Electrical = 115 VAC, 60 Hz, 20A

**ABT-620 UCCS**

The ABT-620 Universal Cannon Crimper/Stripper is a pneumatic powered, microprocessor controlled machine. It is designed to semi-automatically strip insulation from stranded or single conductor electrical wire and attach a stamped and formed contact by crimping. The machine will accommodate 34 thru 12 AWG wire. Primary application of the machine is the termination of jacketed cable where the individual leads cannot be stripped by fully automated equipment. The ABT-620 UCCS operates automatically upon insertion of a wire or it can be switched over to foot pedal operation as desired.

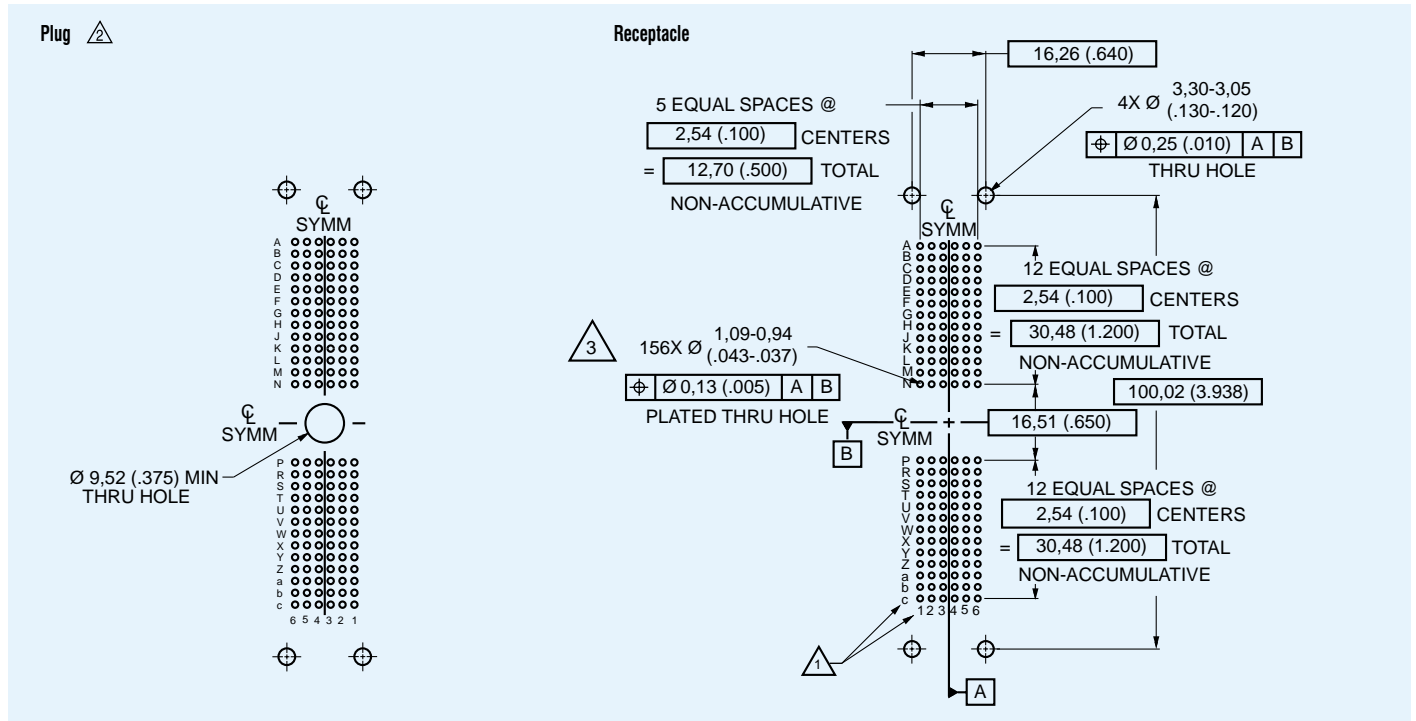
**Machine Strip/Crimp Rate:**  
1200+ per hour

**Power Requirements:**  
Electrical = 115 VAC, 60 Hz, 20A  
Pneumatic = 80 psi, 3 cu. ft. per min.

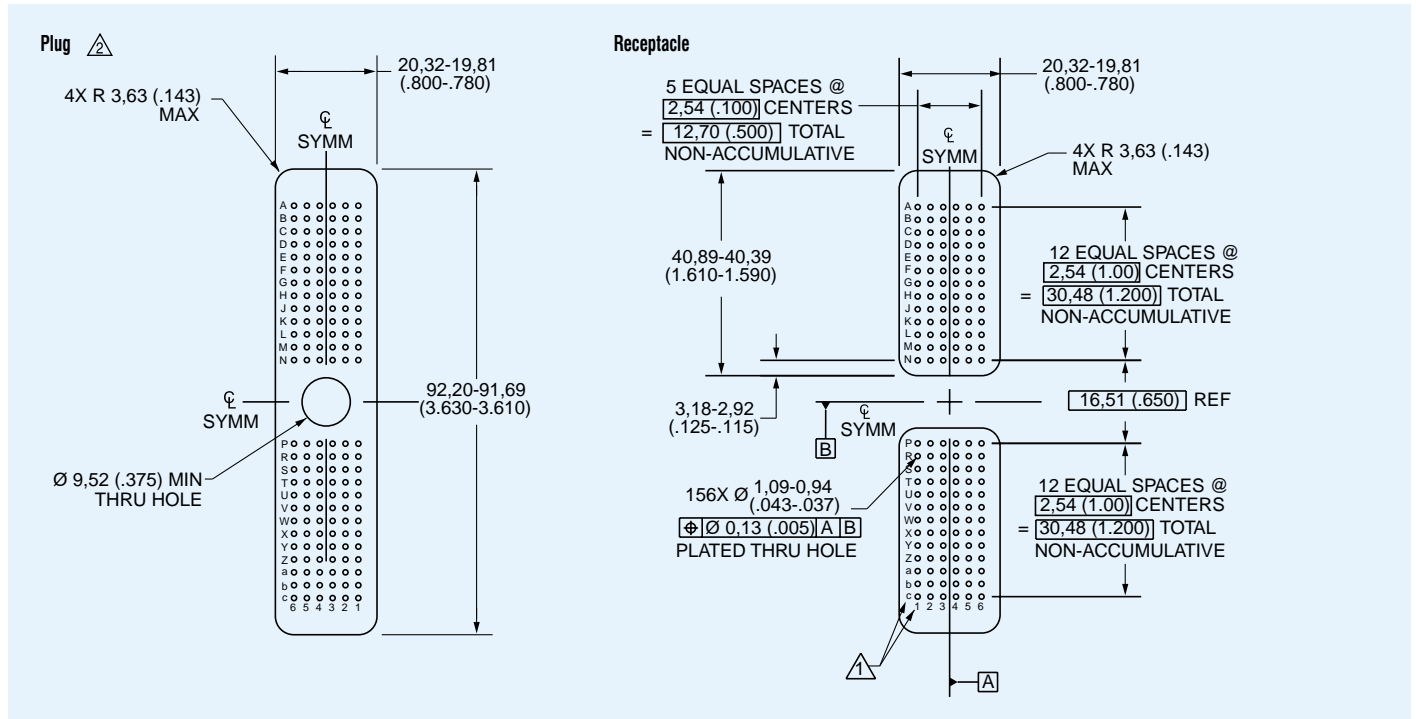
\*For other geographical regions, contact Cannon for details.

DL1/DLM1/DLD1 Printed Circuit Board Hole Patterns

DL1-156/DLM1-156



DLD1-156

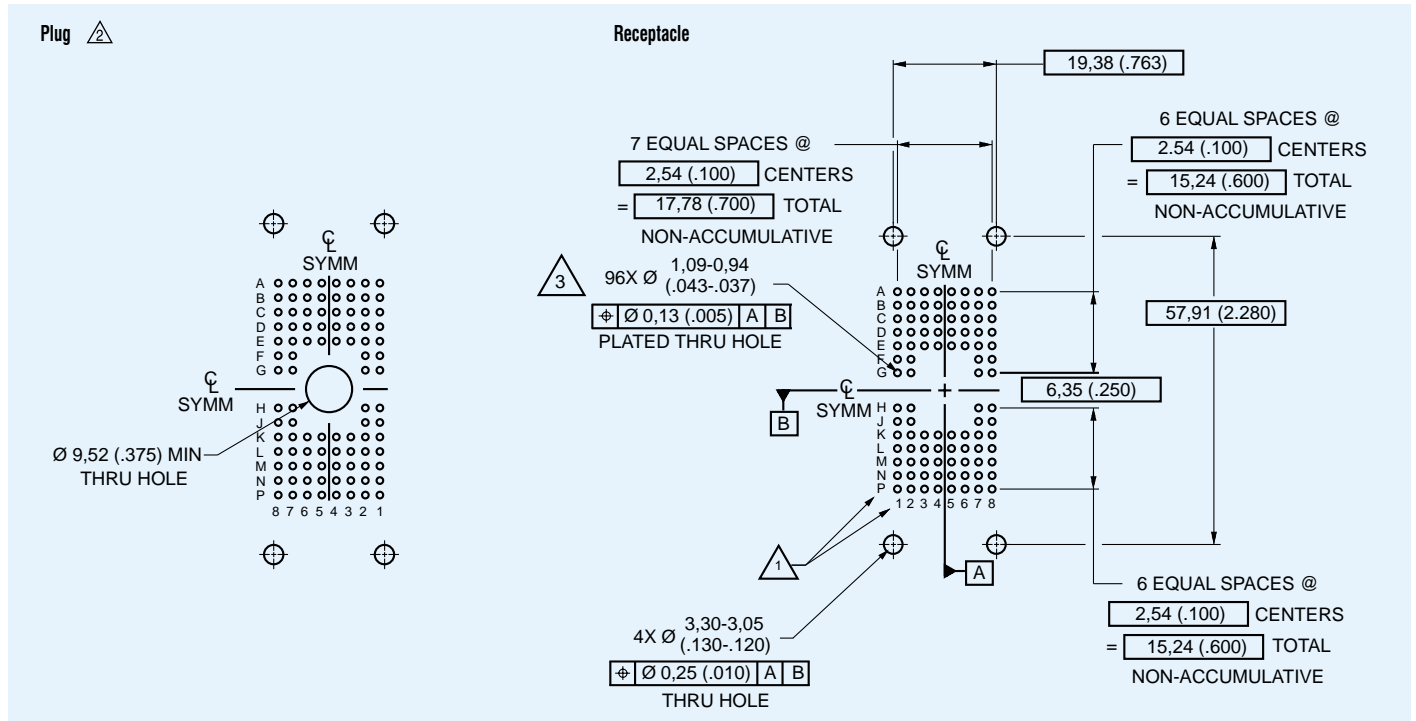


Notes:

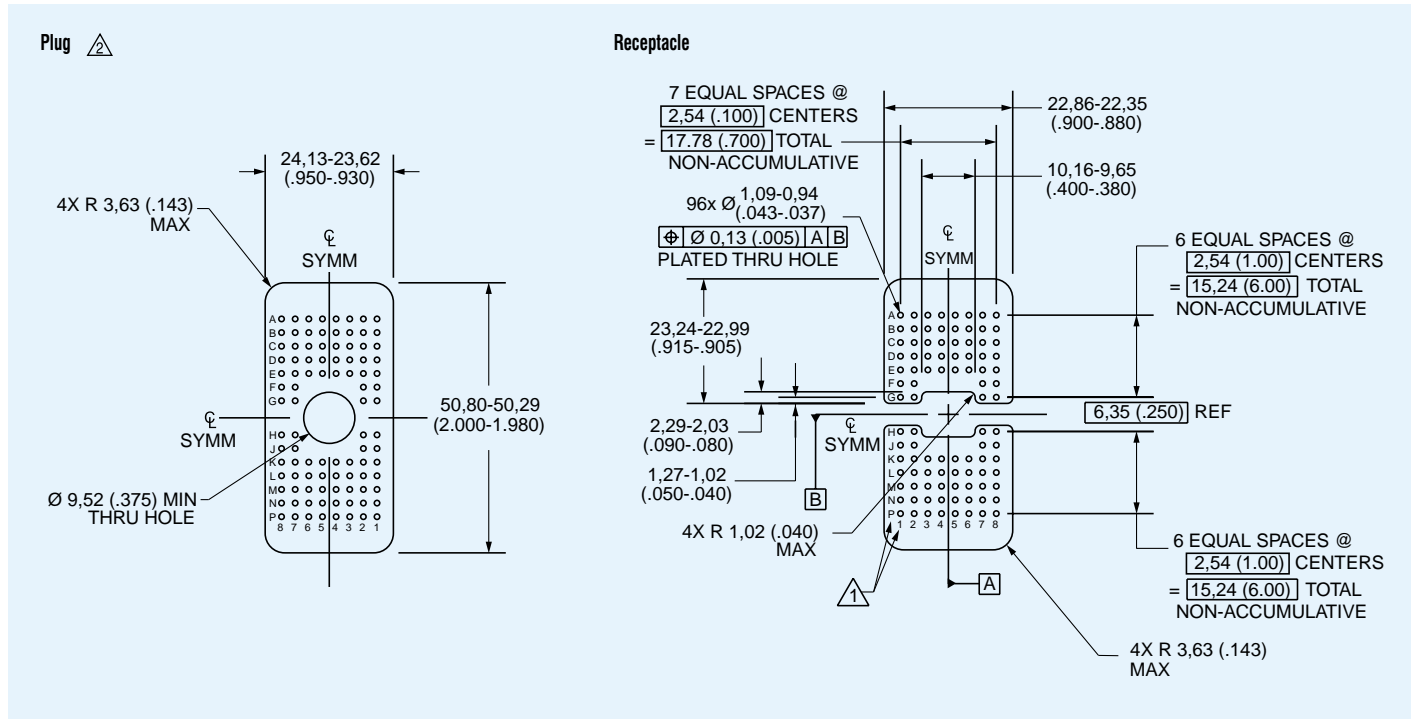
- △ Contact hole cavity identification shown is typical as viewed from top surface of P.C. board.
- △ All plug layout dimensions not shown are similar to the receptacle dimensions.
- △ Plated through (THRU) hole diameters shown are for □ 0,64 (.025) post contacts. PC/RC contact plated through (THRU) hole diameters are 0,79-0,64 (.031-.025). For PCB pad layout configuration, see page 64.

DL2/DLM2/DLD2 Printed Circuit Board Hole Patterns

DL2-96/DLM2-96



DLD2-96

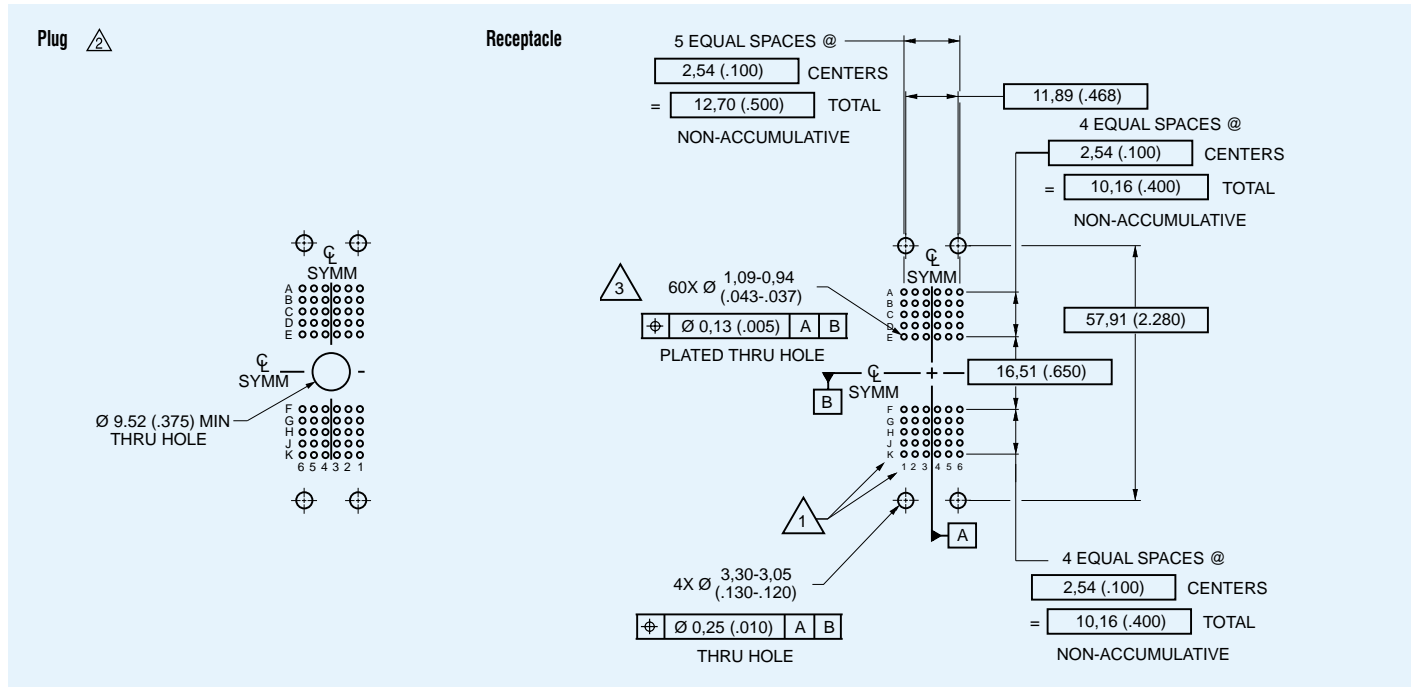


Notes:

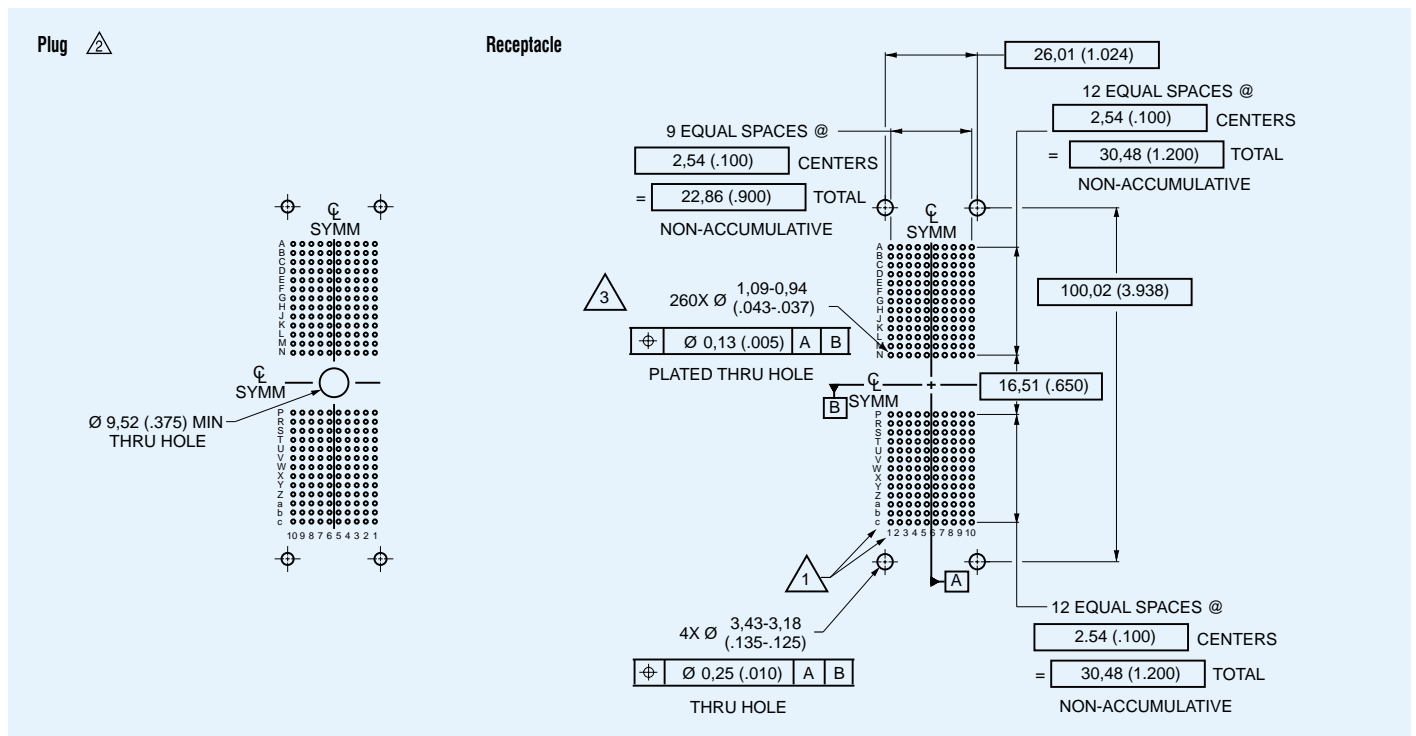
- Contact hole cavity identification shown is typical as viewed from top surface of P.C. board.
- All plug layout dimensions not shown are similar to the receptacle dimensions.
- Plated through (THRU) hole diameters shown are for □ 0,64 (.025) post contacts. PC/RC contact plated through (THRU) hole diameters are 0,79-0,64 (.031-.025). For PCB pad layout configuration, see page 64.

DL3/DLM3/DL5/DLM5 Printed Circuit Board Hole Patterns

DL3-60/DLM3-60



DL5-260/DLM5-260

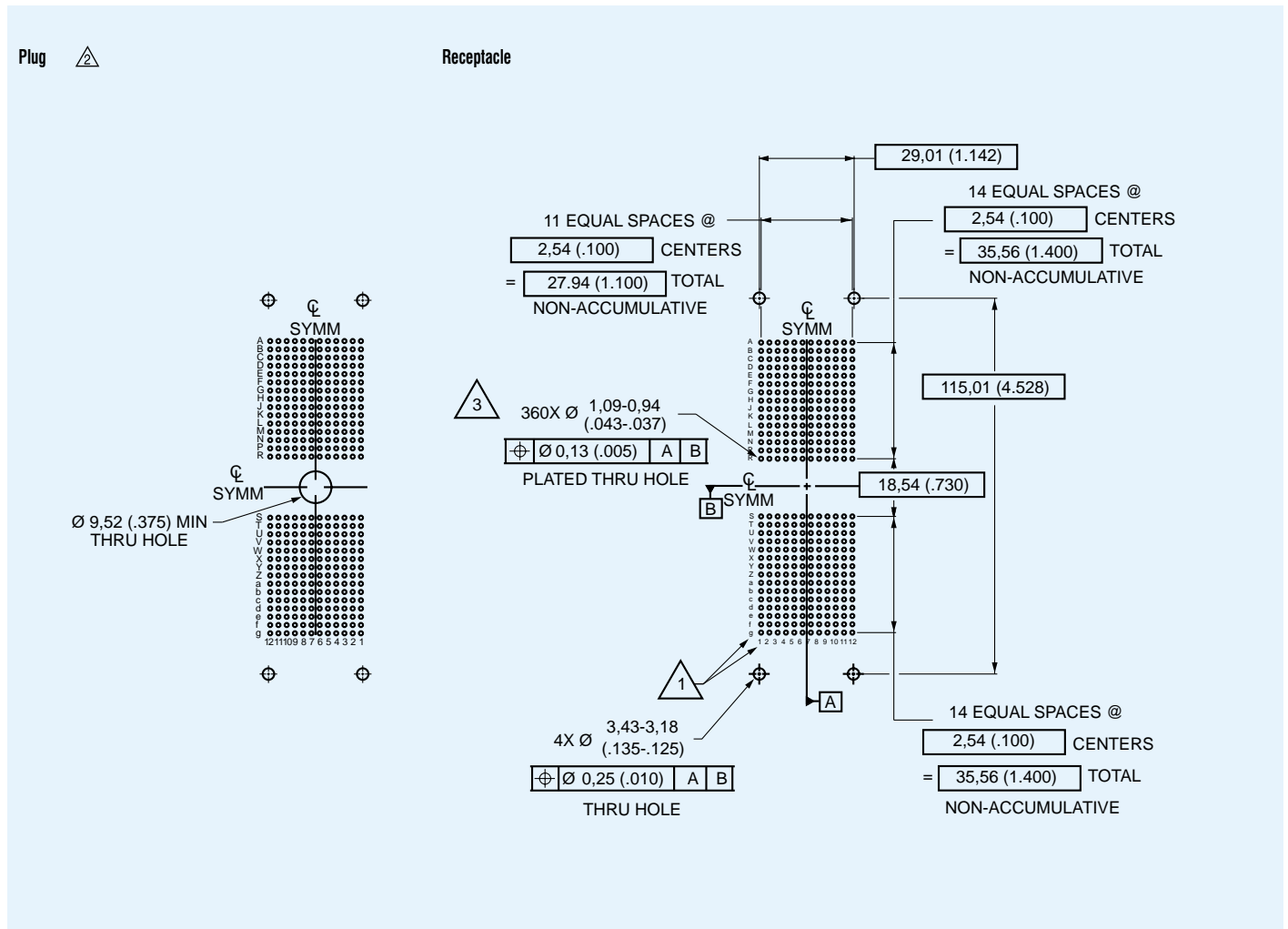


Notes:

- Contact hole cavity identification shown is typical as viewed from top surface of P.C. board.
- All plug layout dimensions not shown are similar to the receptacle dimensions.
- Plated through (THRU) hole diameters shown are for  $\square 0,64 (.025)$  post contacts. PC/RC contact plated through (THRU) hole diameters are 0,79-0,64 (.031-.025). For PCB pad layout configuration, see page 64.

DLM6 Printed Circuit Board Hole Patterns

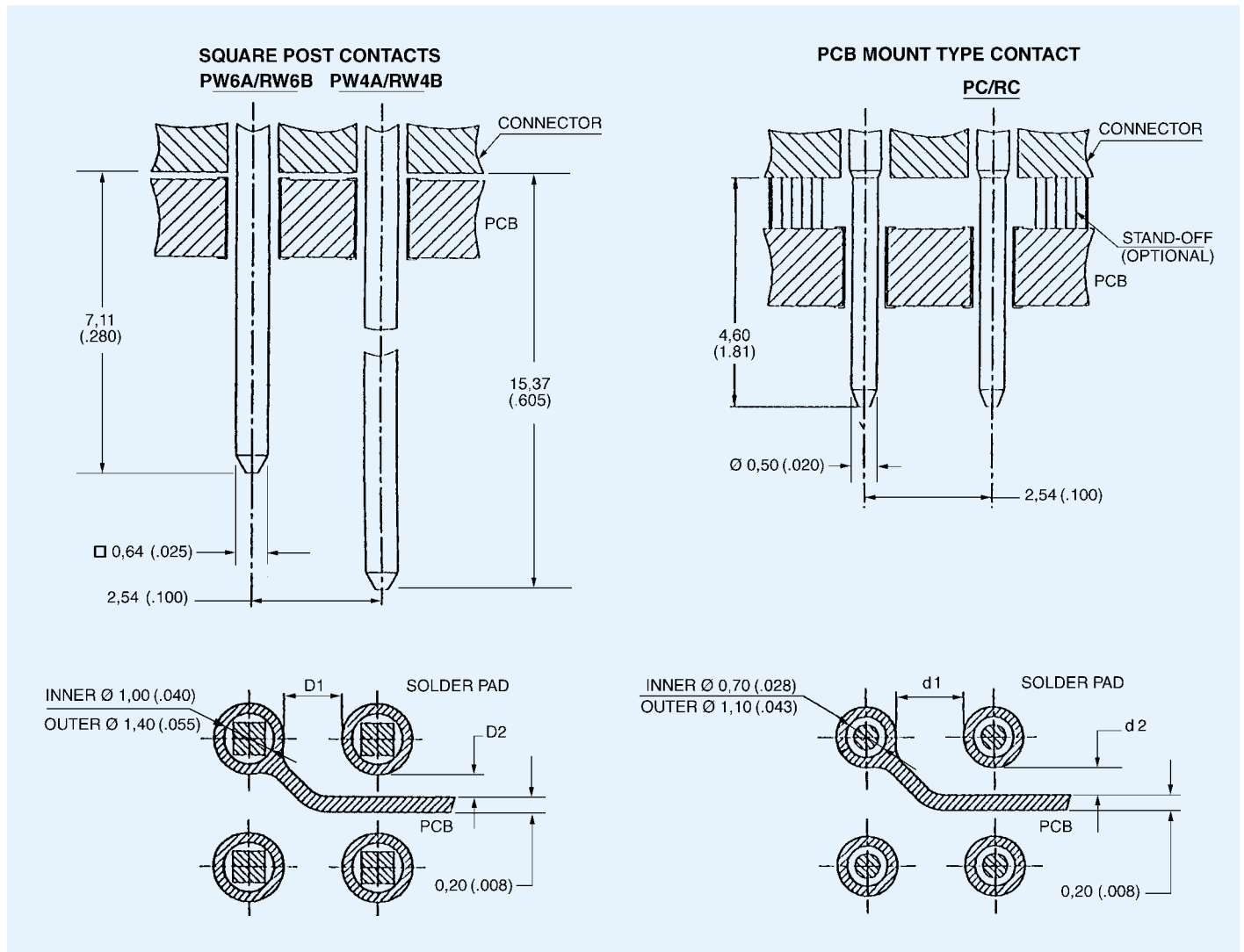
DLM6-360



- Notes:
- △ Contact hole cavity identification shown is typical as viewed from top surface of P.C. board.
  - △ All plug layout dimensions not shown are similar to the receptacle dimensions.
  - △ Plated through (THRU) hole diameters shown are for □ 0.64 (.025) post contacts. PC/RC contact plated through (THRU) hole diameters are 0.79-0.64 (.031-.025). For PCB pad layout configuration, see page 64.



PCB Pad Layout



For the PC/RC Versions; The contact tail design has been modified from a 0,64 (.025) square pin to a 0,05 (.020) diameter round pin. The change enables a decrease in the diameter of the through-holes as well as the solder mounds on PCB's (d1,

and d2 can be wider than D1 and D2). This can reduce the crosstalk in RF circuits and enhance the dielectric withstanding voltage in high voltage circuits.

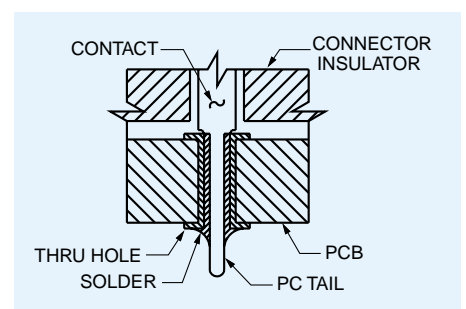
| Dimensions |             |
|------------|-------------|
| D1         | 1,14 (.045) |
| D2         | 0,47 (.018) |
| d1         | 1,44 (.057) |
| d2         | 0,62 (.024) |

PCB Pad Layout

The soldering of contacts into through (THRU) holes on a PC Board has become standard for medical equipment and test equipment for semi-conductors. As a result of the narrow spacing between the solder pad and circuit pattern, crosstalk between signals increases. A solution to this problem is to make the diameter of the contacts and solder lands smaller to provide more space between the lands and the patterns.

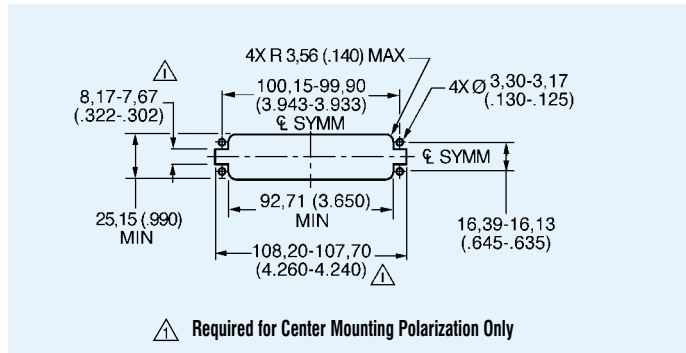
However, a smaller diameter contact results in higher impedance.

Cannon designed a solution with a smaller diameter contact tail. This design application allows the use of a smaller through-hole diameter.

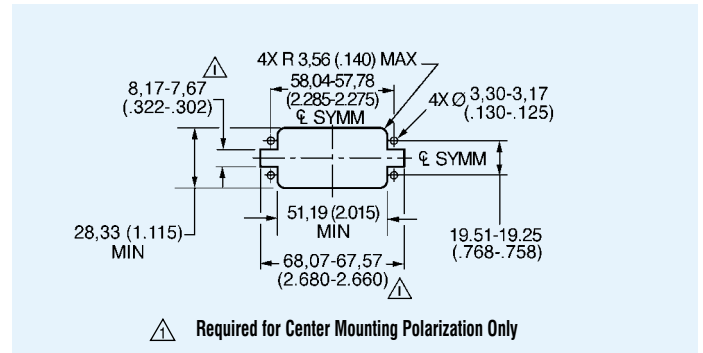


DL/DLM Panel Cutouts and Mounting Hole Patterns

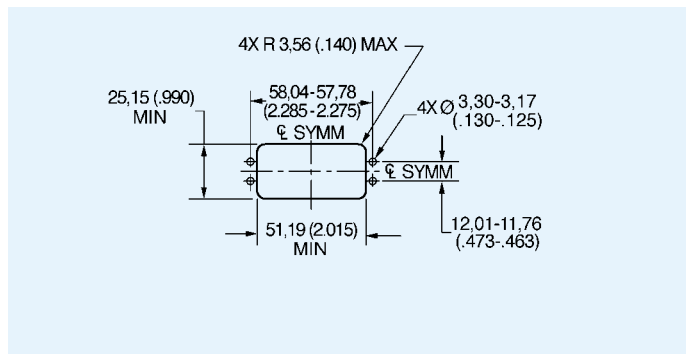
DL1-156/DLM1-156



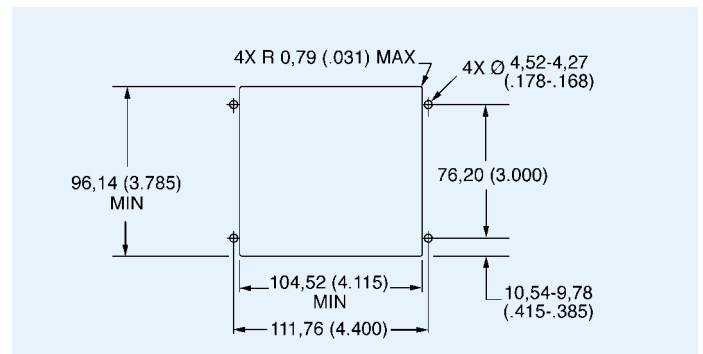
DL2-96/DLM2-96



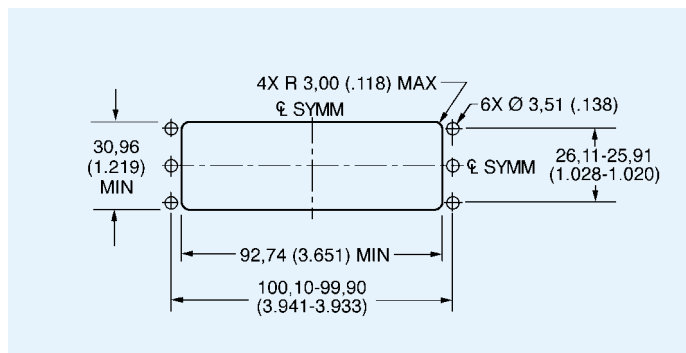
DL3-60/DLM3-60



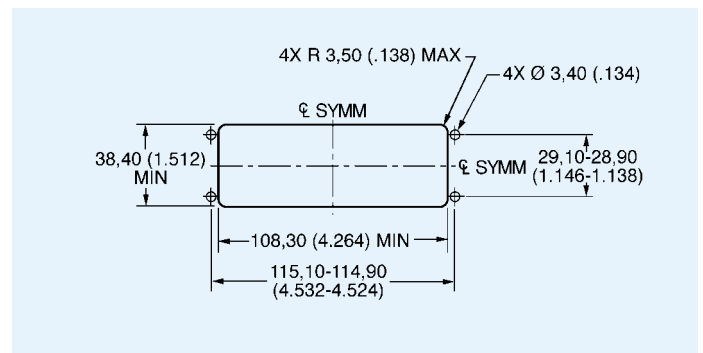
DL4-624



DL5-260/DLM5-260

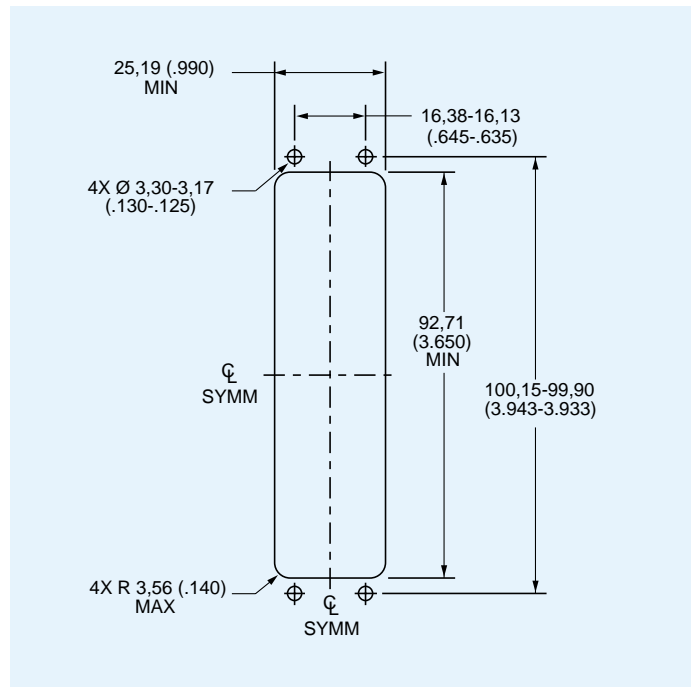


DLM6-360

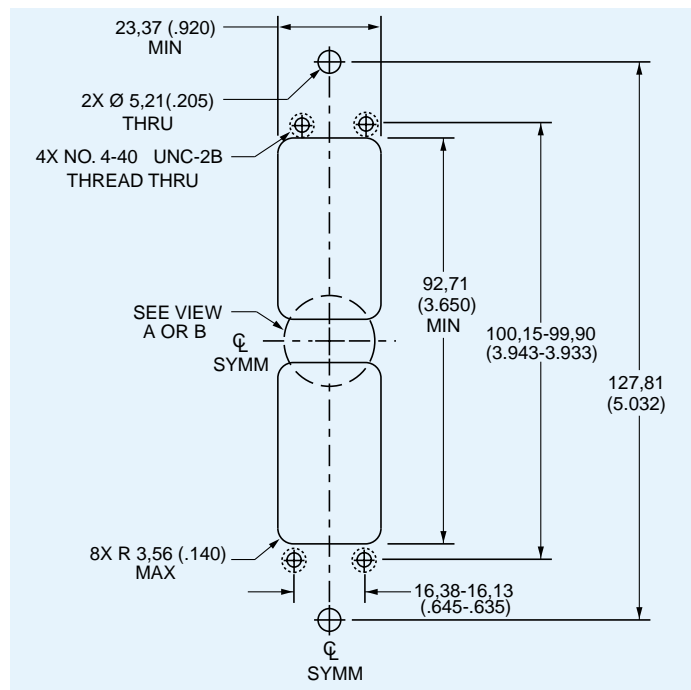


DLD1 Panel Cutouts and Mounting Hole Patterns

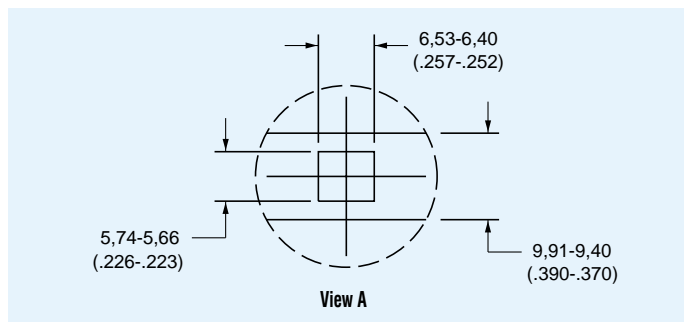
DLD1-156 Plug



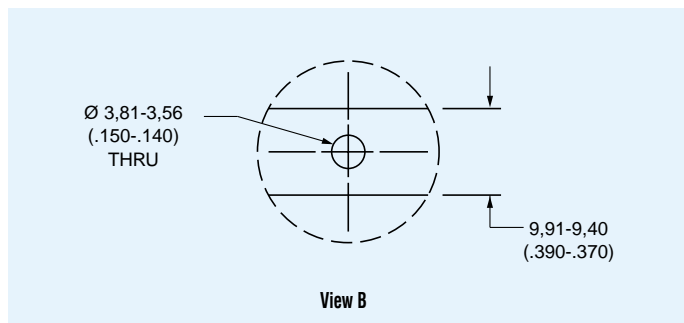
DLD1-156 Receptacle



Front Panel Bridge

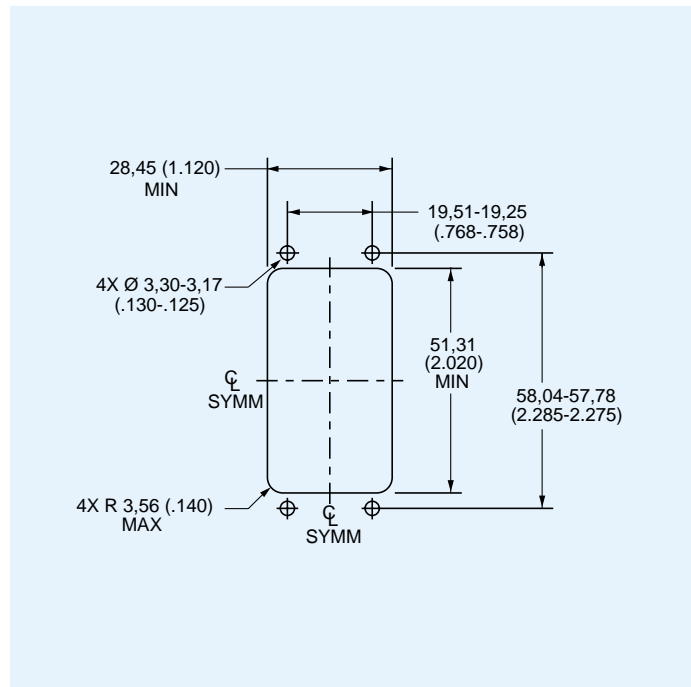


Rear Panel Bridge

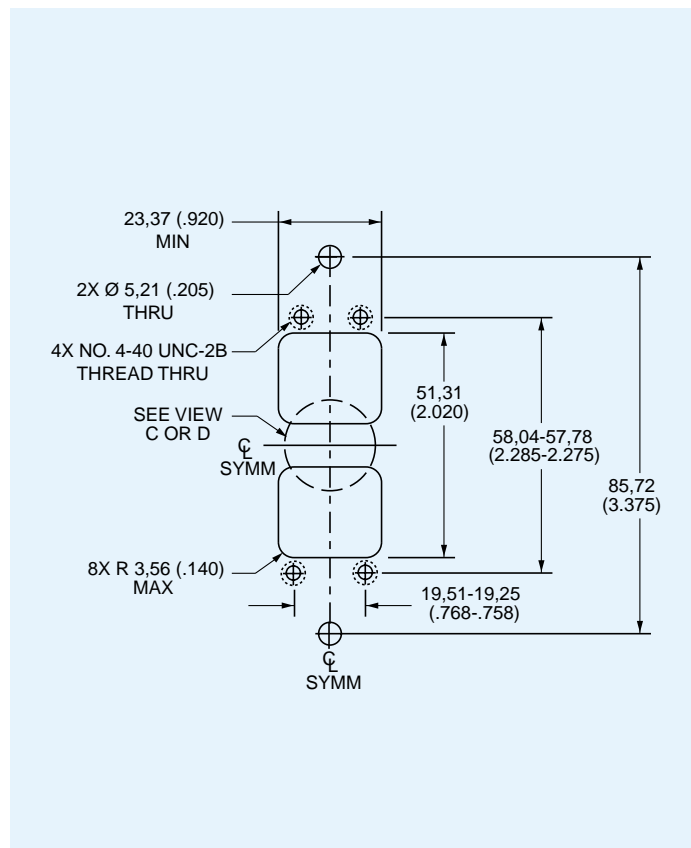


DLD2 Panel Cutouts and Mounting Hole Patterns

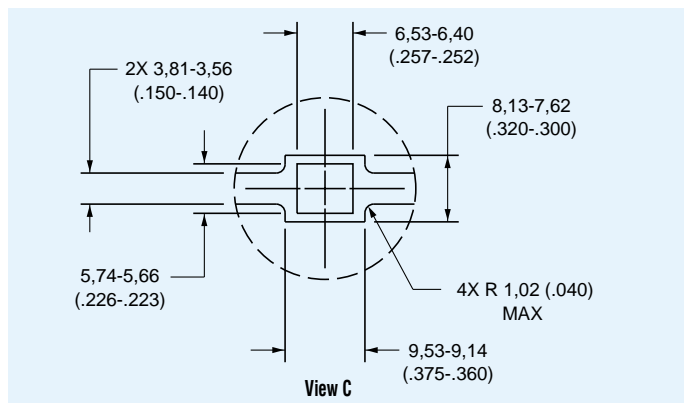
DLD2-96 Plug



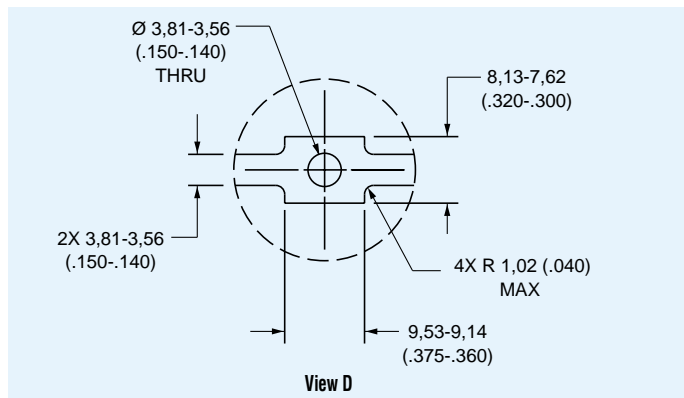
DLD2-96 Receptacle



Front Panel Bridge

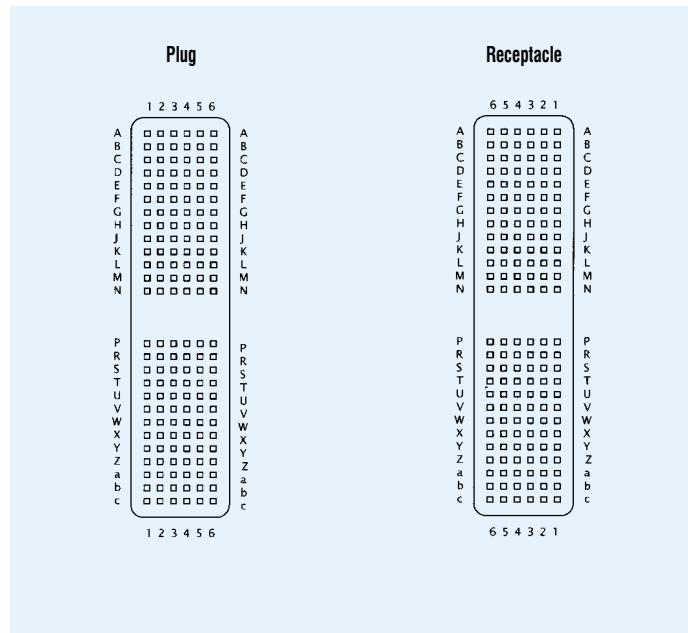


Rear Panel Bridge

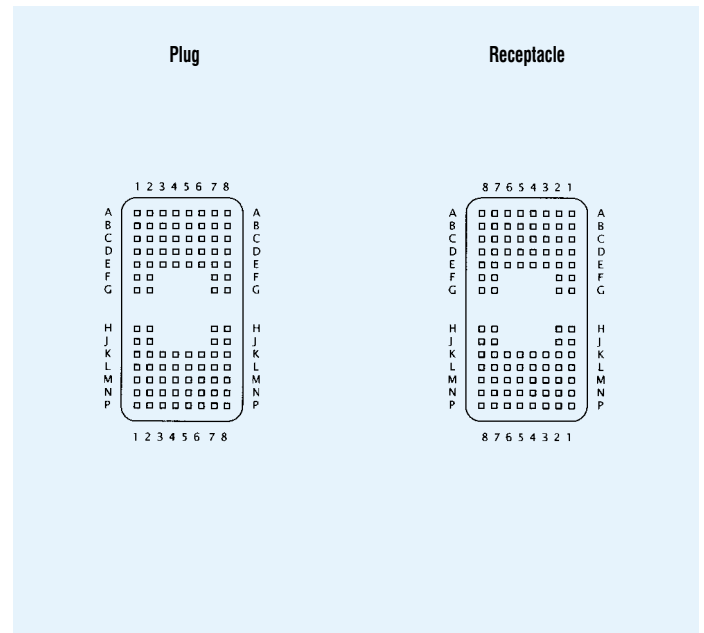


Contact Cavity Arrangements – Rear View

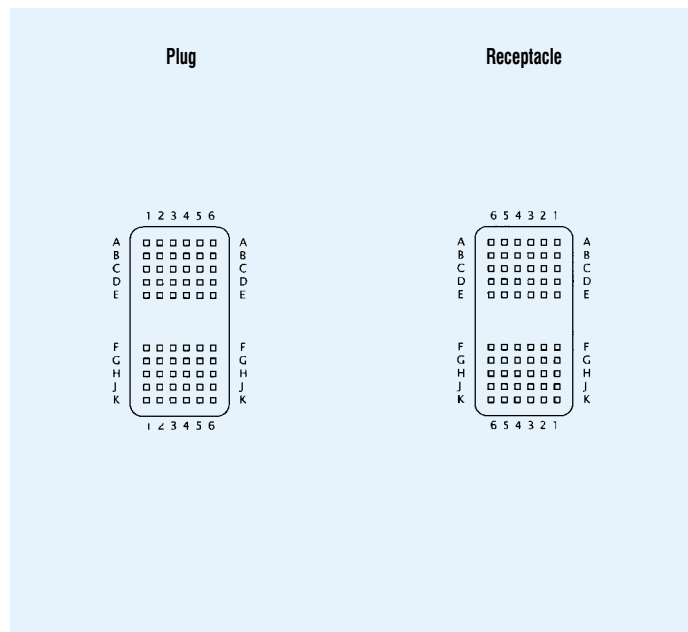
DL1-156/DLM1-156/DLD1-156



DL2-96/DLM2-96/DLD2-96

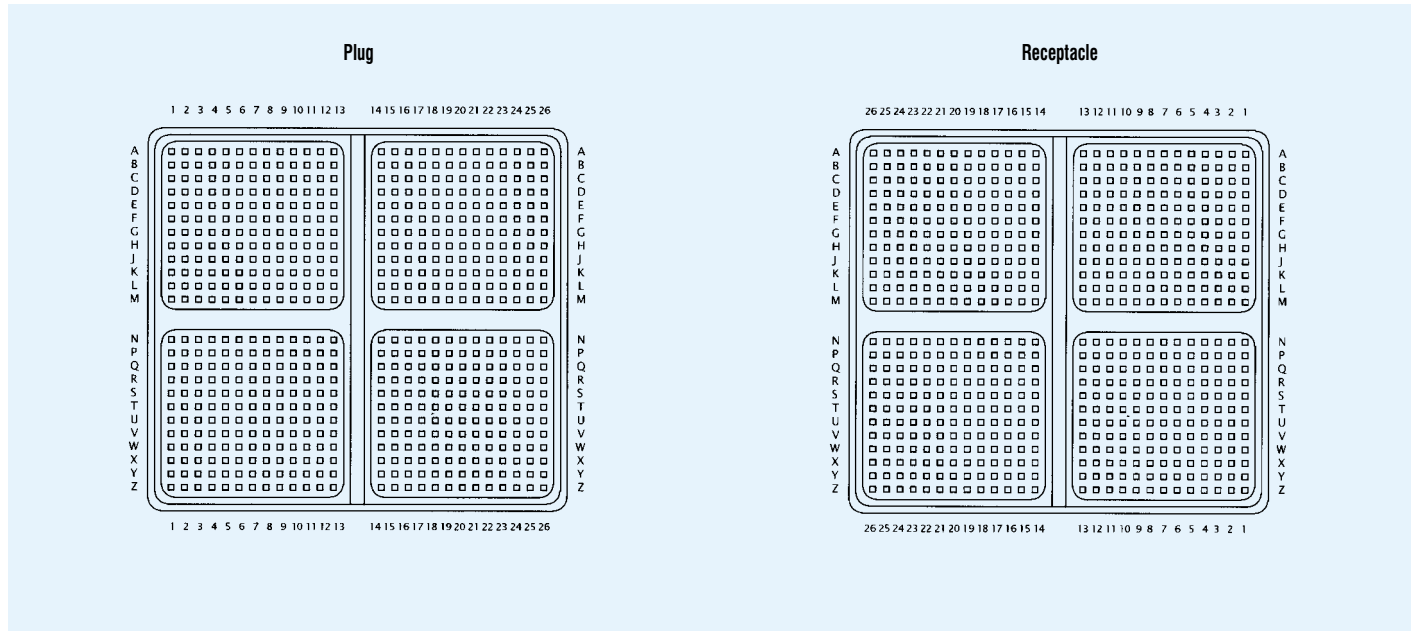


DL3-60/DLM3-60

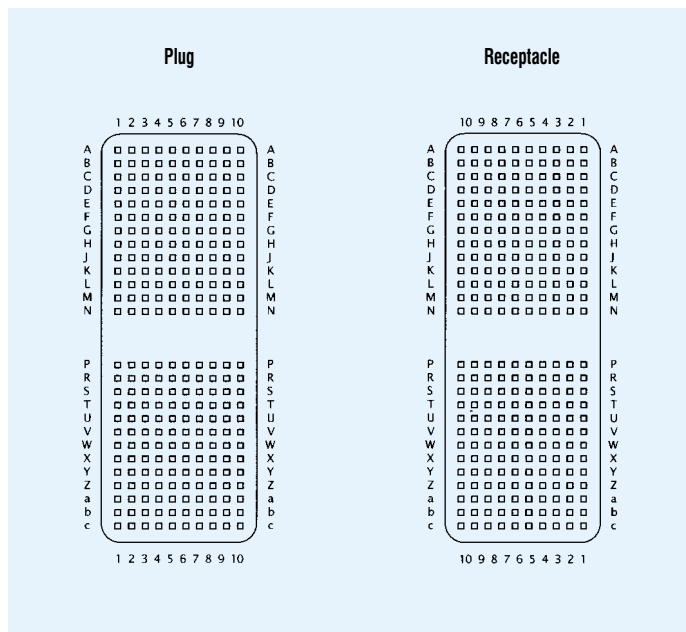


Contact Cavity Arrangements – Rear View

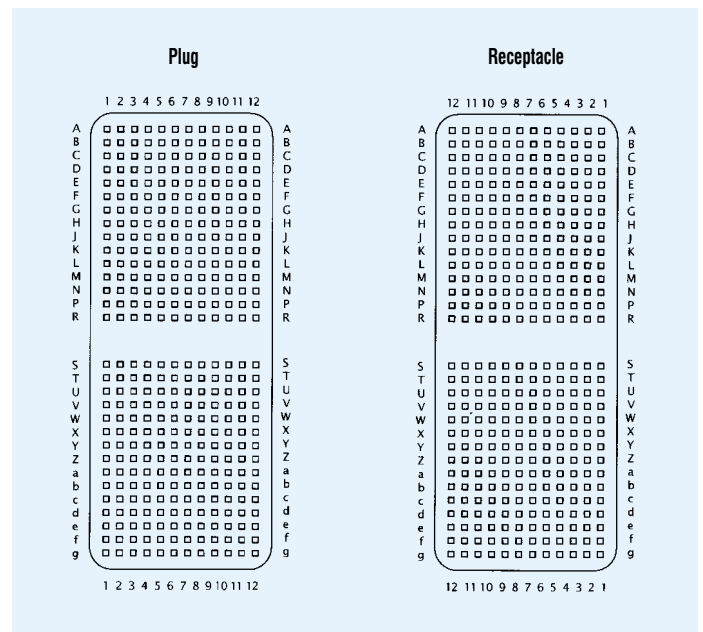
DL4-624



DL5-260/DLM5-260

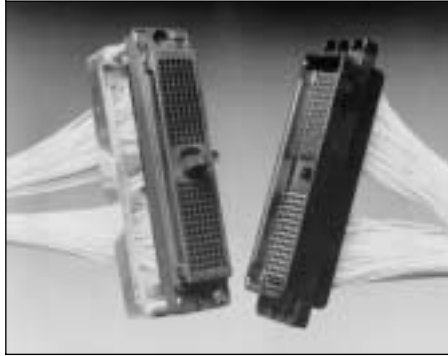


DLM6-360



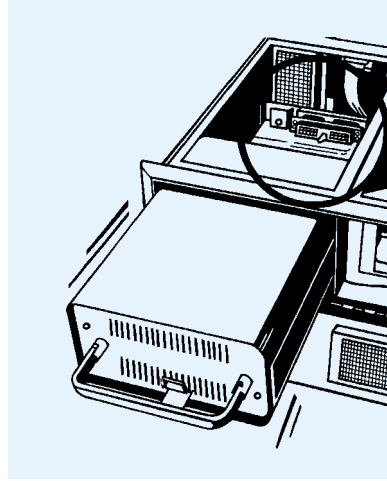
DLD Drawer — Assembly Dimensions

DLD

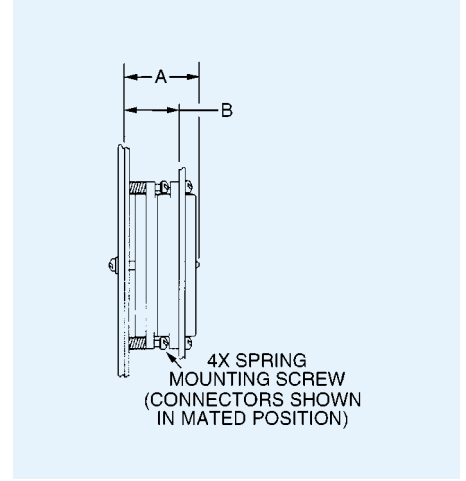


The DLD Drawer features ZIF assembly for greater contact life and eliminates the rod normally used in such products.

DLD Drawer Receptacle



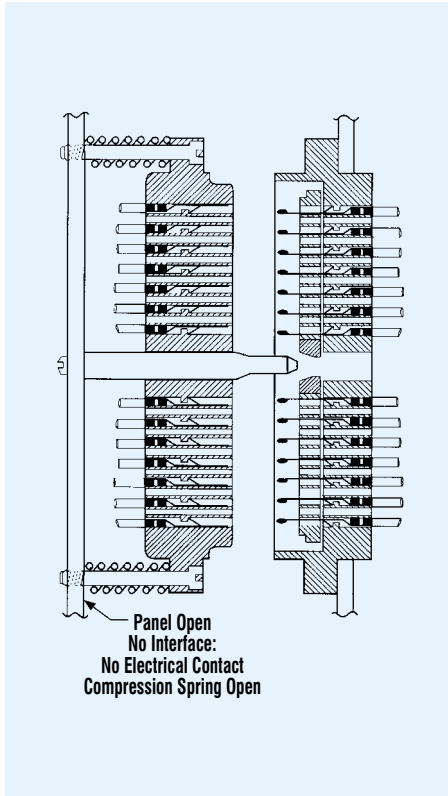
DLD Assembly Dimensions



| Shell Size | Contact Type | A REF         | B REF         |
|------------|--------------|---------------|---------------|
| DLD1       | Crimp        | 46,86 (1.845) | 31,75 (1.250) |
| DLD1       | Square Post  | 57,03 (2.245) | 41,91 (1.650) |
| DLD2       | Crimp        | 46,86 (1.845) | 31,75 (1.250) |
| DLD2       | Square Post  | 57,03 (2.245) | 41,91 (1.650) |

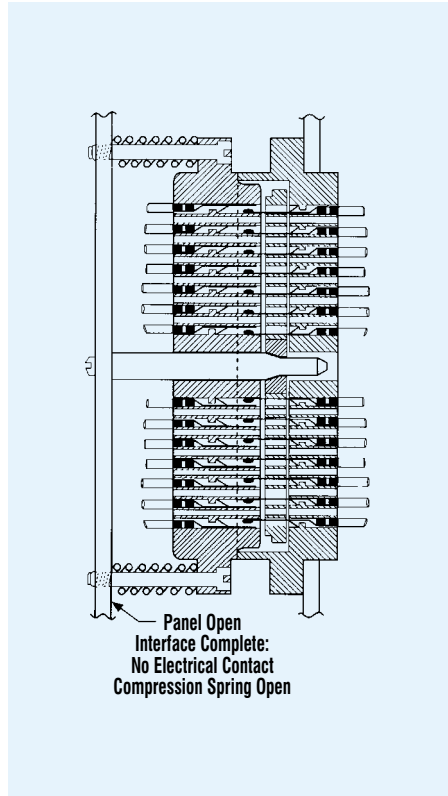
DLD Drawer — Mating Sequence

Figure 1



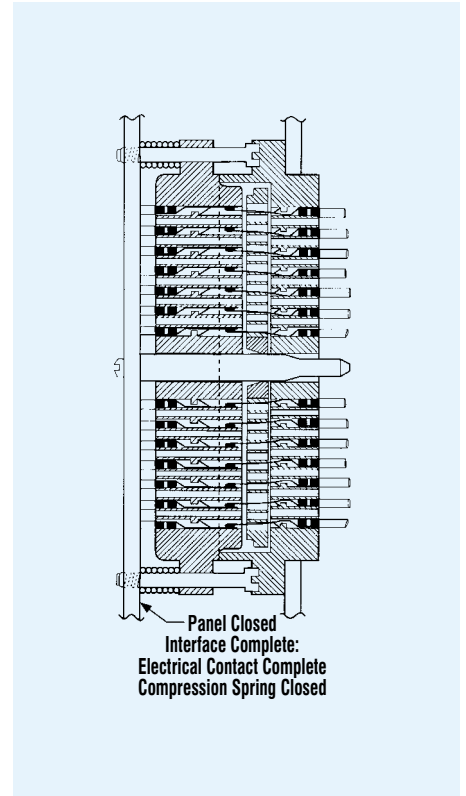
Contacts aligned.

Figure 2



Contacts engaged.

Figure 3



Contacts mated.

## Glossary of Terms

*In every job speciality there are certain words and phrases used by the "insiders" which after a time become almost a language unique to that speciality. DL Zero Insertion Force (ZIF) technology is a typical example of that condition.*

*This page provides some explanations, in an attempt to clarify some of the terms that are commonly used by engineers and sales staff at Cannon.*

*The list is not comprehensive, but highlights many of the expressions commonly used. Should you have any comments or additions please contact us. Feedback will be appreciated.*

**AWG** — American Wire Gauge. A standard for wire diameters based on the approximate circular mil area of the wire. As numbers get larger, wire diameters decrease in size (a size 16 AWG wire has a larger diameter than a size 22 AWG).

**Beryllium Copper** — An alloy of copper used to make contacts. It is relatively expensive, but has superior spring qualities, is resistant to fatigue, and can operate at higher temperatures than other materials such as phosphor bronze. It is used when numerous insertion and extraction cycles are required.

**Cable Clamp** — A rear connector clamping accessory which tightens over a cable or wire bundle to provide strain relief to the cable. The cable clamp may be part of a more elaborate endbell or it may be used alone.

**Contact Retention** — The maximum allowable axial load which can be applied to a contact from either direction without it being dislodged from the insulator. Usually stated in Newtons or pounds of force.

**Contact Spacing** — The distance between the centers of adjacent contacts.

**Crimp** — A method of attaching a contact to a wire through the application of pressure.

**Crimp Contact** — A contact which is terminated to a wire by means of crimping with an appropriate die and tool. After termination, an insertion tool is normally used to insert the crimped contact into the connector. Removable crimp contacts can be FRONT RELEASE or REAR RELEASE. An extraction tool is usually required to remove the contact.

**Cross Talk** — Undesired electrical currents in conductors caused by electromagnetic or electrostatic coupling from other conductors or from external sources. Also, leakage of optical power from one optical conductor to another.

**Derating** — To reduce the voltage, current, or power rating of a connector to improve its reliability or to permit operation at high ambient temperatures or altitudes.

**Derating Curve** — A graph of the change in power handling capability of a connector as a function of ambient temperature or altitude. Typically the graphed function is curved, hence the name.

**EMI/RFI** — Electro-Magnetic Interference and Radio Frequency Interference. This is unwanted stray electronic radiation which may enter, and/or be emitted by an electronic system. The most common method of shielding interconnections against this radiation is to use wires with a metallic braided shield and a connector system which will extend the shield through the interconnection. This type of design will keep radiation from entering, or being emitted by the system. Endbells for shielded cable and connectors with threads or grounding fingers are typically used for this purpose. Call for the specific EMI/RFI accommodations of the connectors in this catalog.

**Extraction Tool** — A device used to remove a (removable) contact from a connector insulator. The extraction tool may be inserted into the mating face of the insulator (FRONT RELEASE) or the wire side (REAR RELEASE). In either case, the contact comes out the rear, or wire side, of the connector.

**Flash Plating** — As commonly used in connector terminology, flash refers to extremely thin platings of metal, for example: gold flash is a very thin plating of gold. So thin, that the thickness is generally not specified.

**Insertion Tool** — A small, handheld tool used to insert contacts into a connector.

**Mating Life** — The minimum number of times a connector can be mated and unmated and still meet all of its design specifications. The maximum life may be much higher than this figure.

**Operating Temperature** — The range of AMBIENT TEMPERATURES over which the connector can operate and still meet all of its design specifications.

**PC Contact** — A pin or socket contact that has a post opposite the mating end which is intended to be soldered directly to a printed circuit (PC) board instead of being terminated to a wire. The solder post may come in square post and or round pin configurations.

**Polarization** — A mechanism that allows connector halves to intermate in only one specific orientation. This can be accomplished by asymmetrical shapes of the two halves as in a

D Subminiature connector, insulator rotation, keys, keyways, ramps, or other means. Polarization prevents connectors of the same size and/or same layout from intermating when this is undesirable, such as when two otherwise identical connectors are used on the same panel. Polarization is typically done by the assembler and cannot be changed by the user, while keying is typically done by the user with an auxiliary keying device.

**Removable Contact** — A contact which can be inserted and removed from the insulator by the user. An insertion tool and extraction tool are normally required to insert and remove the contact.

**Selective Plating** — The application of metal PLATING to selective areas of the contact, particularly those areas subject to wear. Precious metal platings may be applied selectively to those contact surfaces responsible for the electrical connection, reducing the contact cost without sacrificing electrical performance.

**Thermoplastic** — A plastic material that can be softened by heat and rehardened into a solid state by cooling. This process can be accomplished using a variety of techniques.

**UL** — Abbreviation for Underwriter's Laboratories, a corporation supported by a group of underwriters for the purpose of establishing safety standards covering certain types of equipment and components in the United States.

**UL 94V-0** — A flammability performance rating set by Underwriter's Laboratories for plastics.

**Wire Size** — The numerical designation for conductor diameter. This catalog uses American Wire Gauge (AWG) which is based on the approximate circular mil area of the wire. Also see AWG.

**Wrap Post Contact** — A type of contact which is terminated by wrapping wire around a post in a manner that deforms the wire and creates a gas-tight connection between the wire and the post. This method is slow and labor intensive. If used at all, it is used in prototype work.

**Zero Insertion Force Connector (ZIF)** — A connector designed in such a way that the contacts do not mechanically touch until the two connector halves have been jointed and a compression mechanism has joined the contacts together. A ZIF connector has extremely low insertion and removal forces making it possible to easily mate very large numbers of contacts with virtually no wear.



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**THIS NOTE MUST BE READ IN CONJUNCTION WITH THE PRODUCT DATA SHEET/CATALOG. FAILURE TO OBSERVE THE ADVICE IN THIS INFORMATION SHEET AND THE OPERATING CONDITIONS SPECIFIED IN THE PRODUCT DATA SHEET/CATALOG COULD RESULT IN HAZARDOUS SITUATIONS.**

## 1 MATERIAL CONTENT AND PHYSICAL FORM

Electrical connectors do not usually contain hazardous materials. They contain conducting and non-conducting materials and can be divided into two groups.

- a) Printed circuit types and low cost audio types which employ all plastic insulators and casings.
- b) Rugged, Fire Barrier and High Reliability types with metal casings and either natural rubber, synthetic rubber, plastic or glass insulating materials. Contact materials vary with type of connector and also application and are usually manufactured from either: Copper, copper alloys, nickel, alumel, chromel or steel. In special applications, other alloys may be specified.

## 2 FIRE CHARACTERISTICS AND ELECTRIC SHOCK HAZARD

**There is no fire hazard when the connector is correctly wired and used within the specified parameters. Incorrect wiring or assembly of the connector or careless use of metal tools or conductive fluids, or transit damage to any of the component parts may cause electric shock or burns. Live circuits must not be broken by separating mated connectors as this may cause arcing, ionisation and burning.** Heat dissipation is greater at maximum resistance in a circuit. Hot spots may occur when resistance is raised locally by damage, e.g. cracked or deformed contacts, broken strands of wire. Local overheating may also result from the use of the incorrect application tools or from poor quality soldering or slack screw terminals. Overheating may occur if the ratings in the product Data Sheet/Catalog are exceeded and can cause breakdown of insulation and hence electric shock.

If heating is allowed to continue it intensifies by further increasing the local resistance through loss of temper of spring contacts, formation of oxide film on contacts and wires and leakage currents through carbonisation of insulation and tracking paths. Fire can then result in the presence of combustible materials and this may release noxious fumes. Overheating may not be visually apparent. Burns may result from touching overheated components.

## 3 HANDLING

Care must be taken to avoid damage to any component parts of electrical connectors during installation and use. Although there are normally no sharp edges, care must be taken when handling certain components to avoid injury to fingers.

Electrical connectors may be damaged in transit to the customers, and damage may result in creation of hazards. Products should therefore be examined prior to installation/use and rejected if found to be damaged.

## 4 DISPOSAL

Incineration of certain materials may release noxious or even toxic fumes.

## 5 APPLICATION

Connectors with exposed contacts should not be selected for use on the current supply side of an electrical circuit, because an electric shock could result from touching exposed contacts on an unmated connector. Voltages in excess of 30 V ac or 42.5 V dc are potentially hazardous and care should be taken to ensure that such voltages cannot be transmitted in any way to exposed metal parts of the connector body. The connector and wiring should be checked, before making live, to have no damage to metal parts or insulators, no solder blobs, loose strands, conducting lubricants, swarf, or any other undesired conducting particles. Circuit resistance and continuity check should be made to make certain that there are no high resistance joints or spurious conducting paths. Always use the correct application tools as specified in the Data Sheet/Catalog.

Do not permit untrained personnel to wire, assemble or tamper with connectors. For operation voltage please see appropriate national regulations.

## IMPORTANT GENERAL INFORMATION

### (i) Air and creepage paths/Operating voltage

The admissible operating voltages depend on the individual applications and the valid national and other applicable safety regulations.

For this reason the air and creepage path data are only reference values. Observe reduction of air and creepage paths due to PC board and/or harnessing.

### (ii) Temperature

All information given are temperature limits. The operation temperature depends on the individual application.

### (iii) Other important information

ITT Cannon continuously endeavors to improve their products. Therefore, ITT Cannon products may deviate from the description, technical data and shape as shown in this catalog and data sheets.

ITT Cannon manufactures the highest quality products available in the marketplace; however these products are intended to be used in accordance with the specifications in this publication. Any use or application that deviates from the stated operating specifications is not recommended and may be unsafe. No information and data contained in this publication shall be construed to create any liability on the part of ITT Cannon. Any new issue of this publication shall automatically invalidate and supersede any and all previous issues. **A limited warranty applies to ITT Cannon products. Except for obligations assumed by ITT Cannon under this warranty, ITT Cannon shall not be liable for any loss, damage, cost of repairs, incidental or consequential damages of any kind, whether or not based on express or implied warranty, contract, negligence or strict liability arising in connection with the design, manufacture, sale, use or repair of the products.** Product availability, prices and delivery dates are exclusively subject to our respective order confirmation form; the same applies to orders based on development samples delivered. This publication is not to be construed as an offer. It is intended merely as an invitation to make an offer. By this publication, ITT Cannon does not assume responsibility or any liability for any patent infringements or other rights of third parties which may result from its use. Reprinting this publication is generally permitted, indicating the source. However, ITT Cannon's prior consent must be obtained in all cases.

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## Cannon

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**ITT Industries**  
*Engineered for life*

# We're Part of Your World in Interconnect Technology

## ▶ Innovation

## ▶ Experience

## ▶ Reliability

## ▶ Responsiveness

### Don't blink.

No industry in the world moves faster than electronics. Take a snapshot of it today, and it all changes by tomorrow.

When you need to bring your products to market more quickly, you most likely seek a partner who moves just as fast as you do. A company at the forefront with the latest ideas in products and service.

At ITT Industries' Cannon Division, we have made it our business to understand your world. Or should we say, the many parts of your world:

- The places in the world where you do business.
- The products you bring to the world.
- The service you require from suppliers to compete in the world.

At Cannon, we are proud of a heritage that helped pioneer the electronics industry from its infancy in the early part of the twentieth century, to the highly advanced technologies of the present.

Today, we serve nearly every industry in which the increased demand for reliable and innovative interconnect systems is critical: from Computers (Personal computers, portables and peripherals) to Military/Aerospace (Commercial and military aircraft, defense and space).

### INNOVATION

*A commitment to concurrent engineering to help you reach your markets faster*

Let us bring our spirit of innovation to your world. Experienced engineering teams located throughout the globe work hand-in-hand with our customers. And since these teams are thoroughly networked together, you benefit from 24 hour-a-day concurrent engineering capability. These teams advance your project from initial product concepts to final design and into production.

### EXPERIENCE

*Worldwide capacity to meet all of your delivery requirements*

Our decades of manufacturing experience, help us bring the latest products to your world. With automated manufacturing capacity strategically located in North America, Europe and Asia, we can produce products in either large or small quantities to quickly meet your exact requirements.

### RELIABILITY

*We don't stop at "world class quality" — Continuous improvement is our standard*

Our goal is to bring world class electronics to your world. This commitment to perfection has helped Cannon's global facilities earn ISO 9000 certification.

Cannon has also met or exceeded the quality system requirements from all customers who have conducted audits. We participate in ship-to-stock programs with many of these customers worldwide and have received numerous quality and preferred supplier awards from customers throughout the world in each of the industries we serve.

### RESPONSIVENESS

*A singular focus on responding to your needs*

We know that to be responsive, we must know your world inside and out: your particular company, your industry and your challenges. Each of Cannon's thousands of employees worldwide is focused on responding to you with timely and dependable information — and on ensuring that we keep the commitments we make.

### AN INVITATION TO SHARE OUR WORLD

*Innovation. Experience. Reliability. Responsiveness.*

At Cannon, these are the strengths that we bring to our customers each and every day. Just as we have for nearly nine decades. We pride ourselves on a level of service and manufacturing know-how that has enabled us to lead our industry. Exceeding your expectations — not just meeting them — is how we approach every project.

With the world moving faster all the time, Cannon is a partner who can help you get your products to market not just on time, but ahead of the competition.

At Cannon, we realize that each customer we serve has their own special needs and expectations. That is why we would welcome the opportunity to discuss your project, your company, your industry — yes, your world.



*New Product: The DLMI/2/3 range of ZIF connectors offer EMI/RFI shielding without the use of shielding skirts. Metal body versions are directly inter-mateable with the plastic DL. The metal versions also offer added strength for applications where the plastic versions can be damaged. See pages 16-18, 23-25, 30-32, and 37-42.*