DL / DLM / DLD

ZERO INSERTION FORCE CONNECTORS

Cannon

ITT Industries

Engineered for life

1999

Contents

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.

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DL4

DL4

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

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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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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.

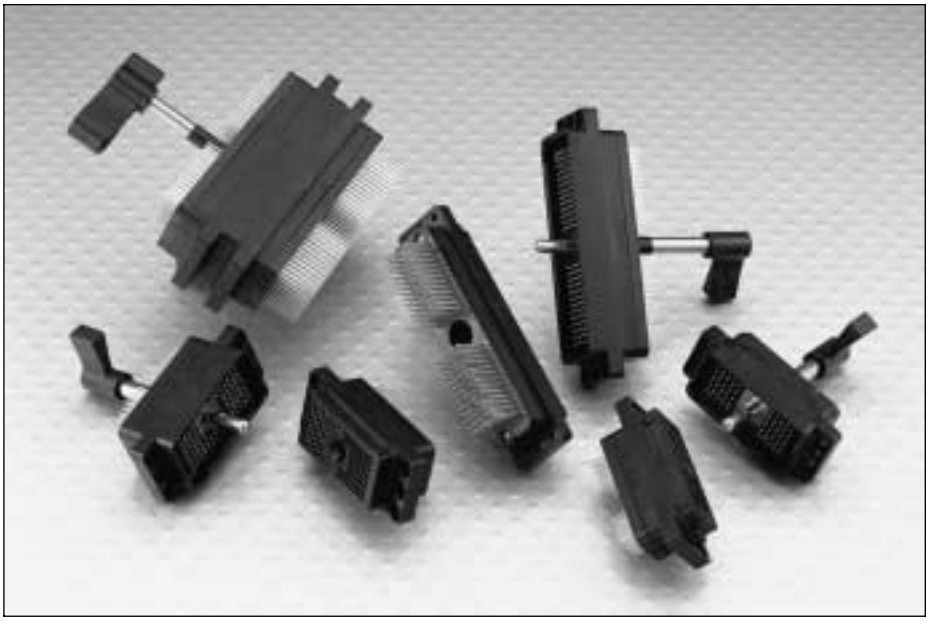
DL Product Introduction

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/0 connectors available today.



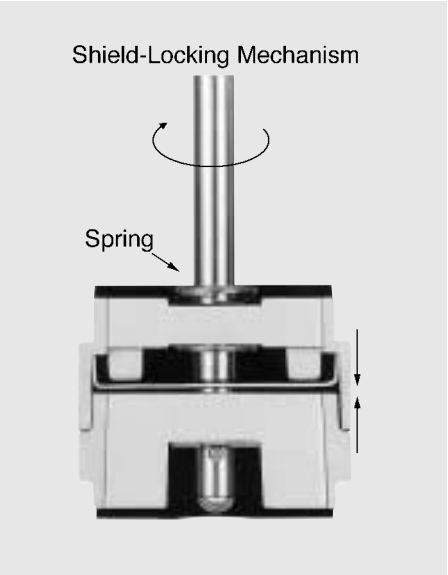
Materials and Finishes

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, 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.

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 intermateable 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 ∅ 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

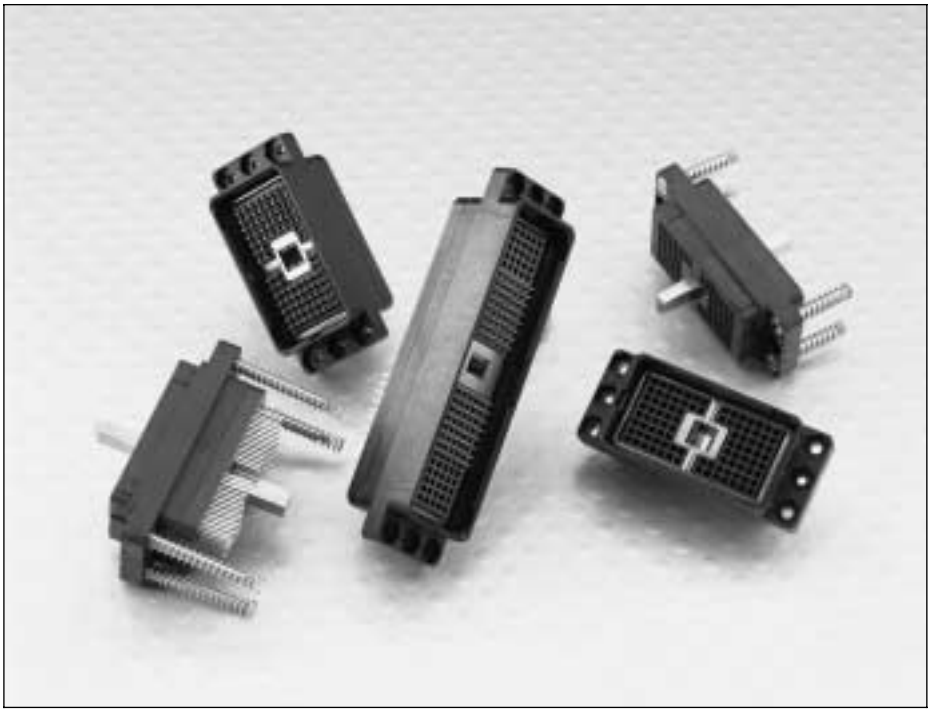
Cannon has combined Zero Insertion Force (ZIF) technology with remote electrical engagement. The DLD Drawer allows the movement of a drawer or panel to effortlessly mate/unmate the connector halves. As an example: electrical sub-systems can be easily removed for service, interchangability, or portability.

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

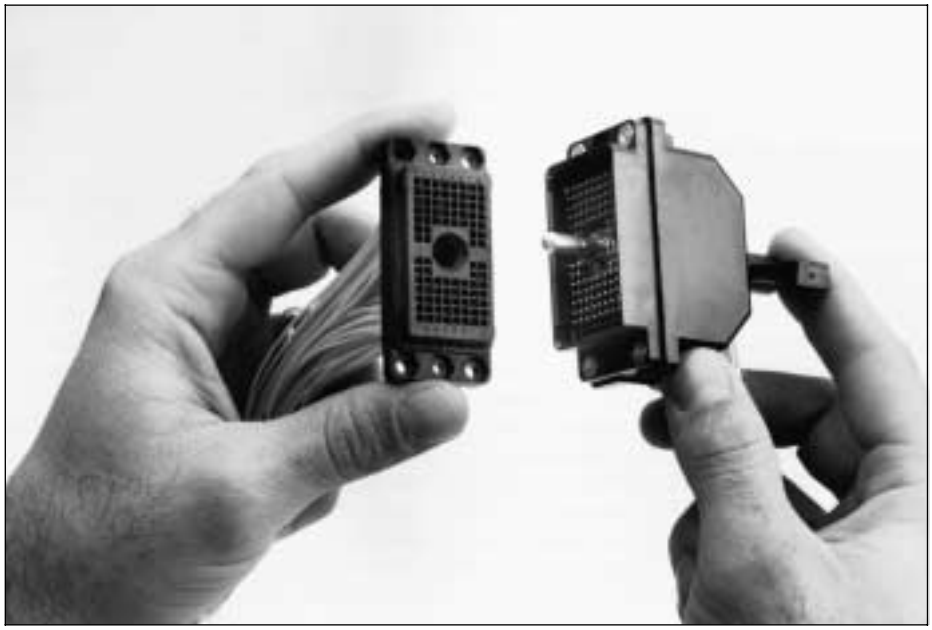
* Order crimp contacts separately, see pages 52-53.

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



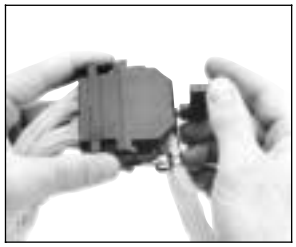
It's as easy as 1, 2, 3...

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.

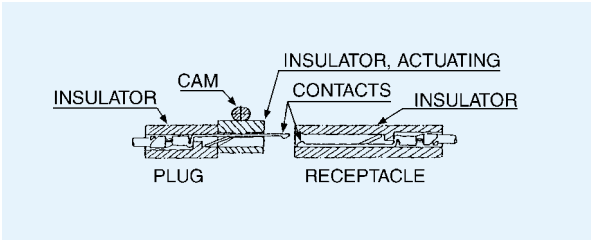
Connector engagement force is zero, and the only wear on the contacts occurs as they are pressed together and lightly wiped past each other during the camming and locking operation.

*Contact Cannon for details.

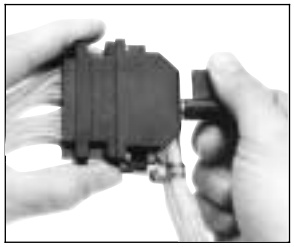
This is our ''DL/DLM'' series of connectors.



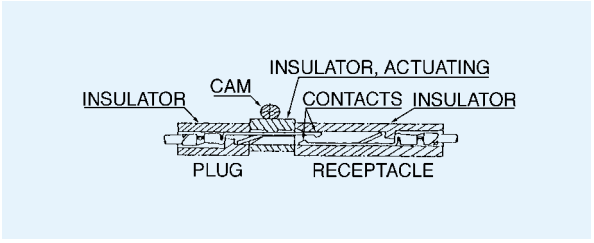
Step 1. Simply place it together.



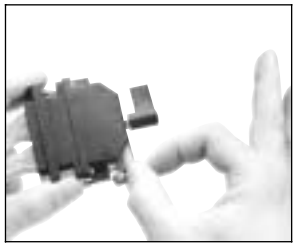
Contacts aligned.



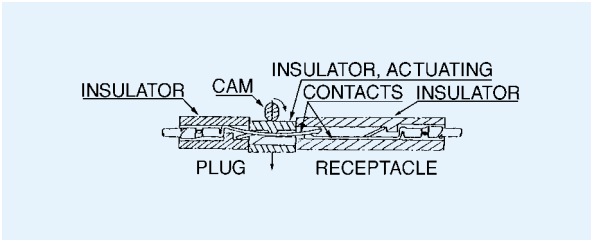
Step 2. Turn the cam a quarter turn.



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 4 A max. - PC/RC Contact 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 1000 VAC RMS - PC/RC Contact 750 VAC RMS - DL4
Operating Temperature	-55°C to 105°C (DL/DLM/DLD) -55°C to 71°C (DL4)
Durability	10,000 Cycles min. (DL/DLM) 20,000 Cycles min. (DL4) 100,000 Cycles min. (DLD)
Contact Resistance	15 mΩ max. - Crimp/Square Post Contact 20 mΩ max. - Crimp #32 AWG - #30 AWG Contact 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

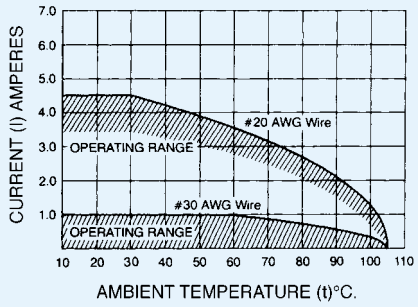
Polarization	Polarizing Posts
Contact Termination	PC Tails, Straight Crimp Square Post Wrap Post Buss

DL/DLM/DLD Temperature/Current Rating

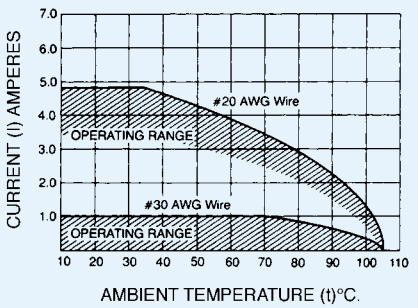
The ambient temperature curves shown represent the rated current carrying capacity of the Cannon DL1/2/3/4, DLM1/2/3 and DLD1/2 electrical connectors, derated to 80% of the values recorded using the methods specified by International Electro-Technical Commission Document 48 (1975).

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.

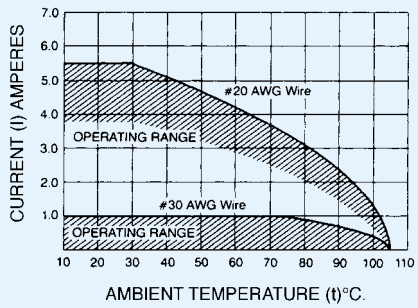
DL1/DLM1/DLD1



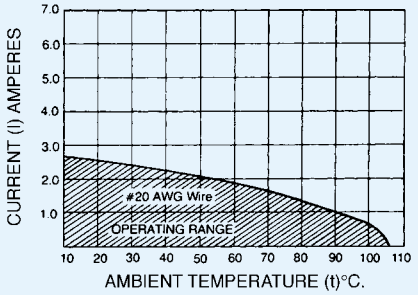
DL2/DLM2/DLD2



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 50μ 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 20μ 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.** **• 50μ inch Gold (low current to 5 A applications) – Most Versatile** **• 20μ 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
Crimp AWG #42-#18 (50μ inches Gold, BUMP in Plug) 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	**
** Similar to DL4-624, see pages 33-34. Contact Cannon for details.	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
Square Post 7,11 (.280) Ext. 50μ inches Gold, BUMP Std. Square Post □ 0,64 (.025) Factory Installed Solder to PCB Through Hole 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
* ''A'' designates plug contacts mandatory for low current applications less than 100 milliamps.	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
Square Post 3,18 (.125) Ext. 50μ inches Gold, BUMP Std. Square Post □ 0,64 (.025) Factory Installed Solder to PCB Through Hole	DL110535-40	110535-0040	DL1	Plastic Body	156 Pin Connector	Square Post	15
	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
Wrap Post 15,37 (.605) Ext. 50μ inches Gold, BUMP Std. Square Post □ 0,64 (.025) Factory Installed	DL1-156PW4A*	110535-0025	DL1	Plastic Body	156 Pin Connector	Wrap Post	15
	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
* ''A'' designates plug contacts mandatory for low current applications less than 100 milliamps.	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
Square Post 7,11 (.280) Ext. 20μ inches Gold, Hermophroditic Std. Square Post □ 0,64 (.025) Factory Installed Solder to PCB Through Hole	DL1-156PW6	110535-0026	DL1	Plastic Body	156 Pin Connector	Square Post	15
Wrap Post 15,37 (.605) Ext. 20μ inches Gold, Hermophroditic Std. Square Post □ 0,64 (.025) 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
PC / RC 4,50 (.177) Ext. 20μ inches Gold - 4 A max. Round Tail - Ø 0,50 (.020) Factory Installed 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: 50μ inches gold contacts (Bump on plug side, Flat on receptacle side) are mandatory for applications with less than 100 milliamps.

How to Order — Receptacle

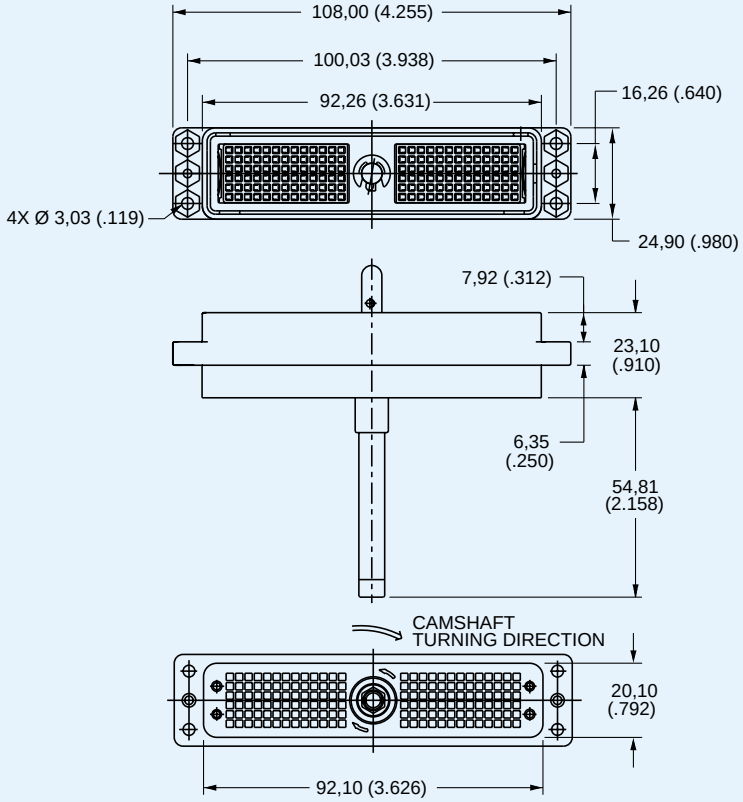
Contact Style	Nomenclature	Part Number	Size	Type	No. of Contacts	Contact Style	Page Reference
Crimp AWG #42-#18 (50μ inches Gold, FLAT in Receptacle) Note: Crimp Contacts Sold Separately	DL1-156R	086-0030-000	DL1	Plastic Body	156 Pin Connector	Crimp	14
	DLM1-156R	127050-0208	DLM1	Metal Body	156 Pin Connector	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
** Similar to DL4-624, see pages 33-34. Contact Cannon for details.	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
Square Post 7,11 (.280) Ext. 50μ inches Gold, FLAT Std. Square Post □ 0,64 (.025) Factory Installed Solder to PCB Through Hole 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
* ''B'' designates receptacle contacts manditory for low current applications less than 100 milliamps.	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
Square Post 3,18 (.125) Ext. 50μ inches Gold, FLAT Std. Square Post □ 0,64 (.025) Factory Installed 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
Wrap Post 15,37 (.605) Ext. 50μ inches Gold, FLAT Std. Square Post □ 0,64 (.025) Factory Installed	DL1-156RW4B*	110536-1006	DL1	Plastic Body	156 Pin Connector	Wrap Post	15
	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
* ''B'' designates receptacle contacts manditory for low current applications less than 100 milliamps.	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
Square Post 7,11 (.280) Ext. 20μ inches Gold, Hermophroditic Std. Square Post □ 0,64 (.025) Factory Installed Solder to PCB Through Hole	DL1-156RW6	110536-1009	DL1	Plastic Body	156 Pin Connector	Square Post	15
Wrap Post 15,37 (.605) Ext. 20μ inches Gold, Hermophroditic Std. Square Post □ 0,64 (.025) 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
PC / RC 4,50 (.177) Ext. 20μ inches Gold - 4 A max. Round Tail - Ø 0,50 (.020) Factory Installed 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: 50μ 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

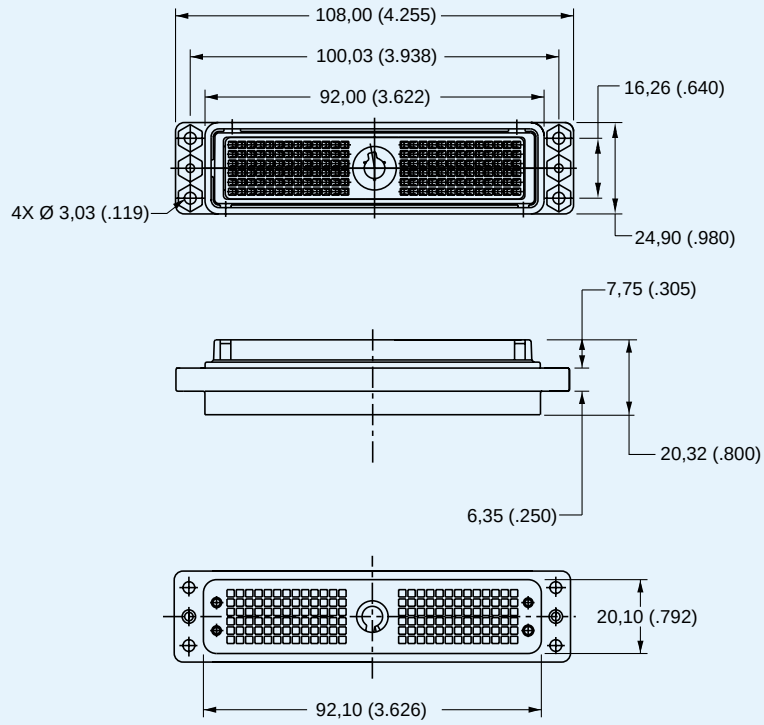
- For contact cavity arrangement, see page 68.
- For panel cutout and mounting hole pattern, see page 65.
- Crimp contacts are to be ordered separately and installed by customer, see pages 52-53.
- Order actuating handle kit separately, see page 47.



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.



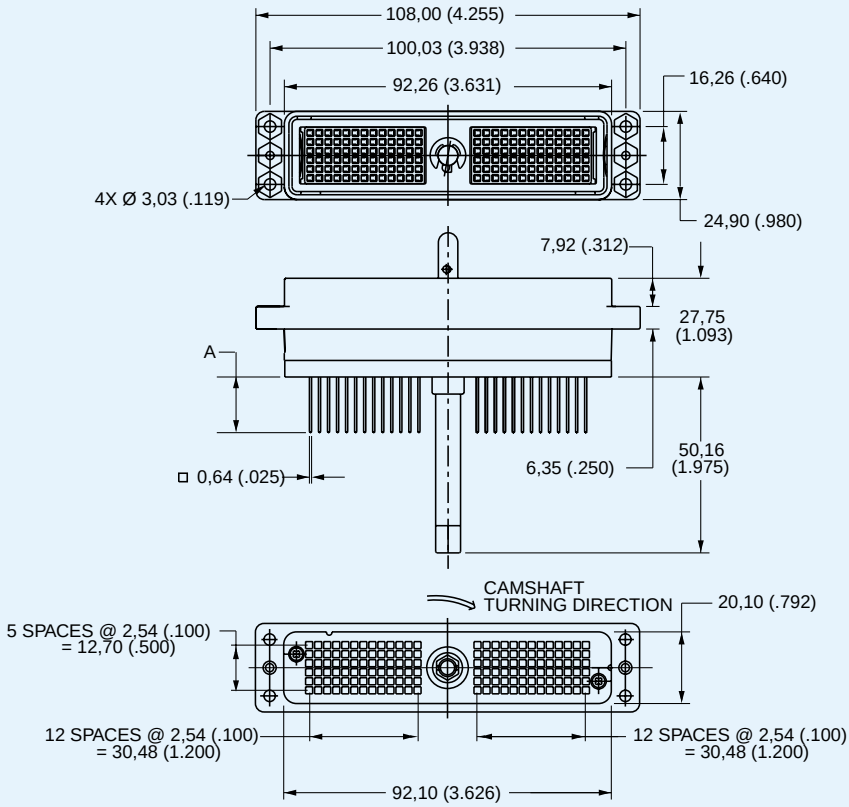
Part Number	Nomenclature
086-0030-000	DL1-156R

Dimensions are shown in mm (inch)
Dimensions subject to change

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

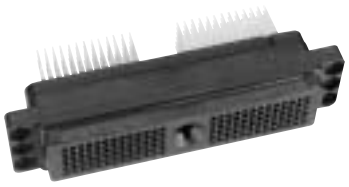
Plug

- 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.

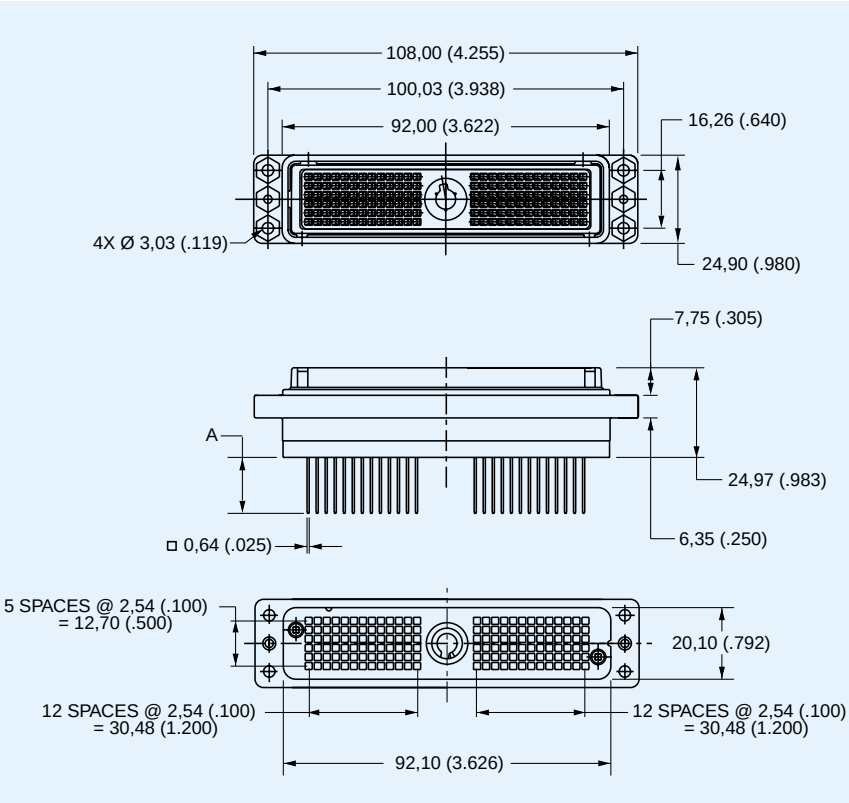


Part Number	Nomenclature	A
110535-0012	DL1-156PW4	15,37 (.605)
110535-0025	DL1-156PW4A	15,37 (.605)
110535-0026	DL1-156PW6	7,11 (.280)
110535-0030	DL1-156PW6A	7,11 (.280)
110535-0040	DL110535-40	3,18 (.125)

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.

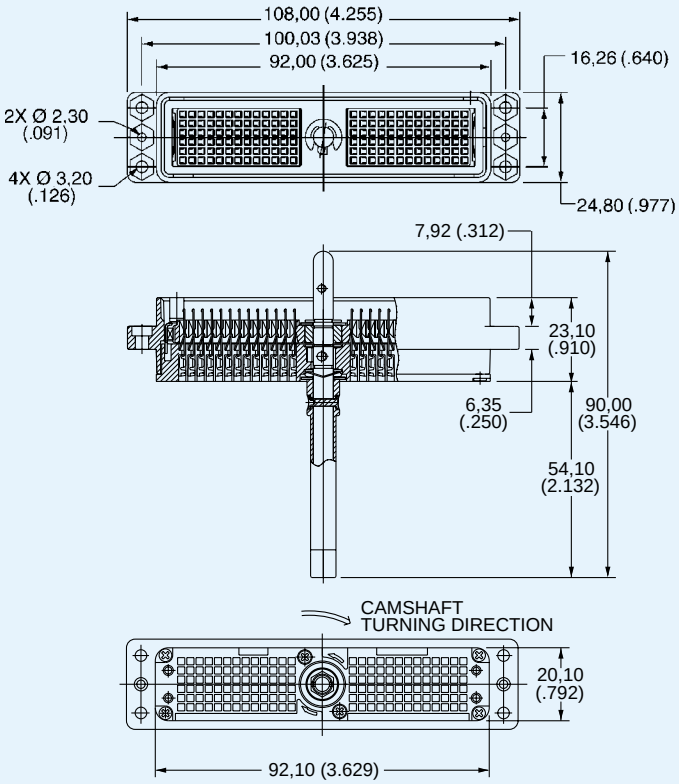


Part Number	Nomenclature	A
110536-1003	DL1-156RW4	15,37 (.605)
110536-1006	DL1-156RW4B	15,37 (.605)
110536-1009	DL1-156RW6	7,11 (.280)
110536-1007	DL1-156RW6B	7,11 (.280)
110536-1011	DL110536-1011	3,18 (.125)

DLM1 — Metal Body — 156 Pin Connectors — Crimp Contacts

Plug

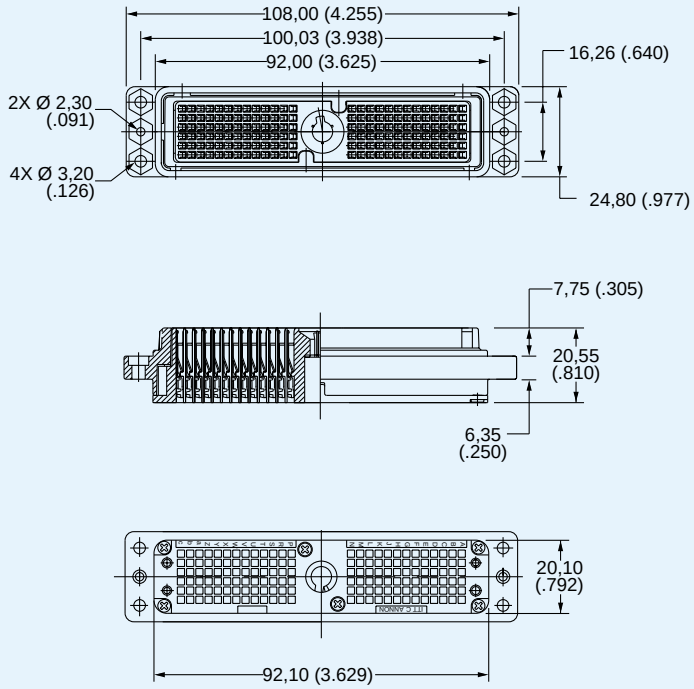
- For contact cavity arrangement, see page 68.
- For panel cutout and mounting hole pattern, see page 65.
- Crimp contacts are to be ordered separately and installed by customer, see pages 52-53.
- Order actuating handle kit separately, see page 47.



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.

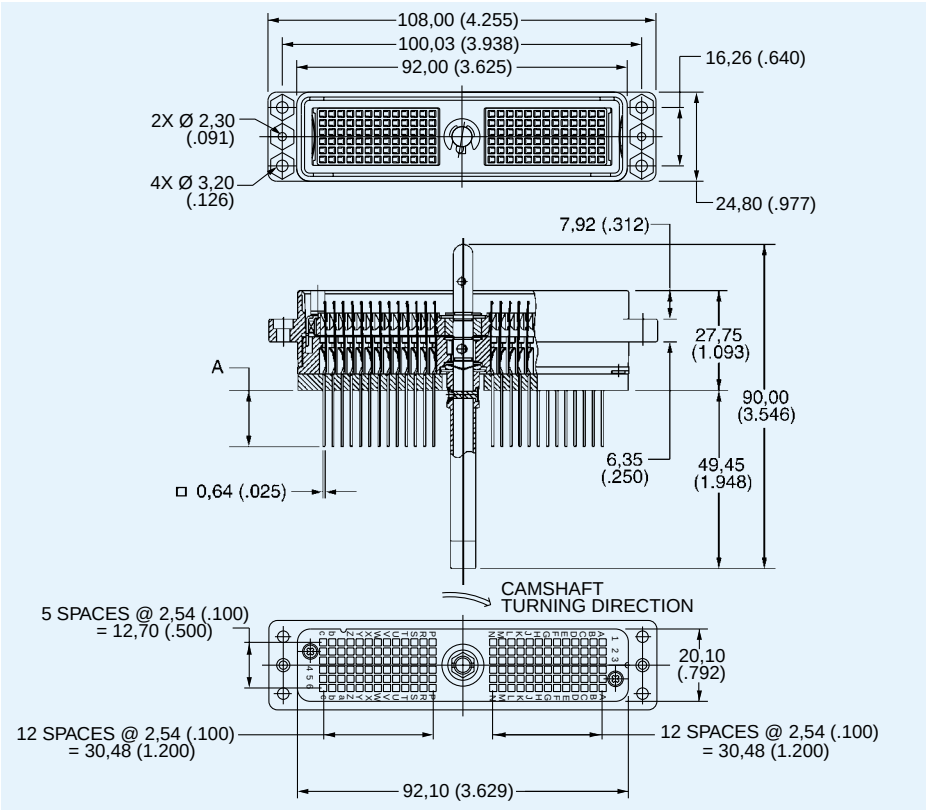


Part Number	Nomenclature
127050-0208	DLM1-156R

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

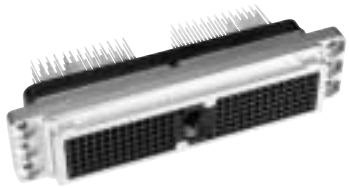
Plug

- 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.

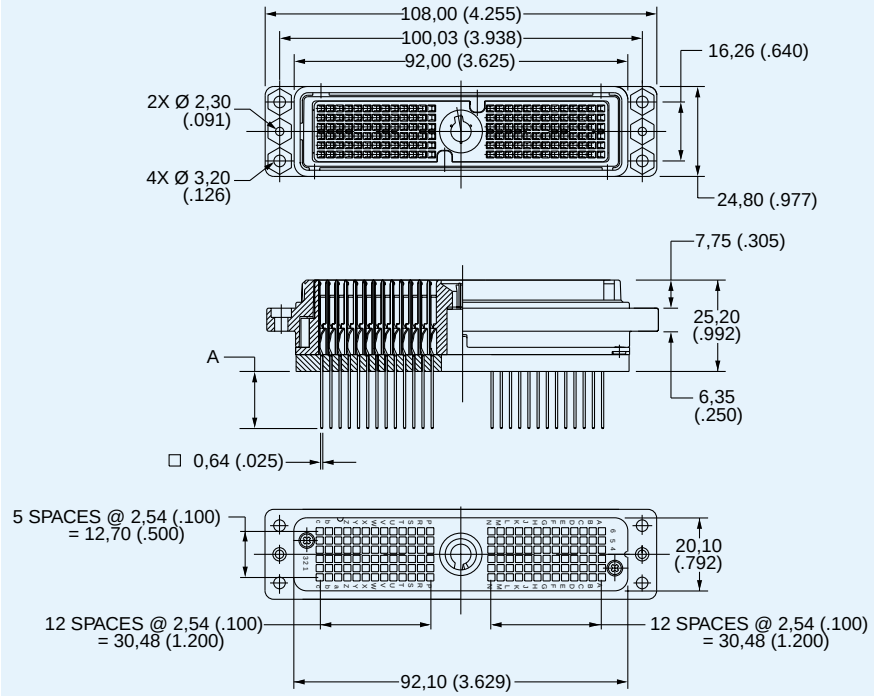


Part Number	Nomenclature	A
112134-0001	DLM1-156PW4A	15,37 (.605)
112134-0000	DLM1-156PW6A	7,11 (.280)
112134-0002	DLM112134-2	3,18 (.125)

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.

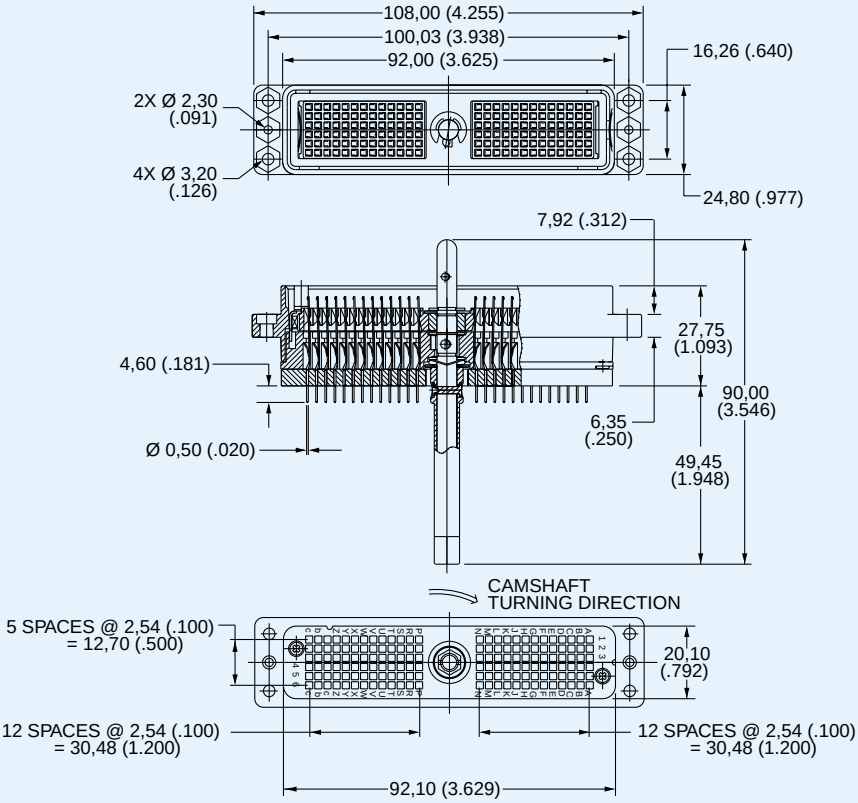


Part Number	Nomenclature	A
112135-0001	DLM1-156RW4B	15,37 (.605)
112135-0000	DLM1-156RW6B	7,11 (.280)
112135-0002	DLM112135-2	3,18 (.125)

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

Plug

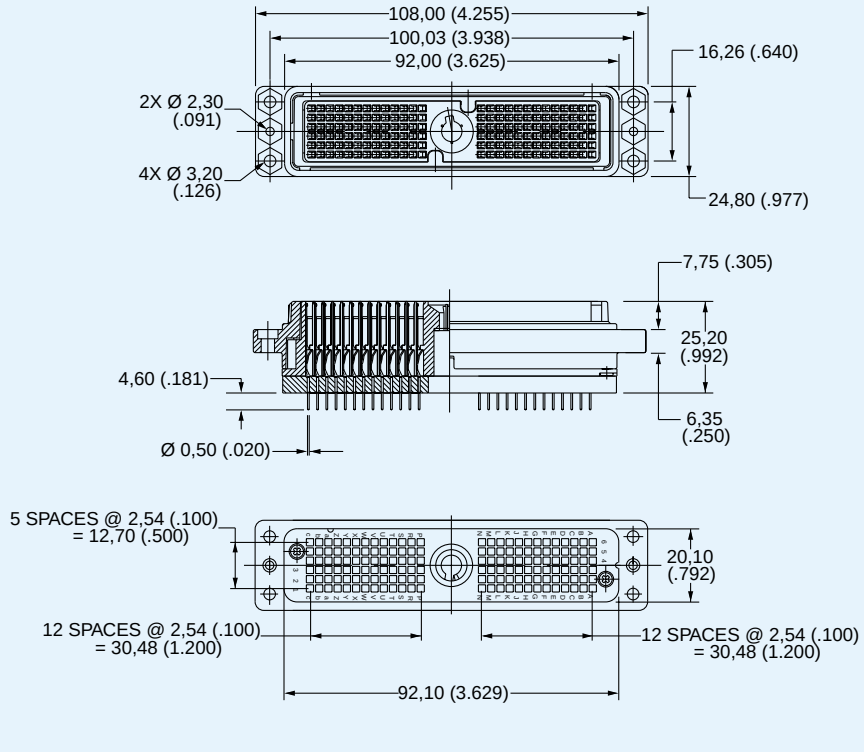
- For contact cavity arrangement, see page 68.
- For panel cutout and mounting hole pattern, see page 65.
- For PC hole pattern, see page 60.
- Order actuating handle kit separately, see page 47.



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.

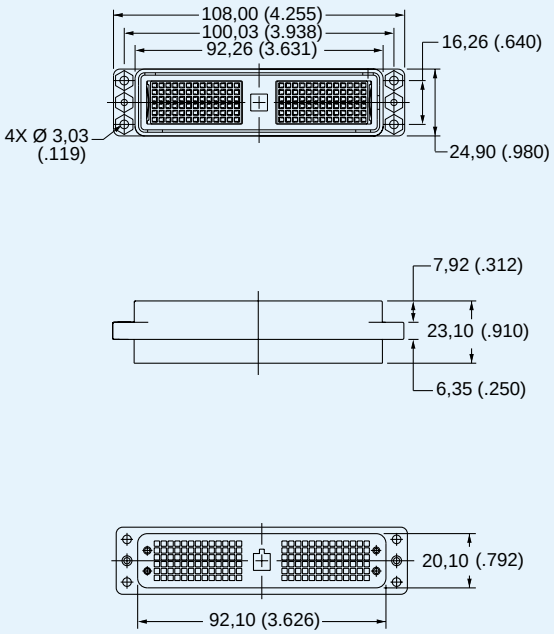


Part Number	Nomenclature
127050-0211	DLM1-156RC

DLD1 — Plastic Body — 156 Pin Connectors — Crimp Contacts

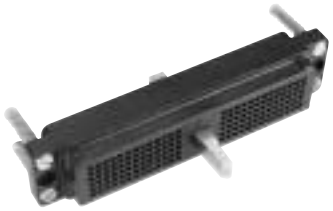
Plug

- 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.

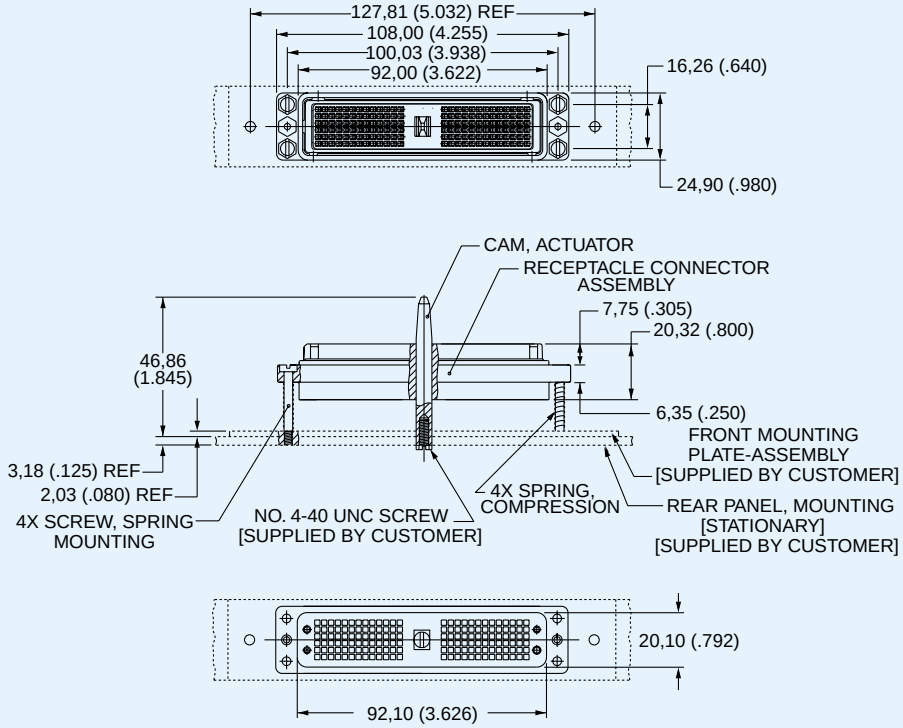


Part Number	Nomenclature
111496-0000	DLD1-156P

Receptacle



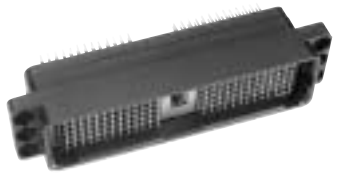
- For contact cavity arrangement, see page 68.
- For panel cutout and mounting hole pattern, see page 66.
- Crimp contacts are to be ordered separately and installed by customer, see pages 52-53.
- For assembly dimensions and mating sequence, see page 70.



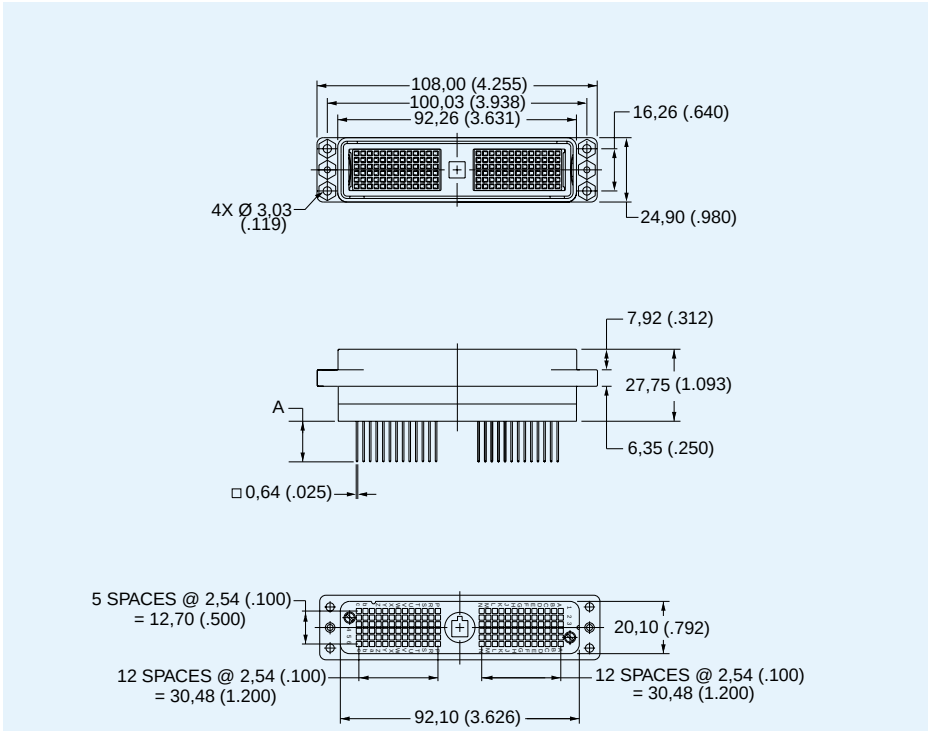
Part Number	Nomenclature
111497-0004	DLD1-156R

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

Plug

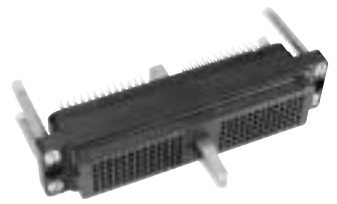


- For contact cavity arrangement, see page 68.
- For panel cutout and mounting hole pattern, see page 66.
- For PC hole pattern, see page 60.
- Front Removable 0,64 (.025) Square Posts 2,54 (.100) Centers.
- For assembly dimensions and mating sequence, see page 70.

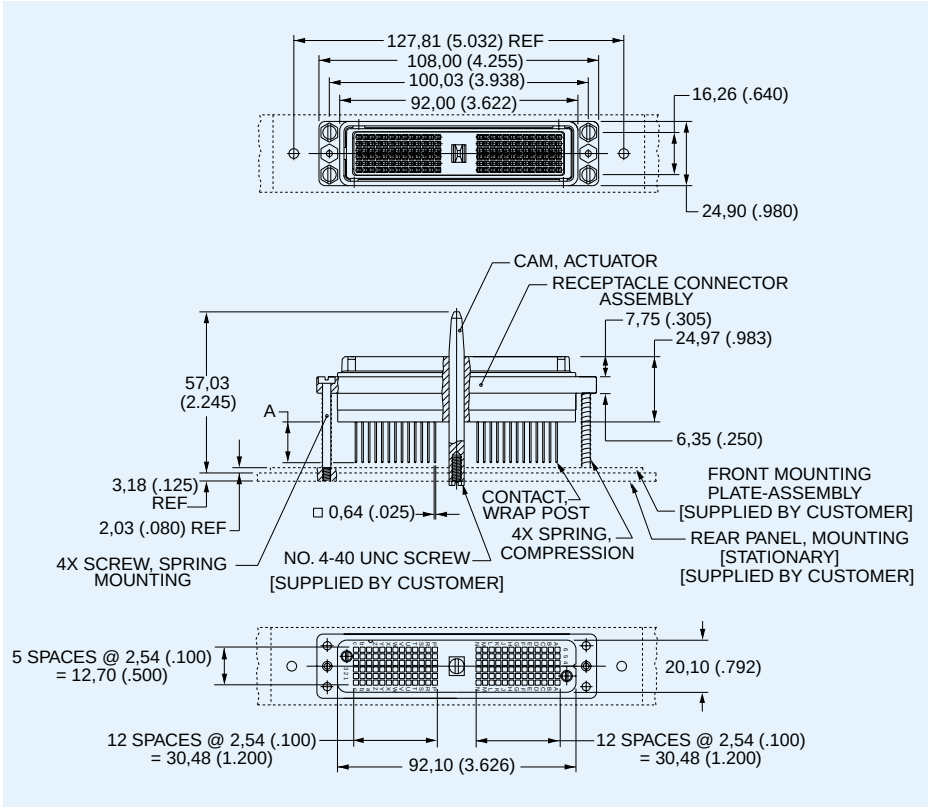


Part Number	Nomenclature	A
111496-0001	DLD1-156PW4A	15,37 (.605)
111496-0002	DLD1-156PW6A	7,11 (.280)

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.

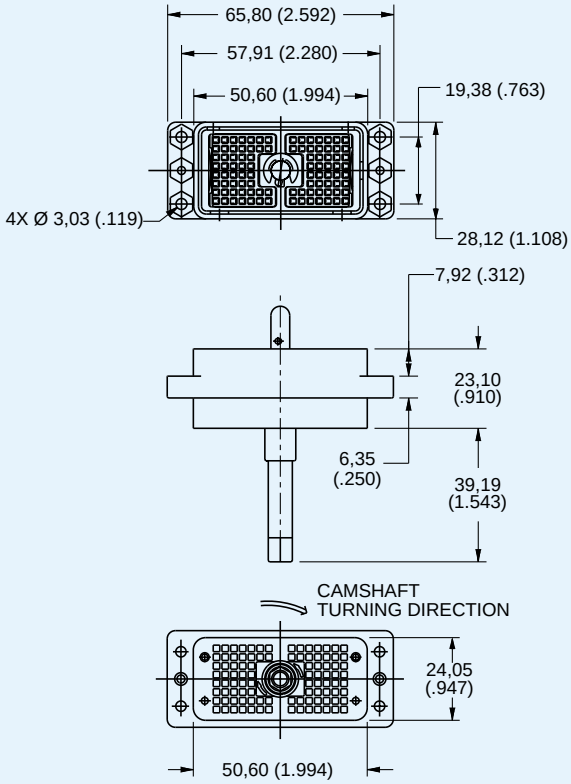


Part Number	Nomenclature	A
111497-0009	DLD1-156RW4B	15,37 (.605)
111497-0010	DLD1-156RW6B	7,11 (.280)

DL2 — Plastic Body — 96 Pin Connectors — Crimp Contacts

Plug

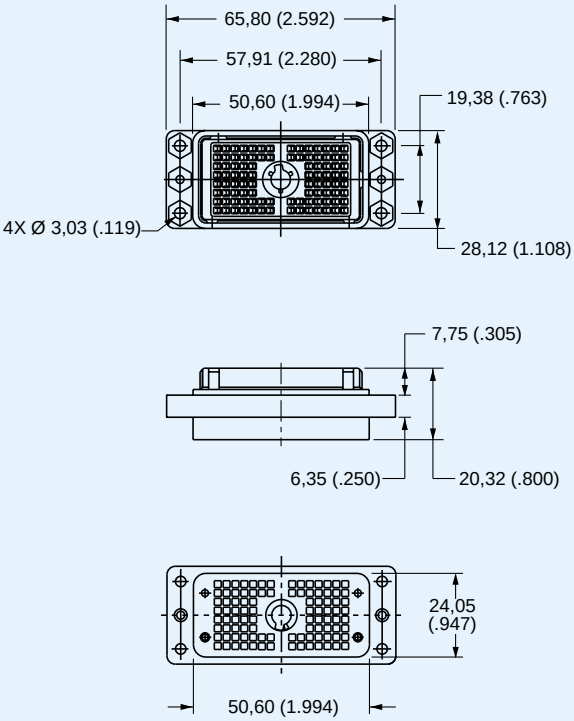
- For contact cavity arrangement, see page 68.
- For panel cutout and mounting hole pattern, see page 65.
- Crimp contacts are to be ordered separately and installed by customer, see pages 52-53.
- Order actuating handle kit separately, see page 47.



Part Number	Nomenclature
110777-0000	DL2-96P

Receptacle

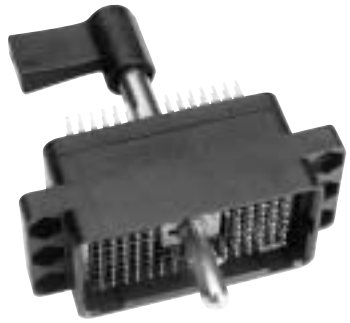
- For contact cavity arrangement, see page 68.
- For panel cutout and mounting hole pattern, see page 65.
- Crimp contacts are to be ordered separately and installed by customer, see pages 52-53.



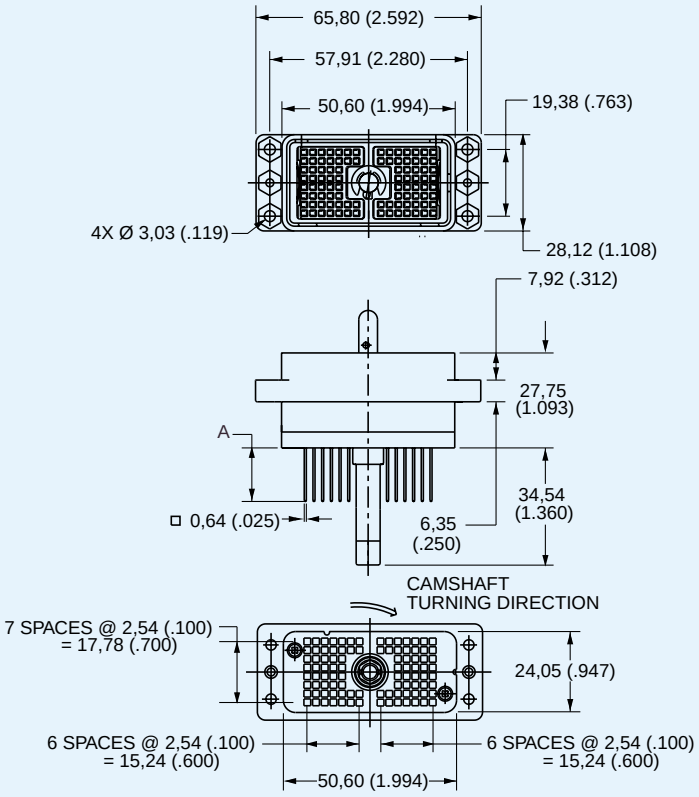
Part Number	Nomenclature
086-0031-000	DL2-96R

DL2 — Plastic Body — 96 Pin Connectors — Square Post Contacts

Plug



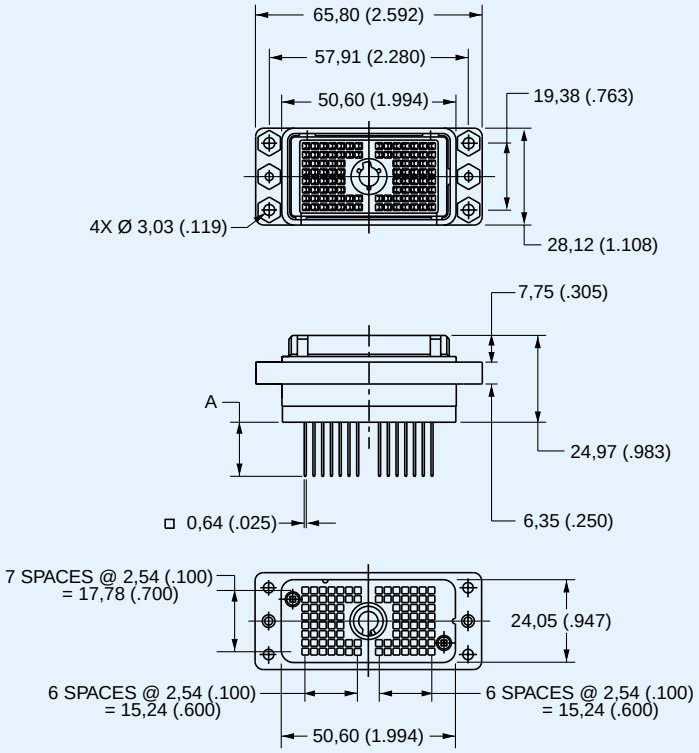
- For contact cavity arrangement, see page 68.
- For panel cutout and mounting hole pattern, see page 65.
- For PC hole pattern, see page 61.
- Front Removable 0,64 (.025) Square Posts 2,54 (.100) Centers.
- Order actuating handle kit separately, see page 47.



Part Number	Nomenclature	A
110777-0008	DL2-96PW4	15,37 (.605)
110777-0022	DL2-96PW4A	15,37 (.605)
110777-0025	DL2-96PW6A	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 61.
- Front Removable 0,64 (.025) Square Posts 2,54 (.100) Centers.

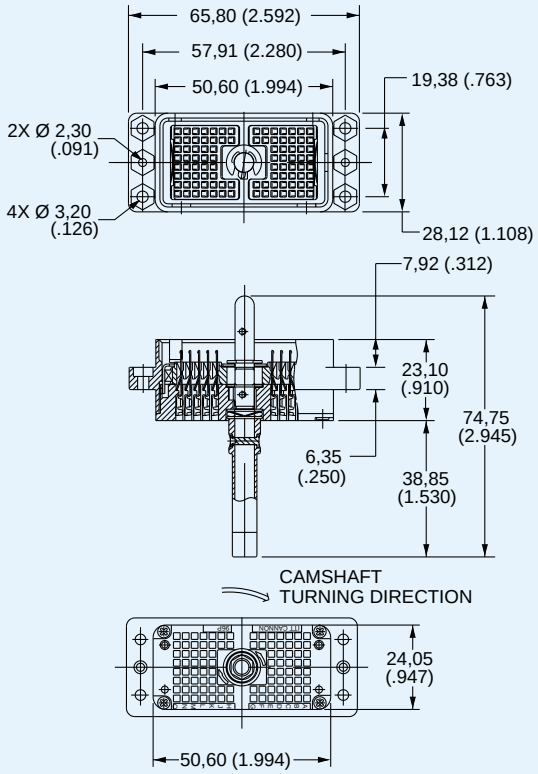


Part Number	Nomenclature	A
110855-0008	DL2-96RW4	15,37 (.605)
110855-0013	DL2-96RW4B	15,37 (.605)
110855-0014	DL2-96RW6B	7,11 (.280)

DLM2 — Metal Body — 96 Pin Connectors — Crimp Contacts

Plug

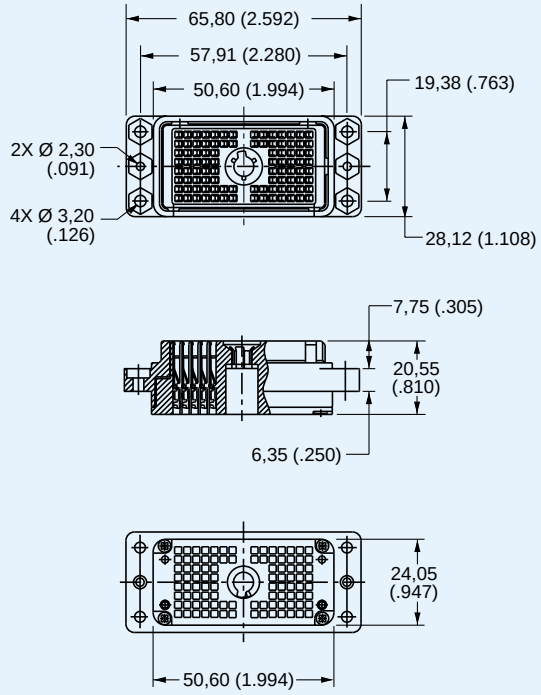
- For contact cavity arrangement, see page 68.
- For panel cutout and mounting hole pattern, see page 65.
- Crimp contacts are to be ordered separately and installed by customer, see pages 52-53.
- Order actuating handle kit separately, see page 47.



Part Number	Nomenclature
127050-0212	DLM2-96P

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.

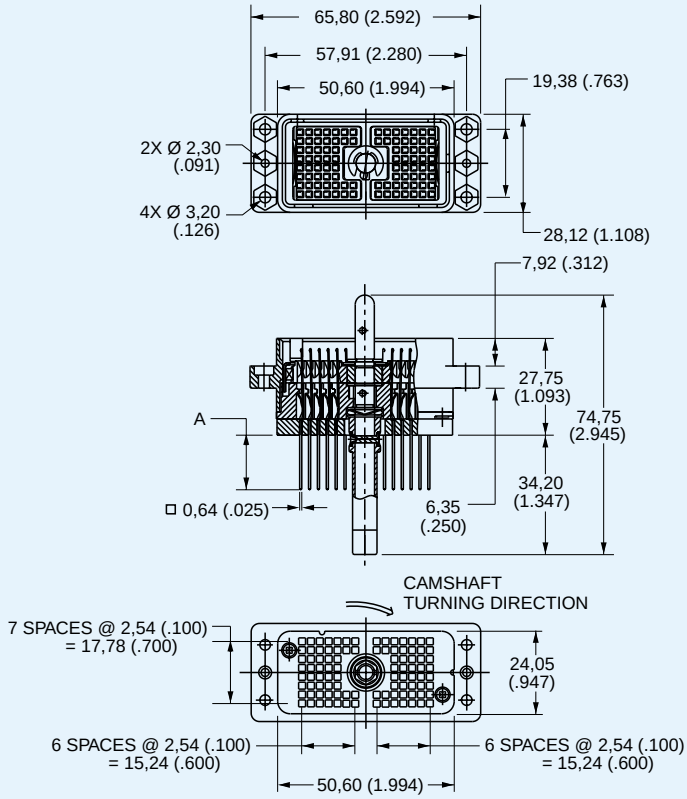


Part Number	Nomenclature
127050-0216	DLM2-96R

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

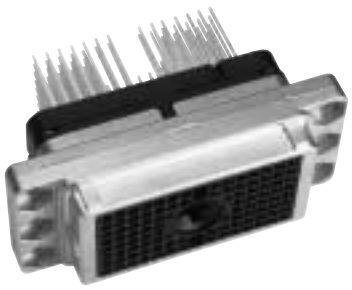
Plug

- 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.

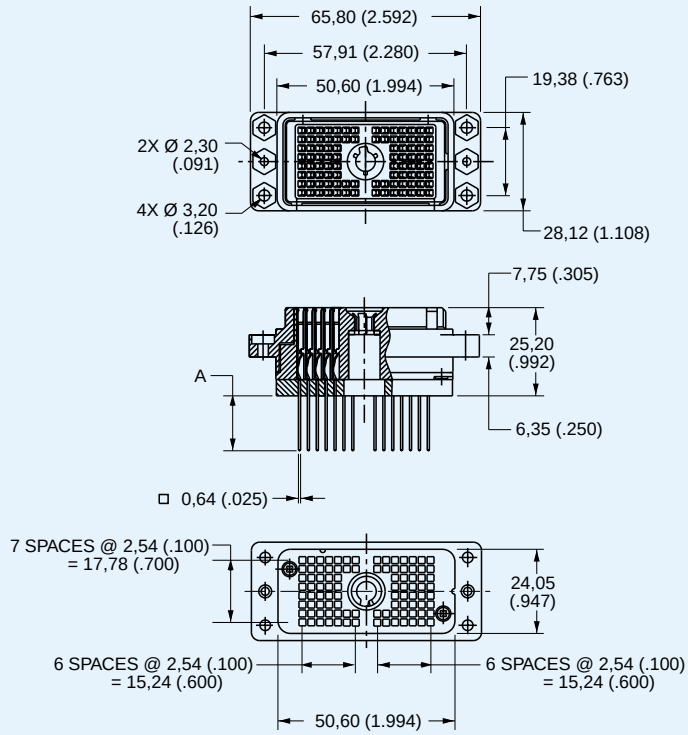


Part Number	Nomenclature	A
112136-0001	DLM2-96PW4A	15,37 (.605)
112136-0000	DLM2-96PW6A	7,11 (.280)
112136-0002	DLM112136-2	3,18 (.125)

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.

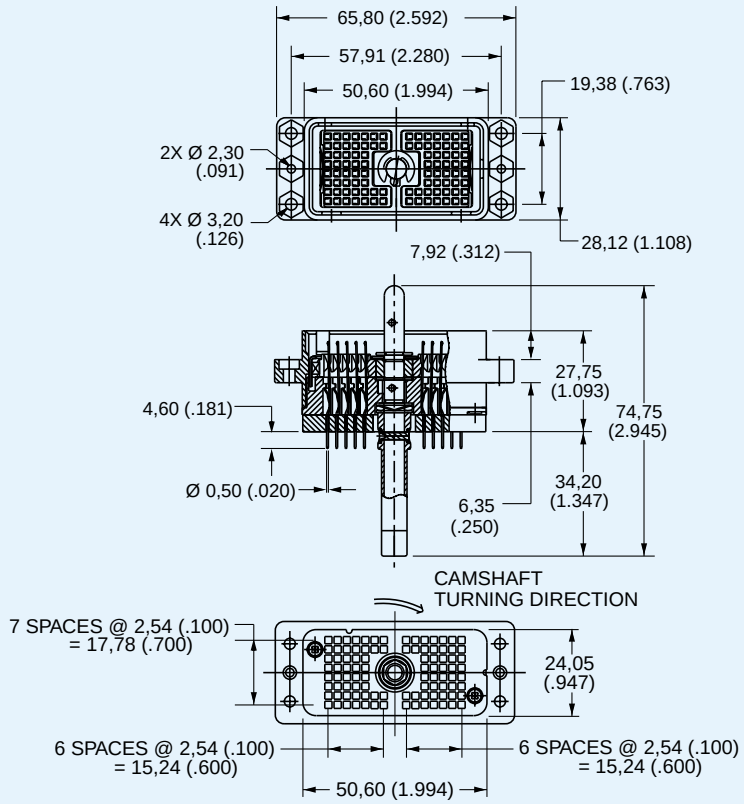


Part Number	Nomenclature	A
112137-0001	DLM2-96RW4B	15,37 (.605)
112137-0000	DLM2-96RW6B	7,11 (.280)
112137-0002	DLM112137-2	3,18 (.125)

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

Plug

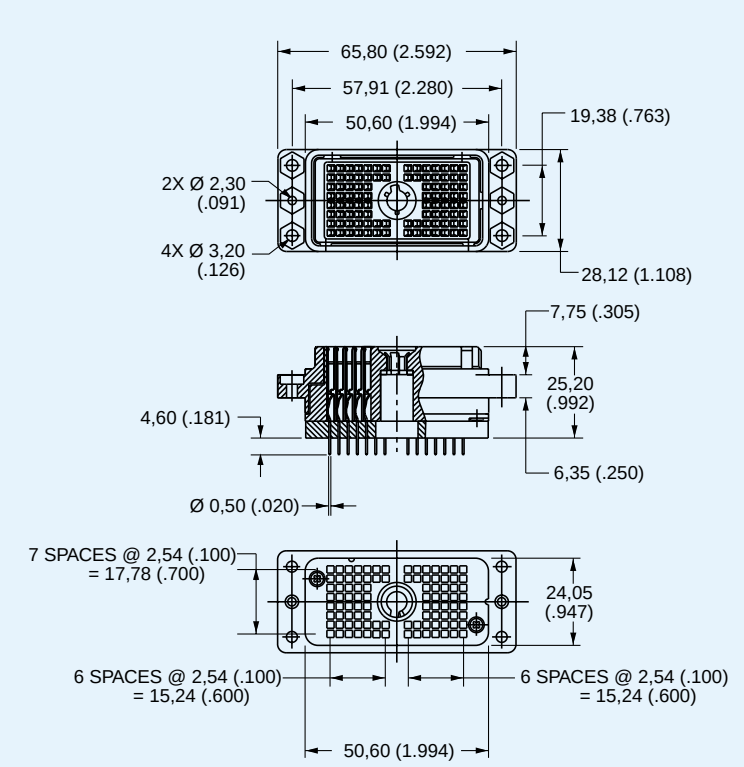
- For contact cavity arrangement, see page 68.
- For panel cutout and mounting hole pattern, see page 65.
- For PC hole pattern, see page 61.
- Order actuating handle kit separately, see page 47.



Part Number	Nomenclature
127050-0215	DLM2-96PC

Receptacle

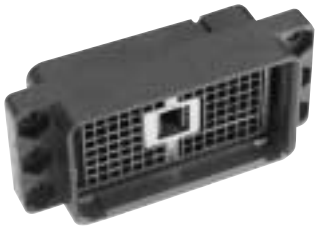
- For contact cavity arrangement, see page 68.
- For panel cutout and mounting hole pattern, see page 65.
- For PC hole pattern, see page 61.



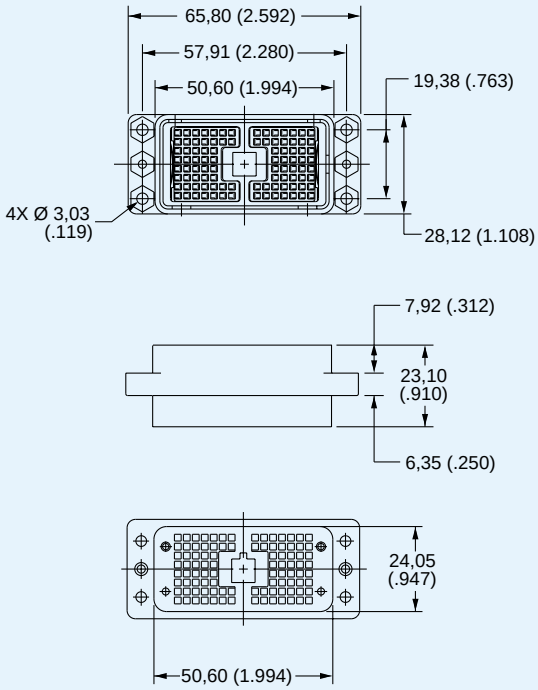
Part Number	Nomenclature
127050-0219	DLM2-96RC

DLD2 — Plastic Body — 96 Pin Connectors — Crimp Contacts

Plug



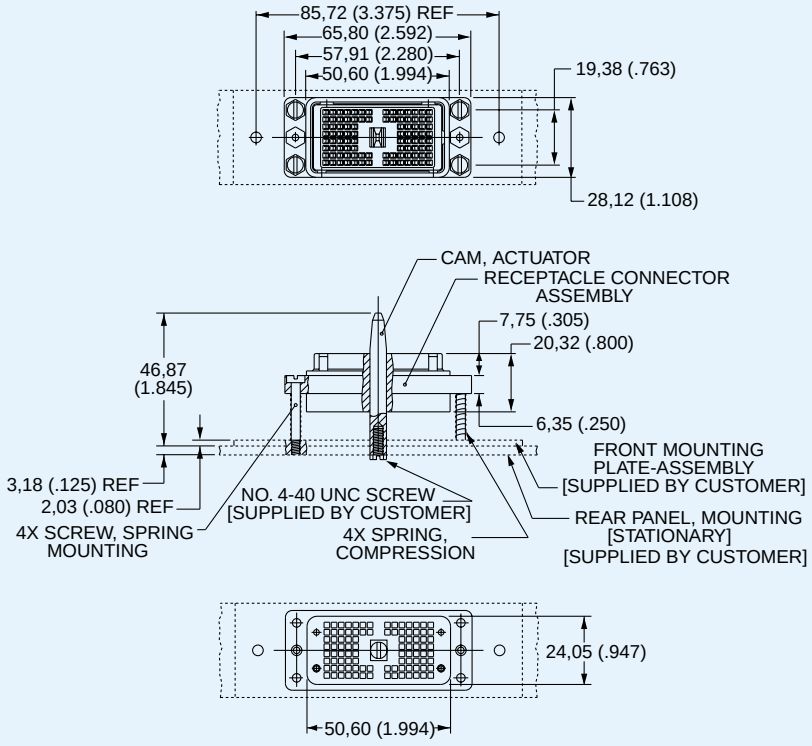
- For contact cavity arrangement, see page 68.
- For panel cutout and mounting hole pattern, see page 67.
- Crimp contacts are to be ordered separately and installed by customer, see pages 52-53.
- For assembly dimensions and mating sequence, see page 70.



Part Number	Nomenclature
111922-0000	DLD2-96P

Receptacle

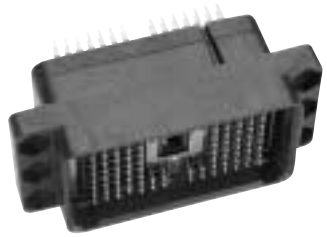
- For contact cavity arrangement, see page 68.
- For panel cutout and mounting hole pattern, see page 67.
- Crimp contacts are to be ordered separately and installed by customer, see pages 52-53.
- For assembly dimensions and mating sequence, see page 70.



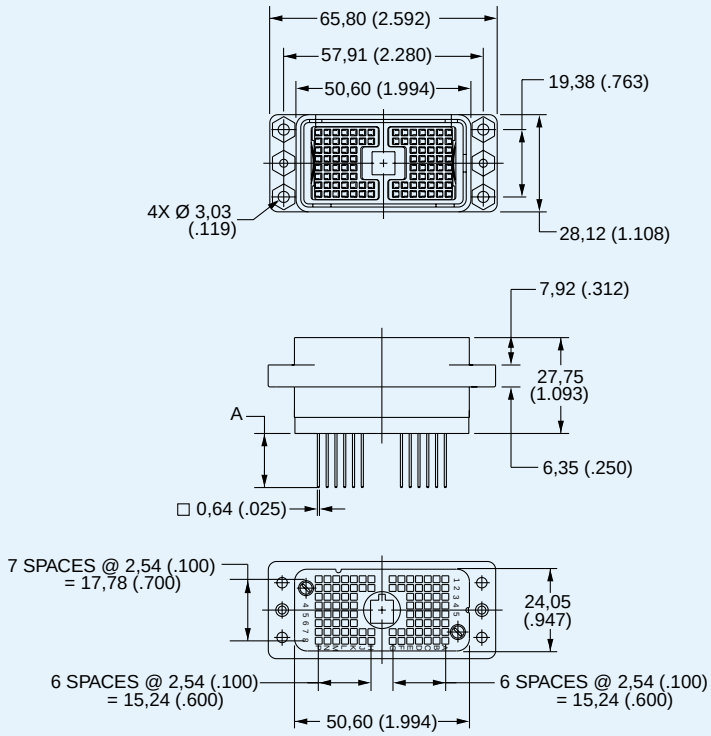
Part Number	Nomenclature
111921-0000	DLD2-96R

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

Plug

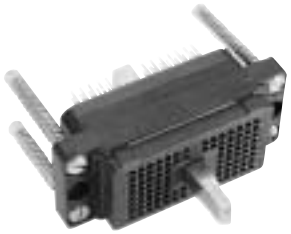


- For contact cavity arrangement, see page 68.
- For panel cutout and mounting hole pattern, see page 67.
- Front Removable 0,64 (.025) Square Posts 2,54 (.100) Centers.
- For PC hole patterns, see page 61.
- For assembly dimensions and mating sequence, see page 70.

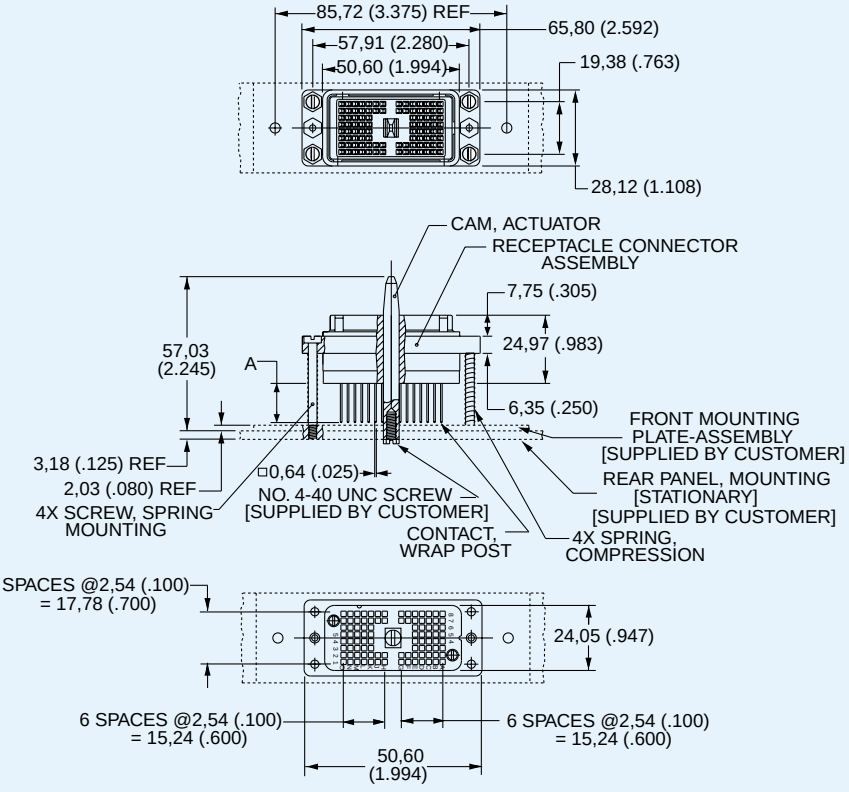


Part Number	Nomenclature	A
111922-0001	DLD2-96PW4A	15,37 (.605)
111922-0002	DLD2-96PW6A	7,11 (.280)

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.

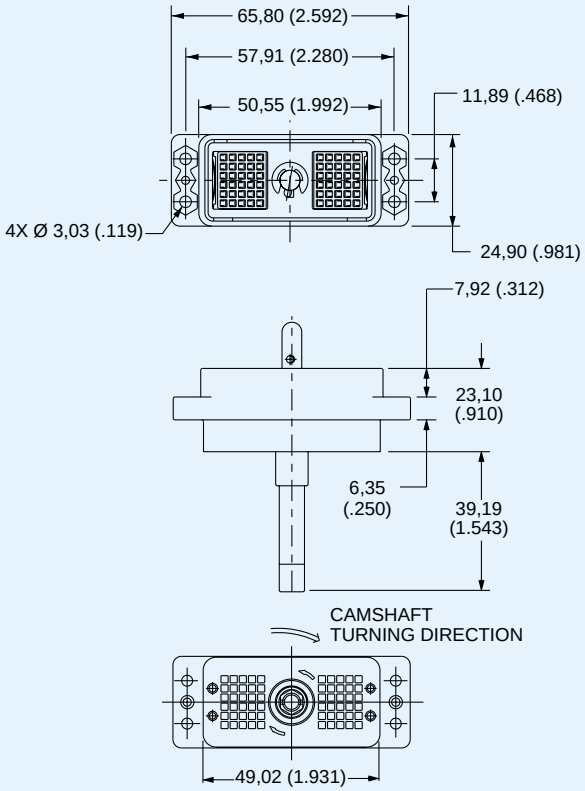


Part Number	Nomenclature	A
111921-0001	DLD2-96RW4B	15,37 (.605)
111921-0002	DLD2-96RW6B	7,11 (.280)

DL3 — Plastic Body — 60 Pin Connectors — Crimp Contacts

Plug

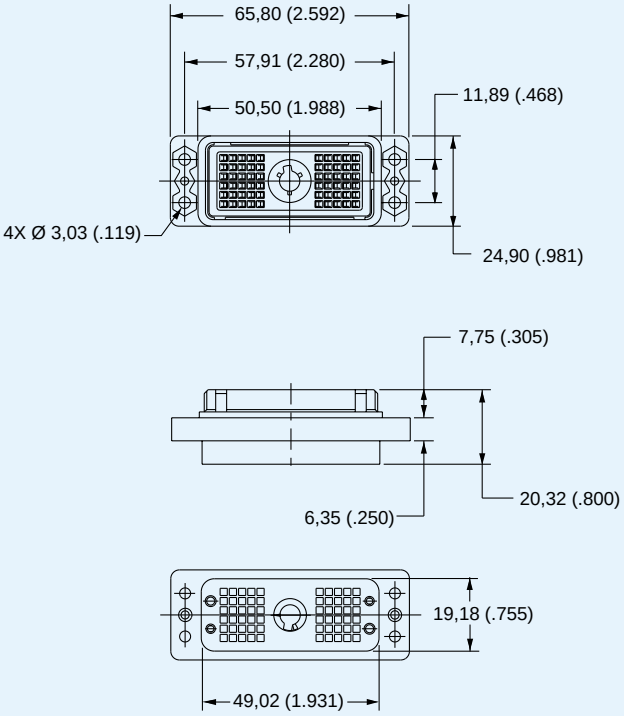
- For contact cavity arrangement, see page 68.
- For panel cutout and mounting hole pattern, see page 65.
- Crimp contacts are to be ordered separately and installed by customer, see pages 52-53.
- Order actuating handle kit separately, see page 47.



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

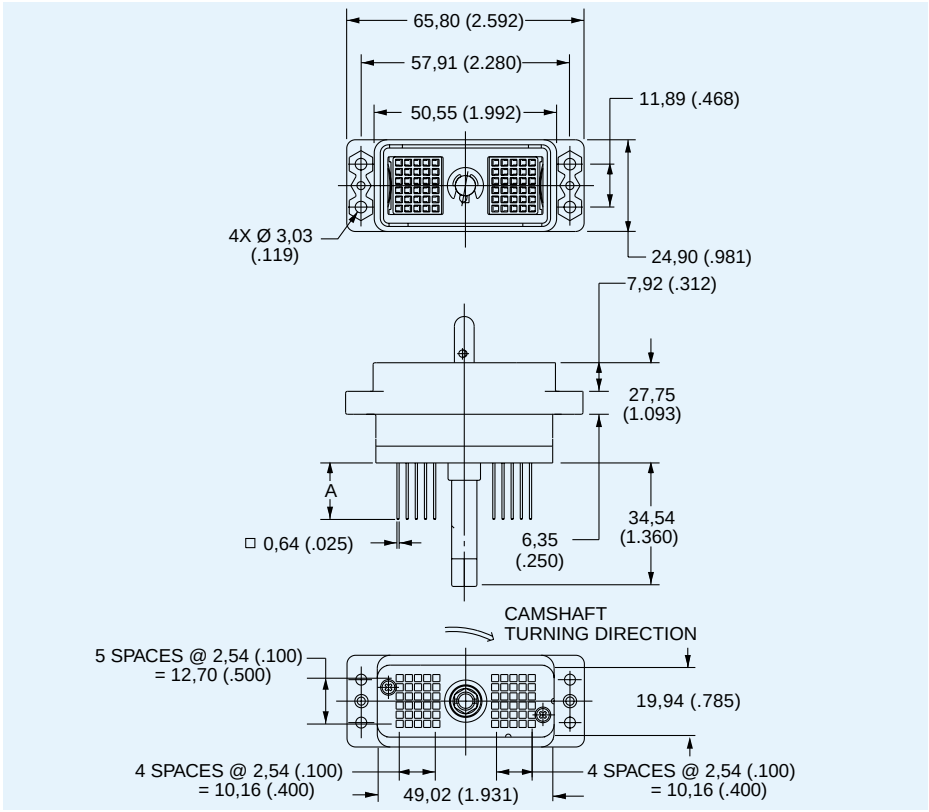
Dimensions are shown in mm (inch)
Dimensions subject to change

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

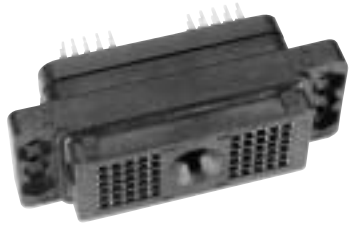
Plug

- 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)

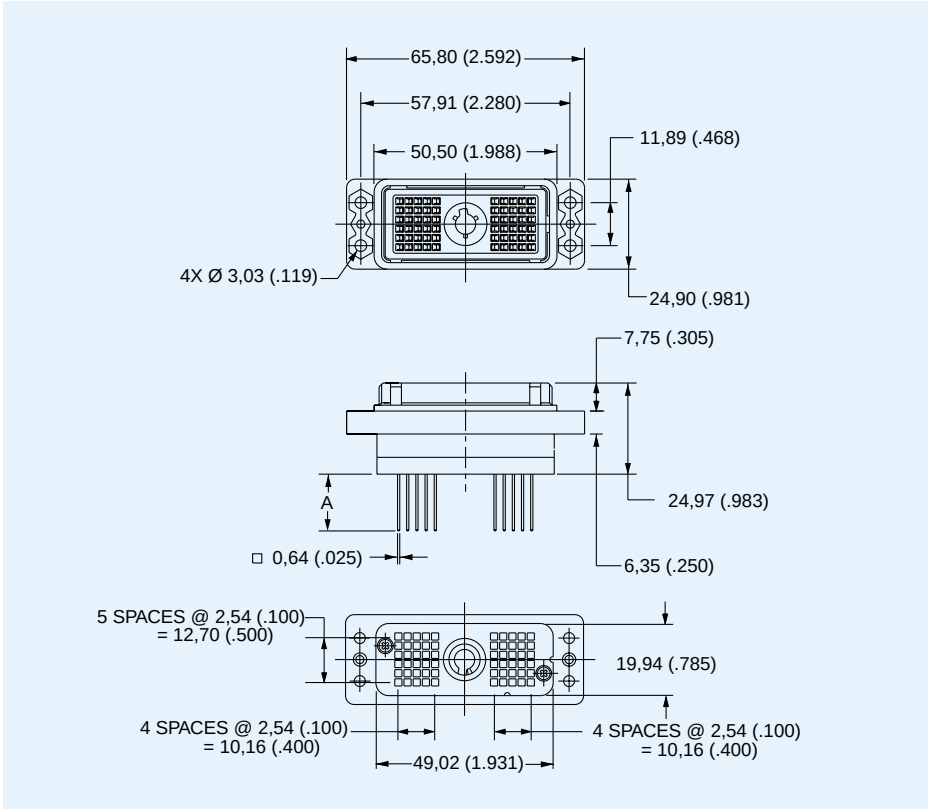


Receptacle



- 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)

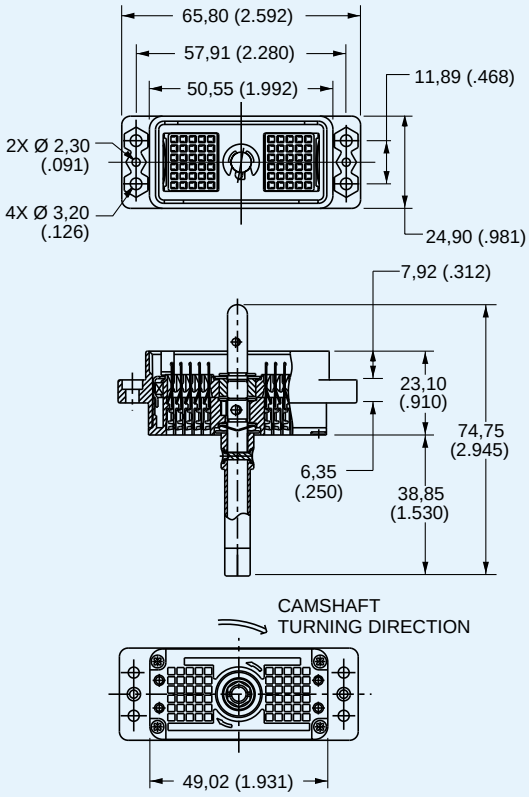


DLM3 — Metal Body — 60 Pin Connectors — Crimp Contacts

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.

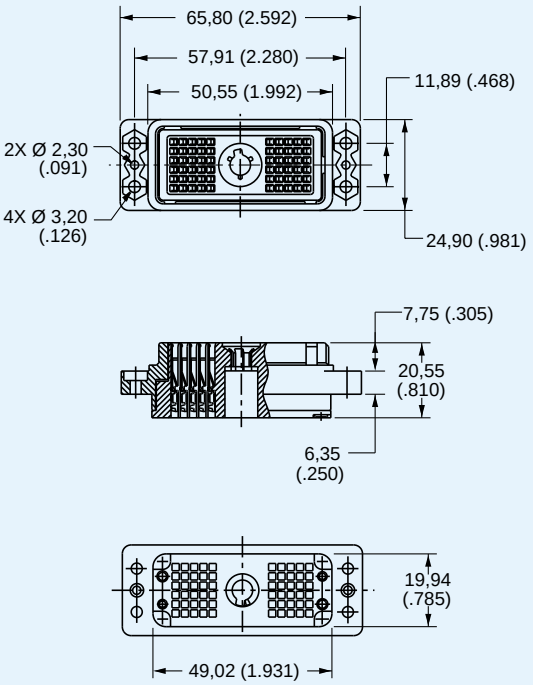
Part Number	Nomenclature
127050-0220	DLM3-60P



Receptacle

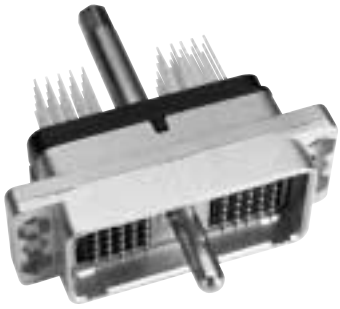
- For contact cavity arrangement, see page 68.
- For panel cutout and mounting hole pattern, see page 65.
- Crimp contacts are to be ordered separately and installed by customer, see pages 52-53.

Part Number	Nomenclature
127050-0224	DLM3-60R

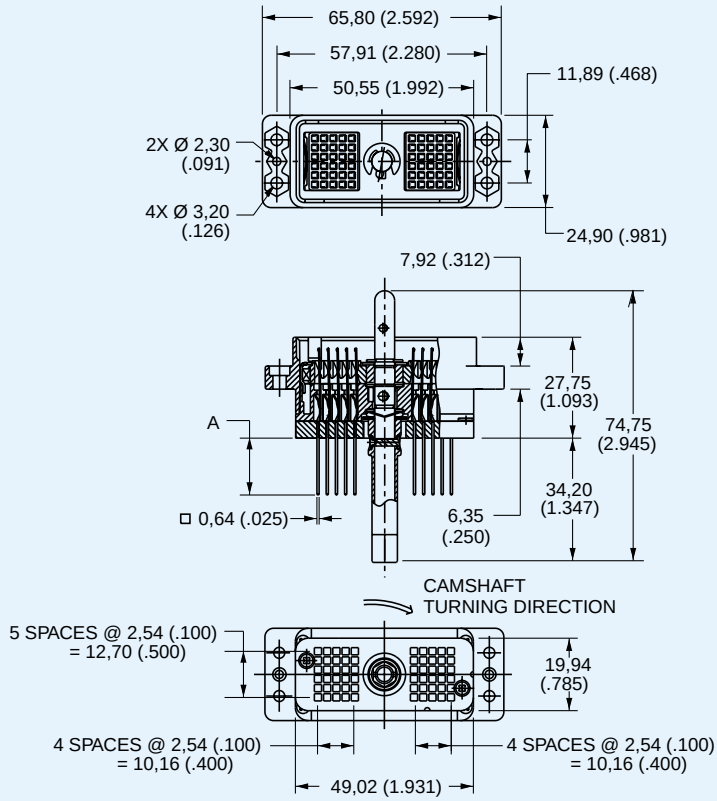


DLM3 — Metal Body — 60 Pin Connectors — Square Post Contacts

Plug



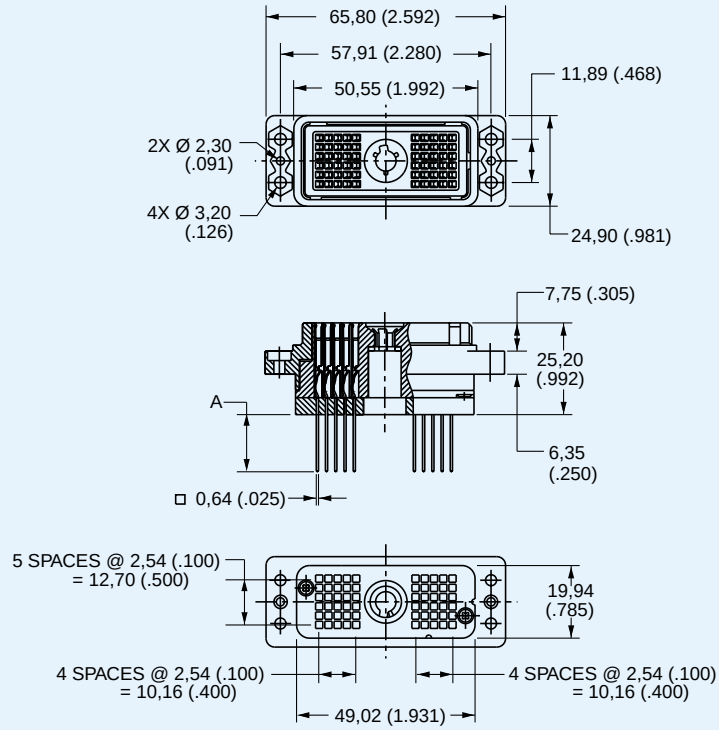
- For contact cavity arrangement, see page 68.
- For panel cutout and mounting hole pattern, see page 65.
- For PC hole pattern, see page 62.
- Front Removable 0,64 (.025) Square Posts 2,54 (.100) Centers.
- Order actuating handle kit separately, see page 47.



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.



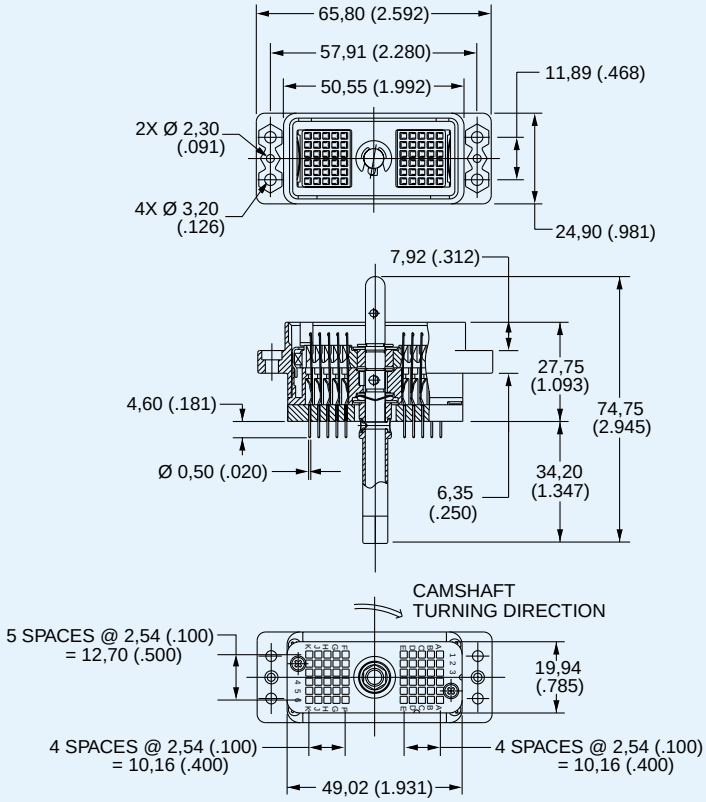
Part Number	Nomenclature	A
112139-0001	DLM3-60RW4B	15,37 (.605)
112139-0000	DLM3-60RW6B	7,11 (.280)
112139-0002	DLM112139-2	3,18 (.125)

DLM3 — 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.

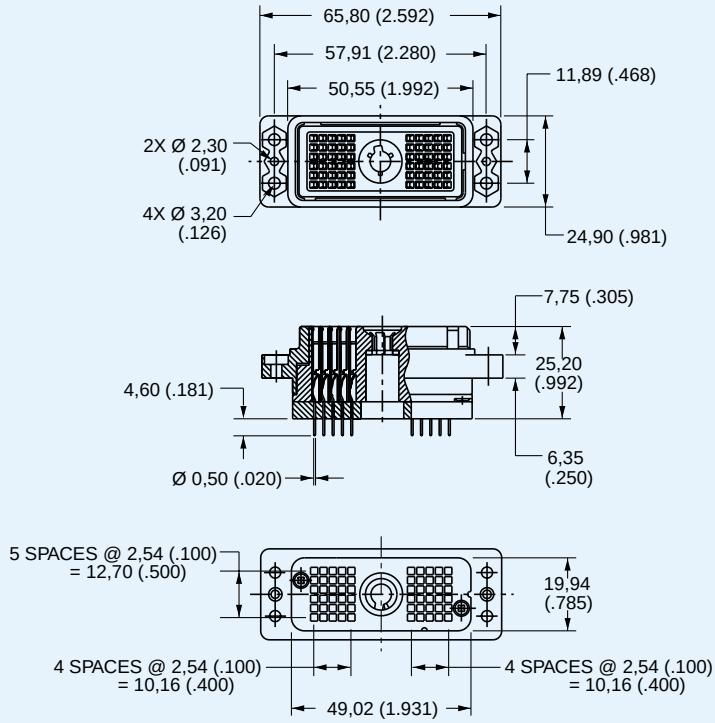
Part Number	Nomenclature
127050-0223	DLM3-60PC



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

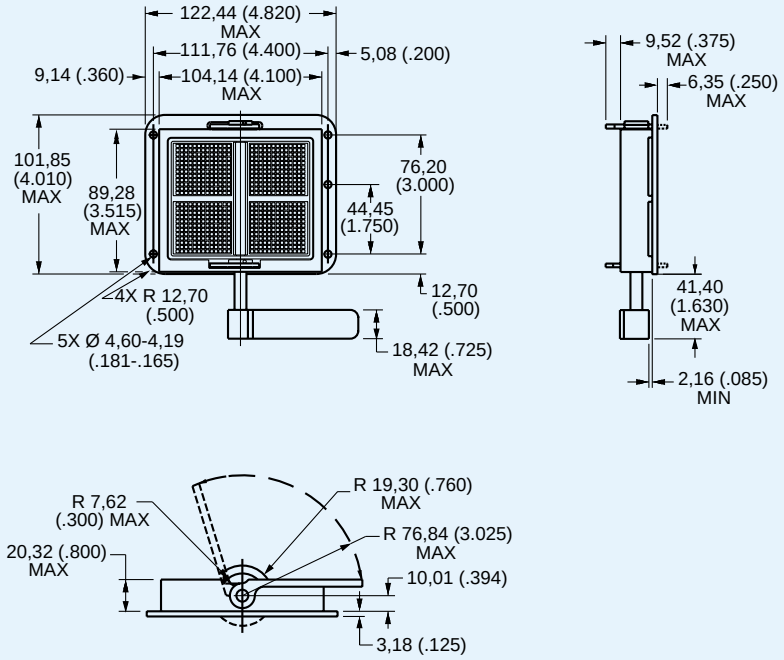


Dimensions are shown in mm (inch)
Dimensions subject to change

DL4 — Metal Frame — 624 Pin Connector — Crimp Contacts

Plug

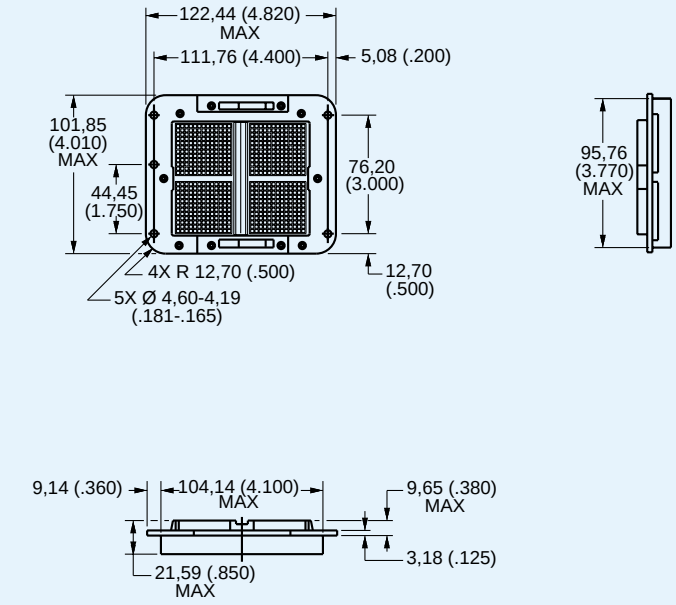
- For contact cavity arrangement, see page 69.
- For panel cutout and mounting hole pattern, see page 65.
- Crimp contacts are to be ordered separately and installed by customer, see pages 52-53.
- Actuating handle is part of completed assembly.



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.

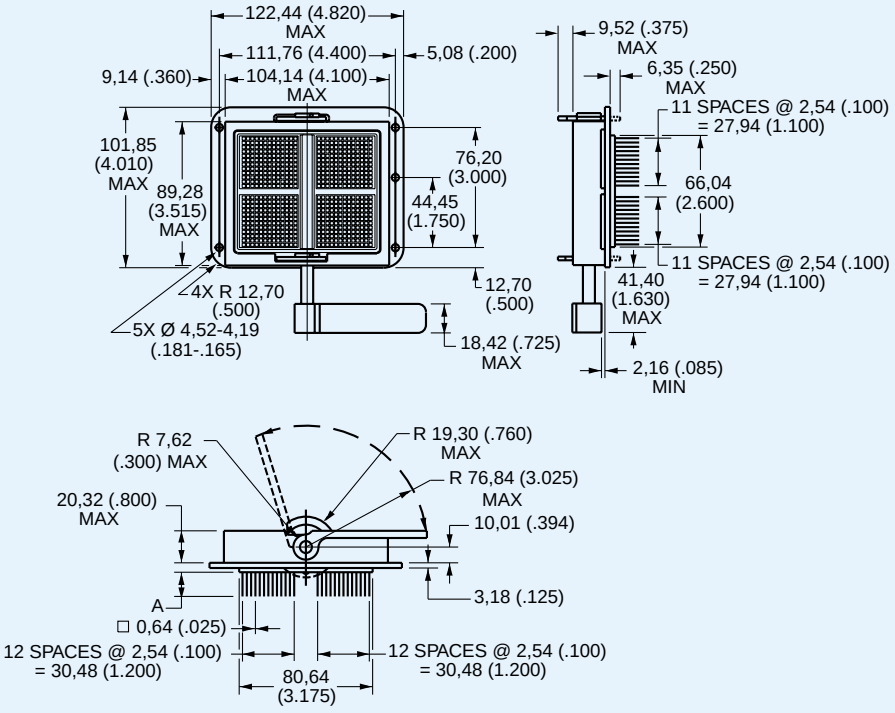


Part Number	Nomenclature
110960-0002	DL4-624R

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

Plug

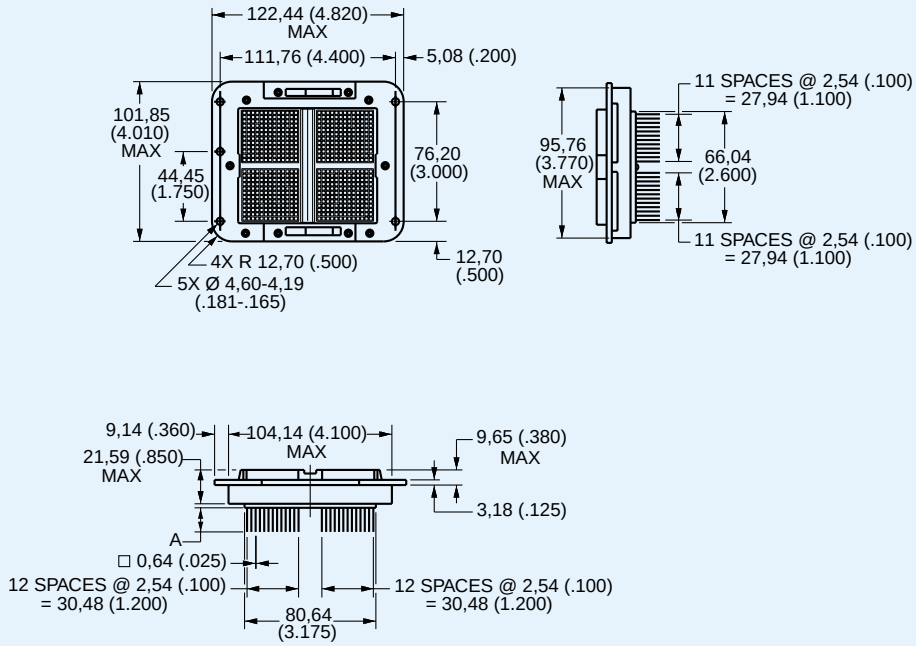
- For contact cavity arrangement, see page 69.
- For panel cutout and mounting hole pattern, see page 65.
- Front Removable 0,64 (.025) Square Posts 2,54 (.100) Centers.
- Actuating handle is part of completed assembly.



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.

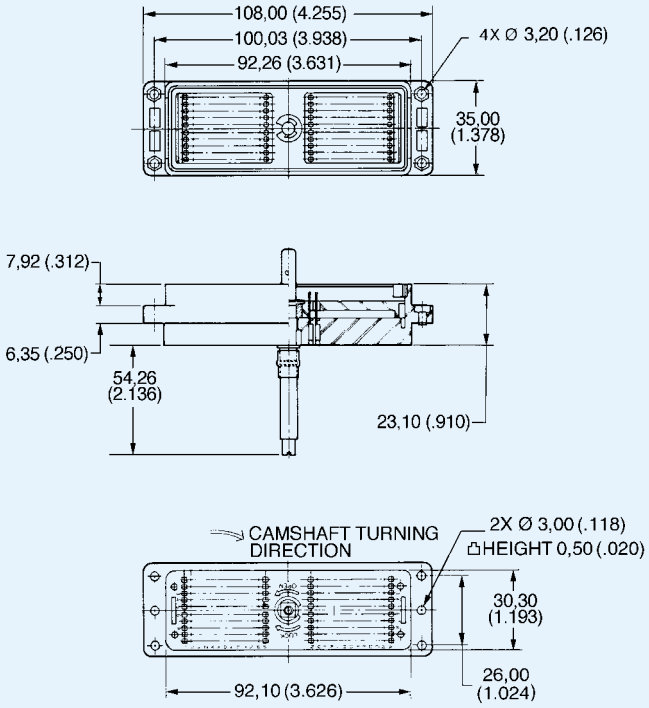


Part Number	Nomenclature	A
110960-0022	DL4-624RW4	15,37 (.605)
110960-0045	DL4-624RW4B	15,37 (.605)
110960-0048	DL4-624RW6B	7,11 (.280)

DL5 — Plastic Body — 260 Pin Connectors — Crimp Contacts

Plug

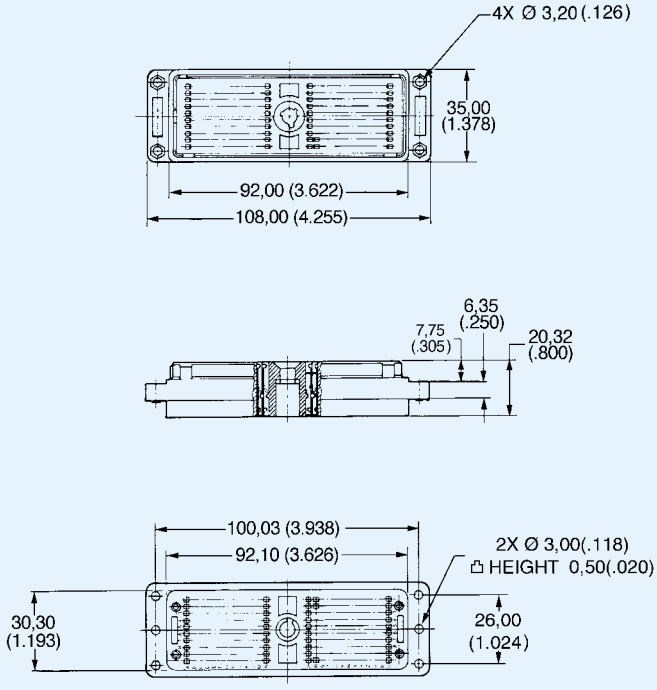
- For contact cavity arrangement, see page 69.
- For panel cutout and mounting hole pattern, see page 65.
- Crimp contacts are to be ordered separately and installed by customer, see pages 52-53.
- Order actuating handle kit separately, see page 47.



Part Number	Nomenclature
111986-0014	DL5-260P

Receptacle

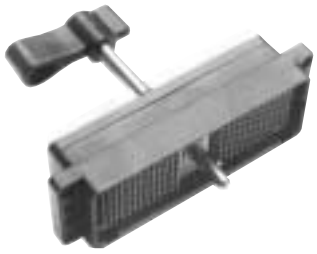
- For contact cavity arrangement, see page 69.
- For panel cutout and mounting hole pattern, see page 65.
- Crimp contacts are to be ordered separately and installed by customer, see pages 52-53.



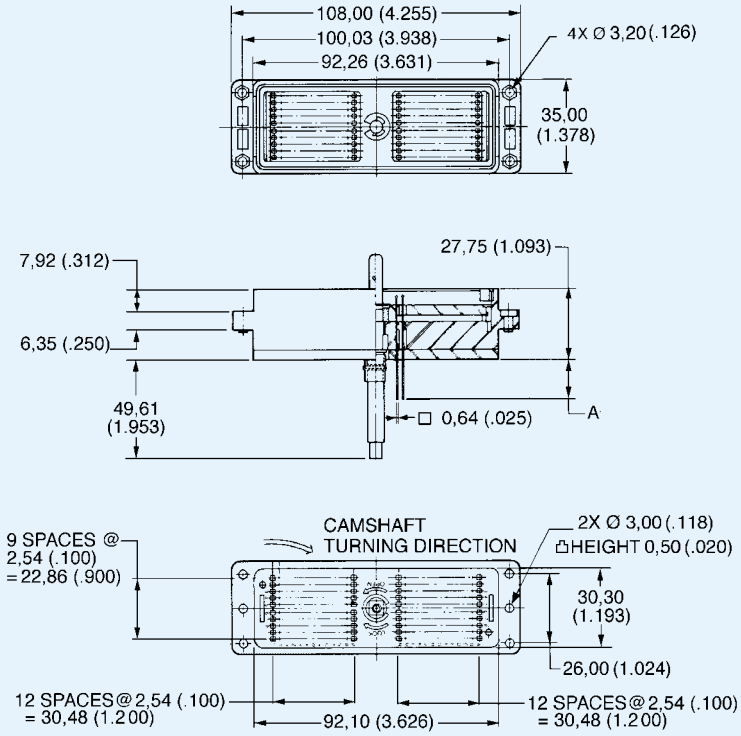
Part Number	Nomenclature
086-4501-000	DL5-260R

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

Plug

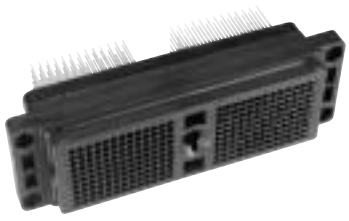


- For contact cavity arrangement, see page 69.
- For panel cutout and mounting hole pattern, see page 65.
- For PC hole pattern, see page 62.
- Front Removable 0,64 (.025) Square Posts 2,54 (.100) Centers.
- Order actuating handle kit separately, see page 47.

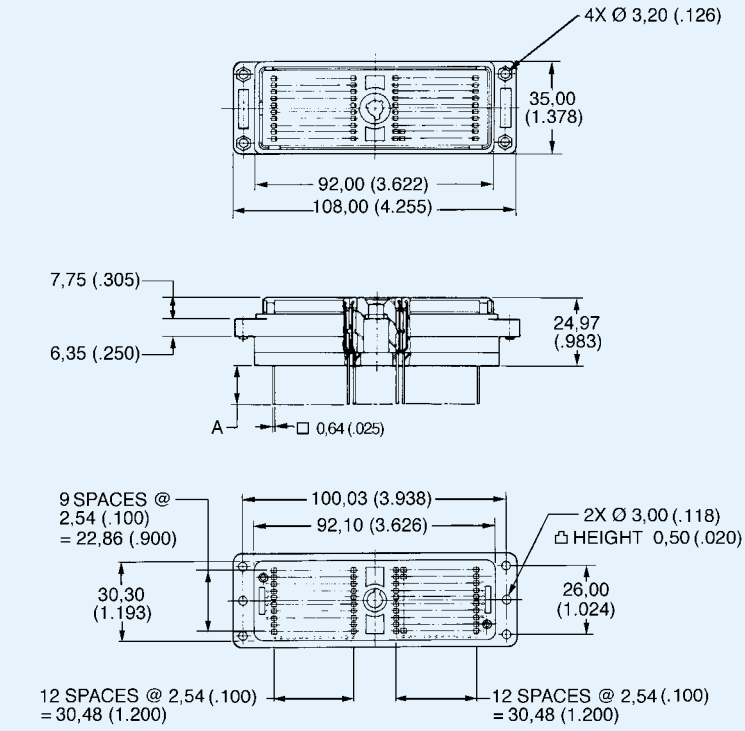


Part Number	Nomenclature	A
111986-0003	DL5-260PW4A	15,37 (.605)
111986-0000	DL5-260PW6A	7,11 (.280)

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.



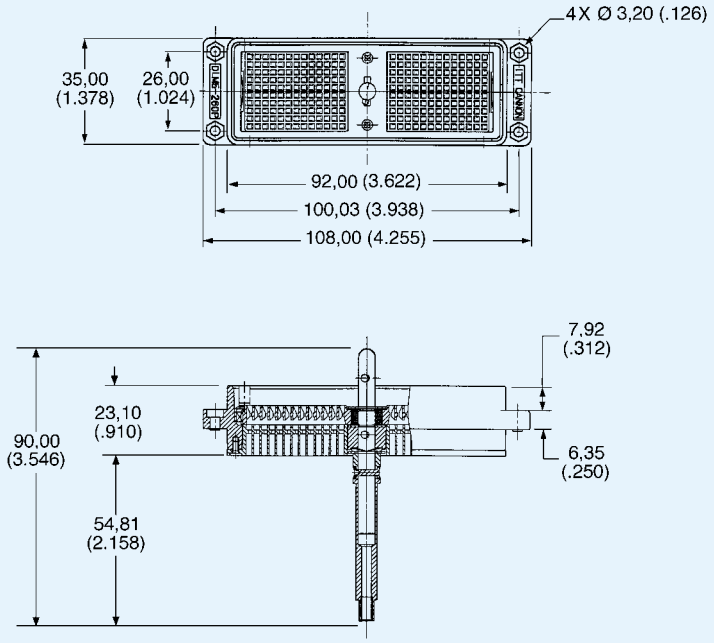
Part Number	Nomenclature	A
111987-0001	DL5-260RW4B	15,37 (.605)
111987-0000	DL5-260RW6B	7,11 (.280)

Dimensions are shown in mm (inch)
Dimensions subject to change

DLM5 — Metal Body — 260 Pin Connectors — Crimp Contacts

Plug

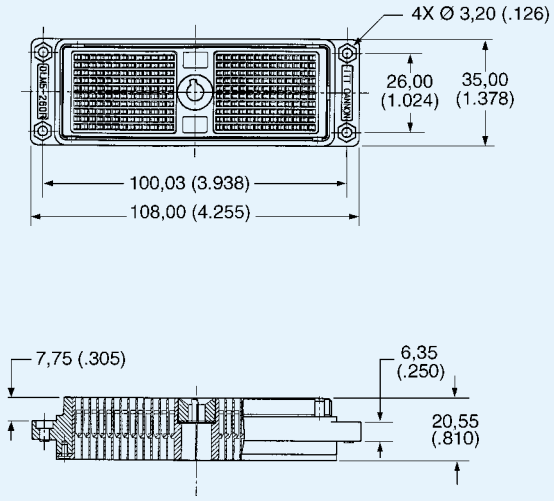
- For contact cavity arrangement, see page 69.
- For panel cutout and mounting hole pattern, see page 65.
- Crimp contacts are to be ordered separately and installed by customer, see pages 52-53.
- Order actuating handle kit separately, see page 47.



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.

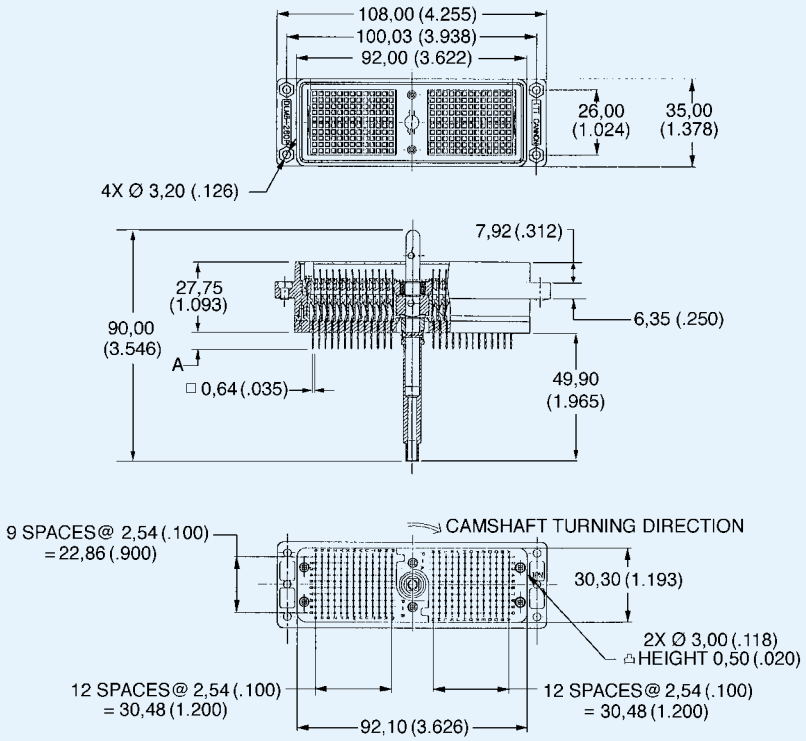


Part Number	Nomenclature
127050-0110	DLM5-260R

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

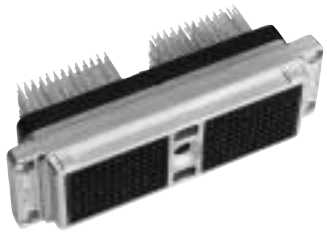
Plug

- 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.

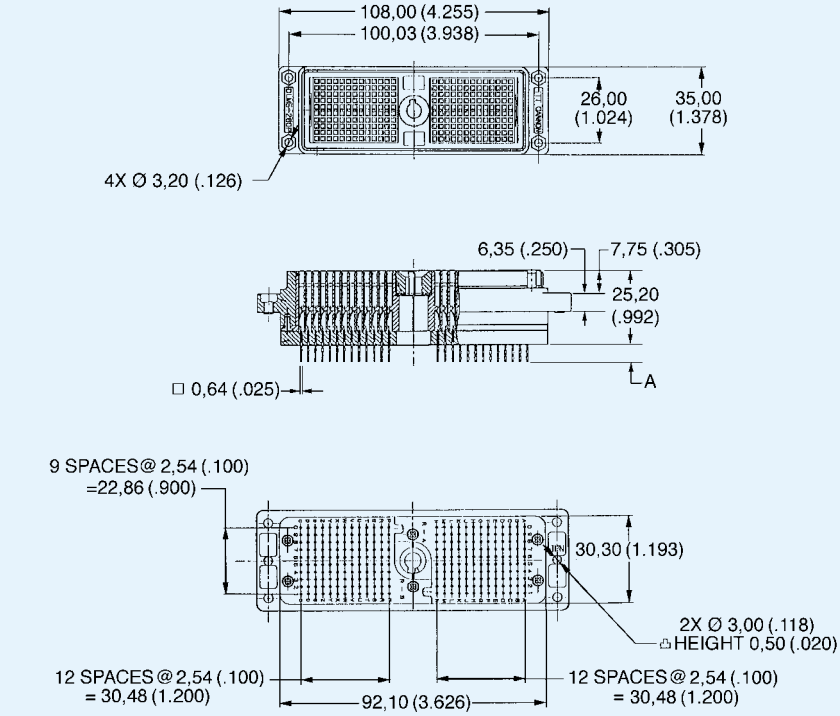


Part Number	Nomenclature	A
112086-0002	DLM5-260PW4A	15,37 (.605)
112086-0000	DLM5-260PW6A	7,11 (.280)
112086-0003	DLM112086-3	3,18 (.125)

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.

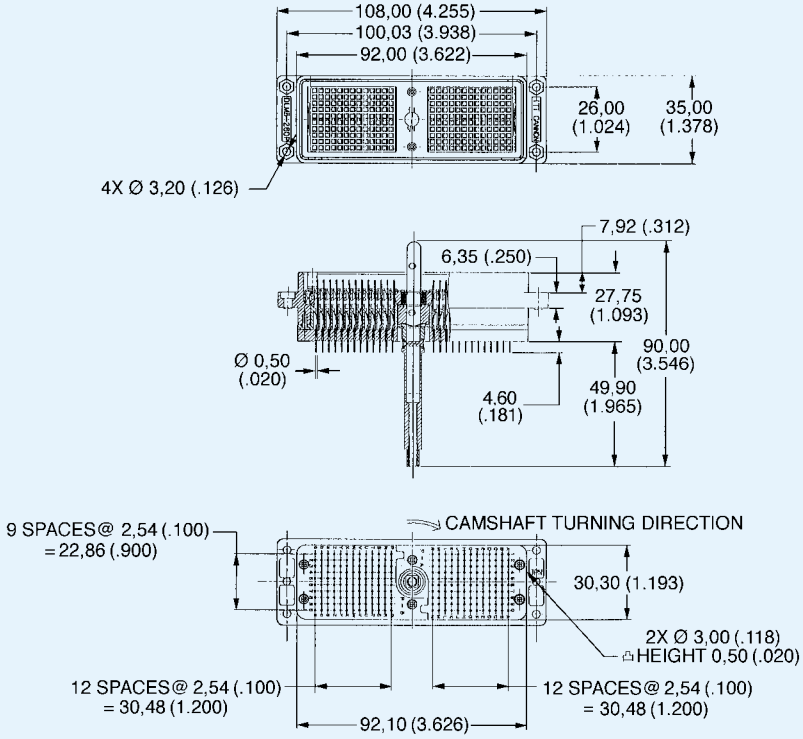


Part Number	Nomenclature	A
112087-0001	DLM5-260RW4B	15,37 (.605)
112087-0000	DLM5-260RW6B	7,11 (.280)
112087-0003	DLM112087-3	3,18 (.125)

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

Plug

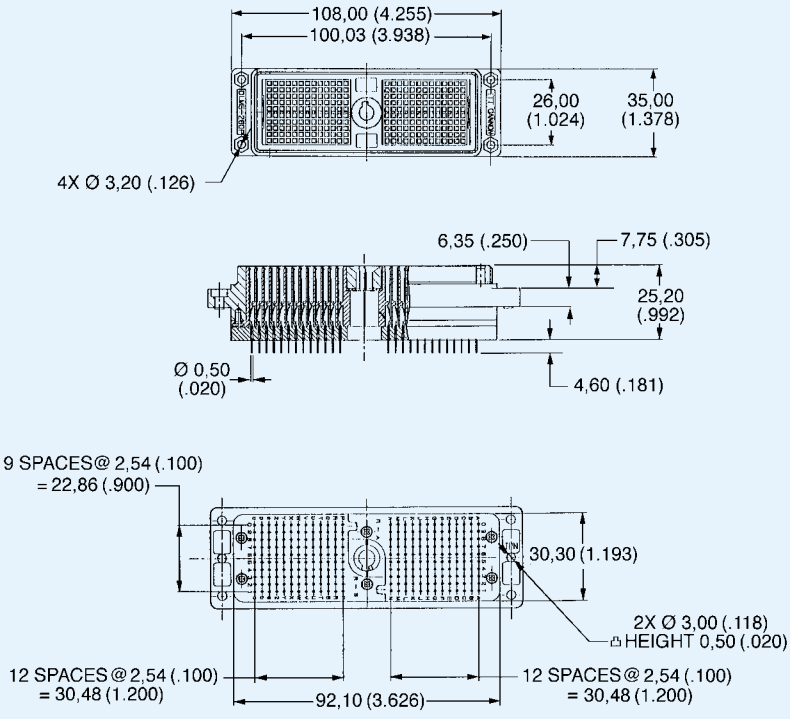
- For contact cavity arrangement, see page 69.
- For panel cutout and mounting hole pattern, see page 65.
- For PC hole pattern, see page 62.
- Order actuating handle kit separately, see page 47.



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.

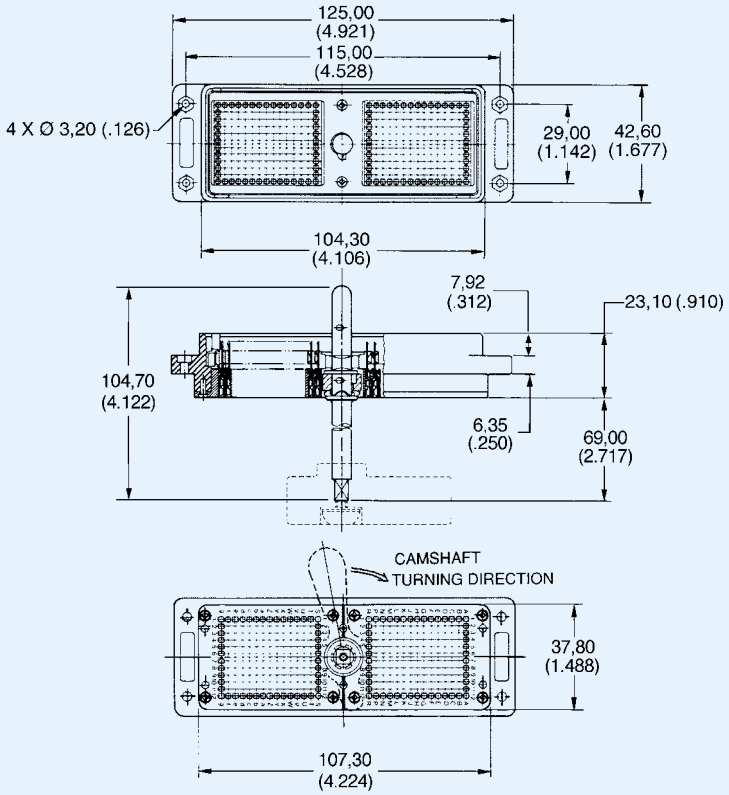


Part Number	Nomenclature
127050-0112	DLM5-260RC

DLM6 — Metal Body — 360 Pin Connectors — Crimp Contacts

Plug

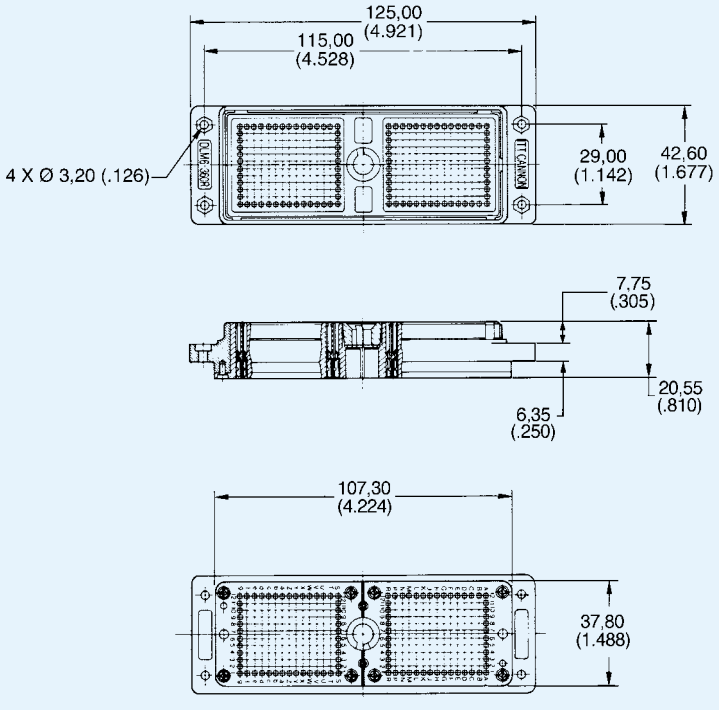
- For contact cavity arrangement, see page 69.
- For panel cutout and mounting hole pattern, see page 65.
- Crimp contacts are to be ordered separately and installed by customer, see pages 52-53.
- Order actuating handle kit separately, see page 47.



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.

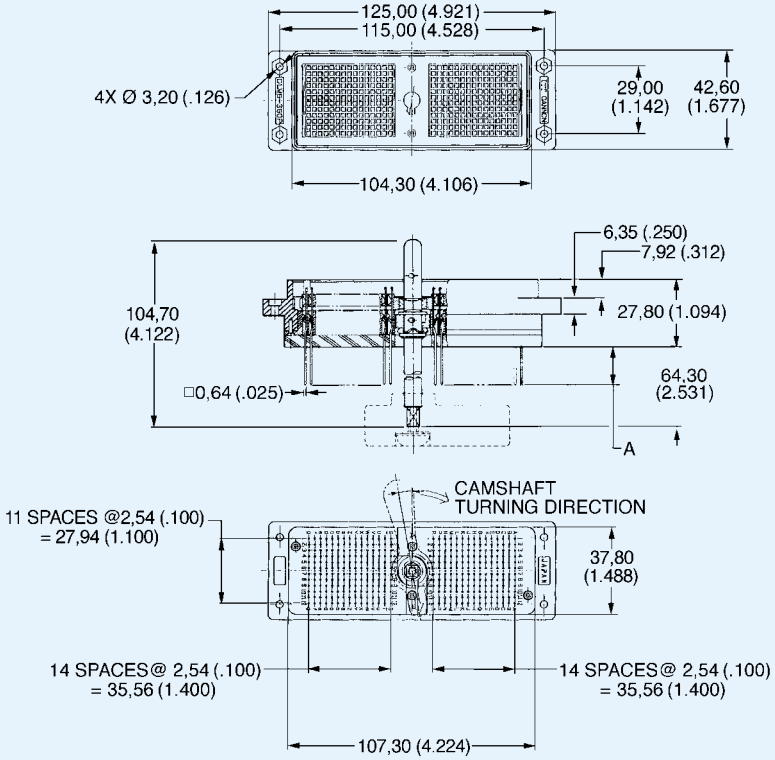


Part Number	Nomenclature
127050-0045	DLM6-360R

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

Plug

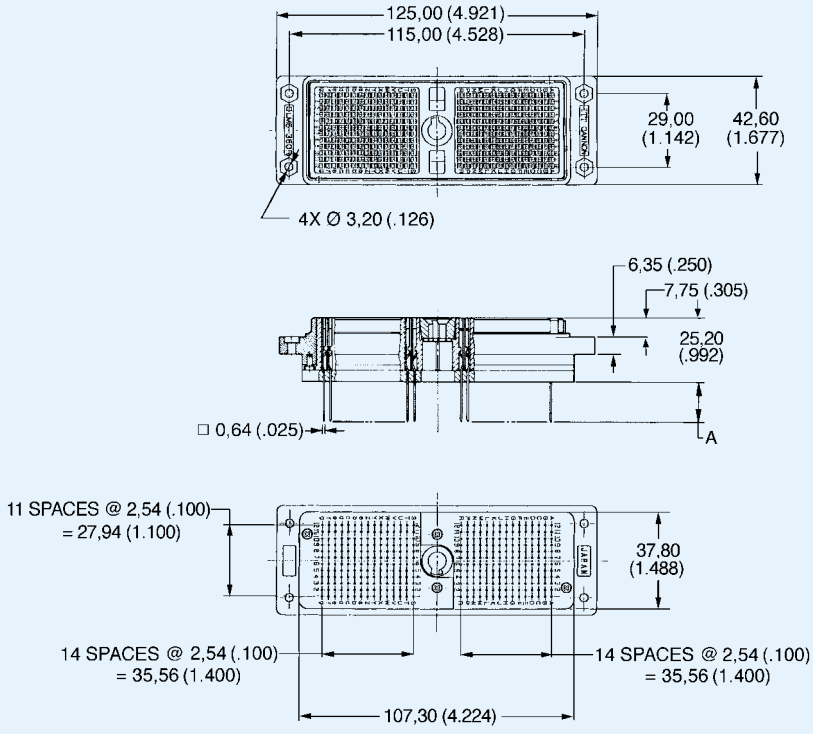
- For contact cavity arrangement, see page 69.
- For panel cutout and mounting hole pattern, see page 65.
- For PC hole pattern, see page 63.
- Front Removable 0,64 (.025) Square Posts 2,54 (.100) Centers.
- Order actuating handle kit separately, see page 47.



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.

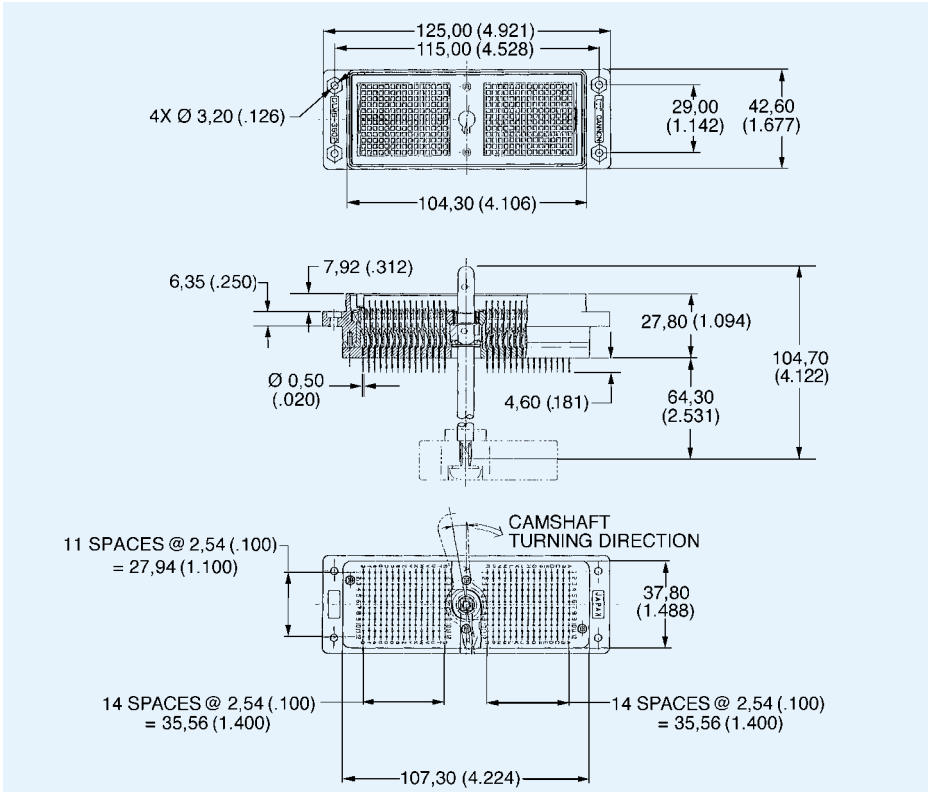


Part Number	Nomenclature	A
111996-0000	DLM6-360RW4B	15,37 (.605)
111996-0001	DLM6-360RW6B	7,11 (.280)
111996-0005	DLM111996-5	3,18 (.125)

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

Plug

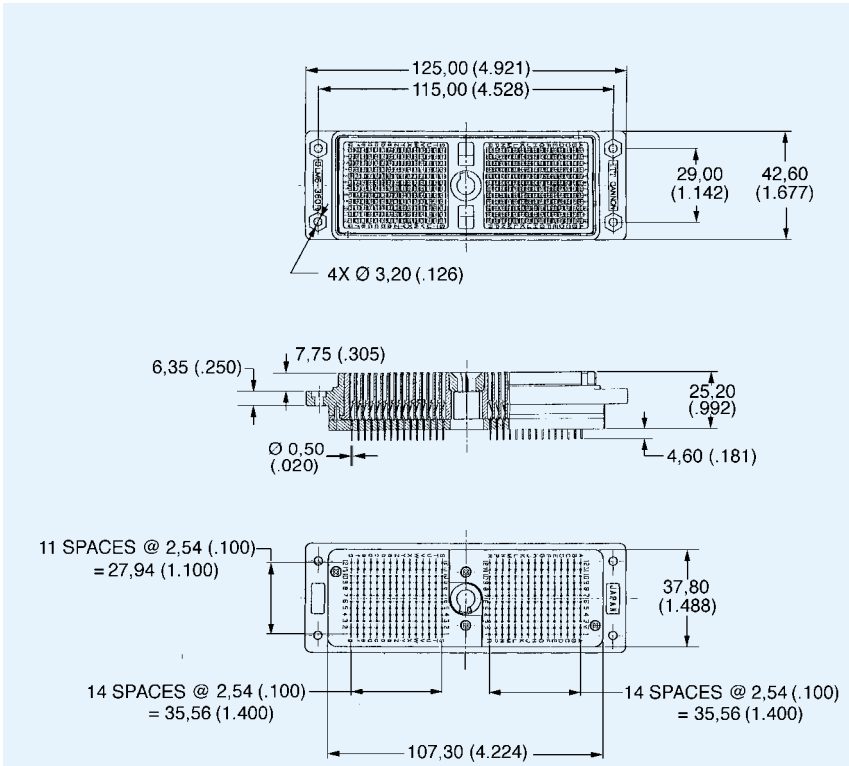
- For contact cavity arrangement, see page 69.
- For panel cutout and mounting hole pattern, see page 65.
- For PC hole pattern, see page 63.
- Order actuating handle kit separately, see page 47.



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

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 see page 47	Protective Covers		Metal Shell EMI/RFI Shielding see page 49	Plastic Junction Shell see page 46	Cable Clamps see page 46	Metal Backshell see pages 44-45	Polarizing Posts see page 48
		Rubber see page 47	Plastic 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	●	–	–	–	–	–	●	●
DLD1-156	–	–	–	–	–	–	–	–
DLD2-96	–	–	–	–	–	–	–	–

● Compatible
– Not Compatible

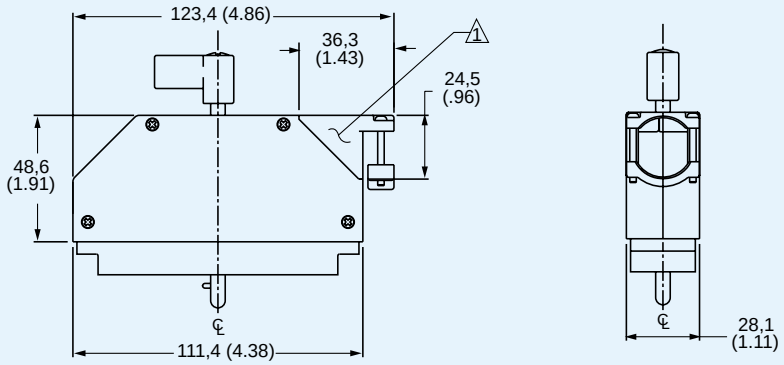
Metal Backshell

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



1 Wire hood may be installed in two positions. 90° cable entry as shown or straight entry by rotating wire hood.

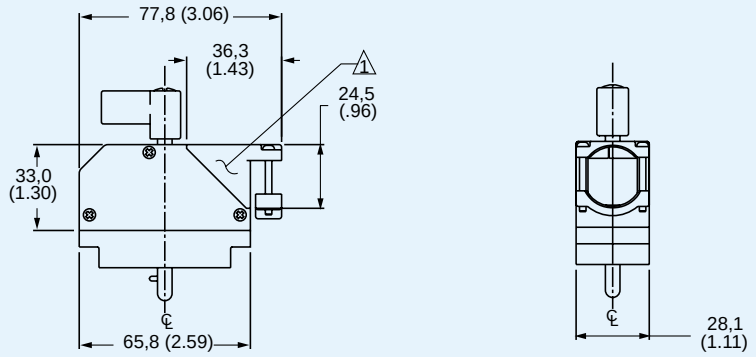
Used On	Part Number	Mounting	Max Cable Entry
DL1, DLM1	249-4516-000	Straight or 90°	19,05 (.750)

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



1 Wire hood may be installed in two positions. 90° cable entry as shown or straight entry by rotating wire hood.

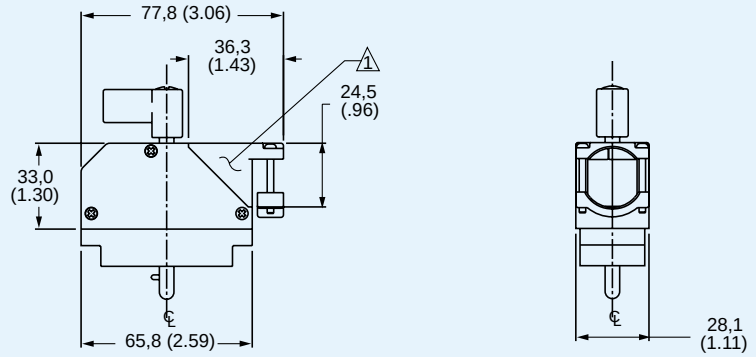
Used On	Part Number	Mounting	Max Cable Entry
DL2, DLM2	249-4517-000	Straight or 90°	19,05 (.750)

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



1 Wire hood may be installed in two positions. 90° cable entry as shown or straight entry by rotating wire hood.

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

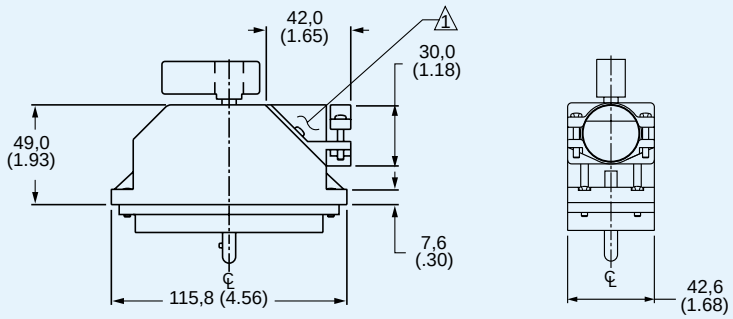
Metal Backshell

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



1 Wire hood may be installed in two positions. 90° cable entry as shown or straight entry by rotating wire hood.

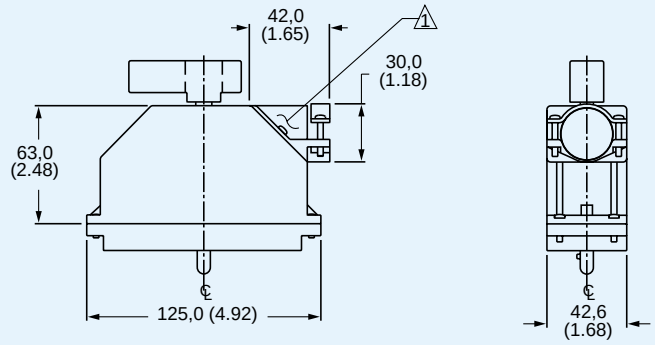
Used On	Part Number	Mounting	Max Cable Entry
DL5, DLM5	249-4501-000	Straight or 90°	22,23 (.875)

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

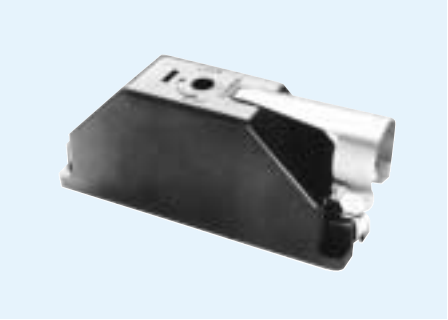


1 Wire hood may be installed in two positions. 90° cable entry as shown or straight entry by rotating wire hood.

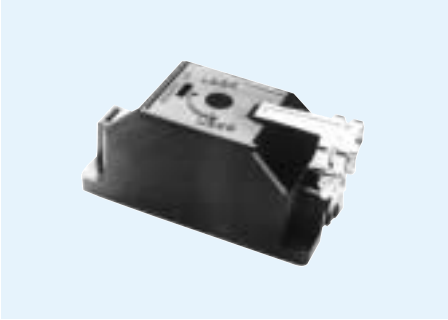
Used On	Part Number	Mounting	Max Cable Entry
DLM6	249-4515-000	Straight or 90°	28,00 (1.102)

Plastic Junction Shell Kits DL1, DL2, DL3

DL1-J/S

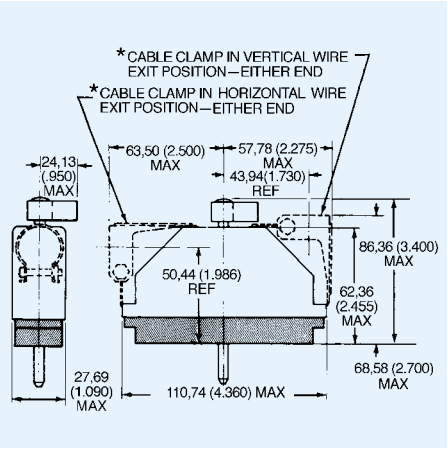


DL2-J/S



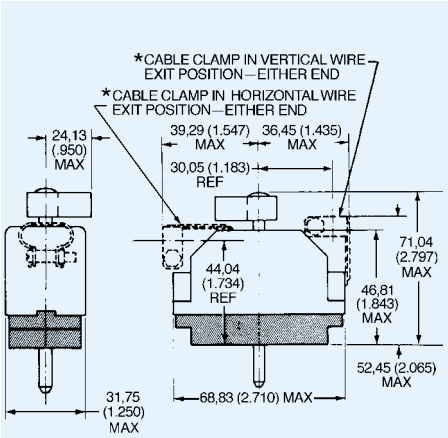
DL3-J/S

DL1 – Dimensions



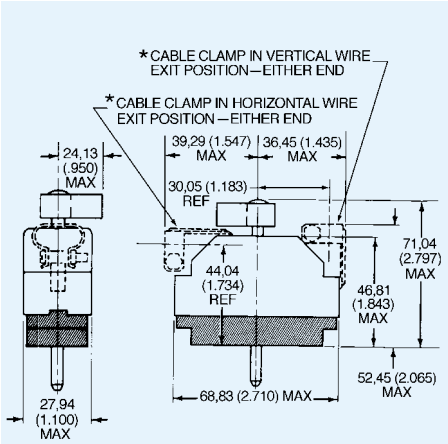
Note: DL1 shell is single piece.

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

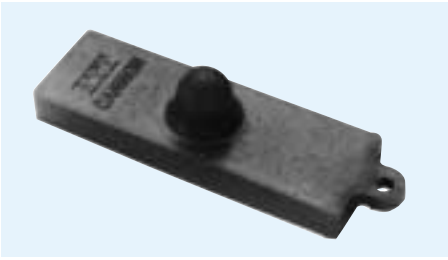
Protective Covers

Protective Covers – Rubber

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

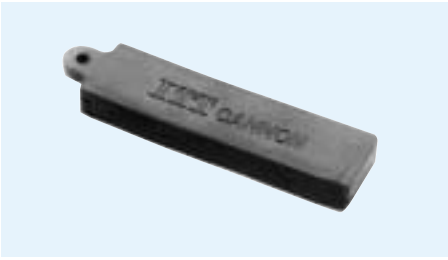
Material: Anti-static synthetic rubber – ASTM2BC520A14B14Z1.

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.

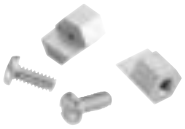
Material: Polyethylene.

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

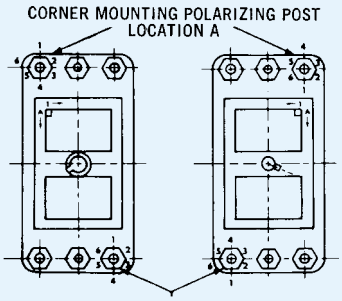
*Corner mounting polarization is accomplished by replacing the nut with polarizing posts.

Recommended Key Nomenclature

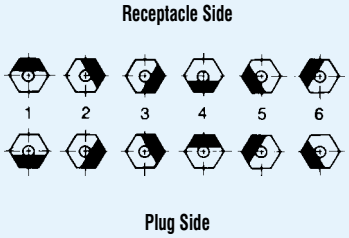
- Polarizing posts are a customer installed option.
- Recommended key nomenclature can be used for simple, opposite corner polarization.
- It is recommended that customers use their own configuration drawings.

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)



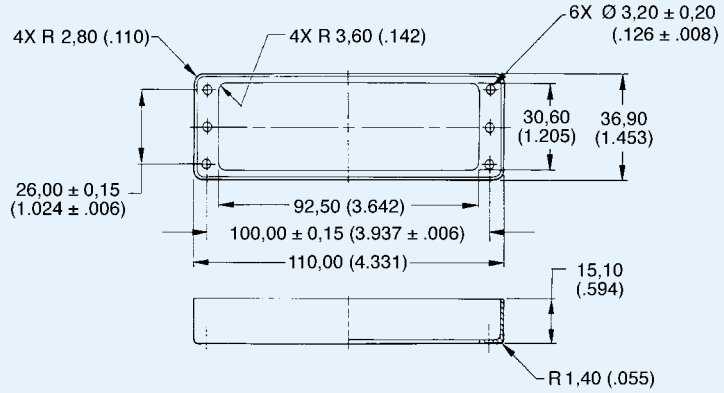
Reference views for Polarizing Arrangements



Note: Shaded area represents location of extended portion of polarizing pins in plug or receptacle.

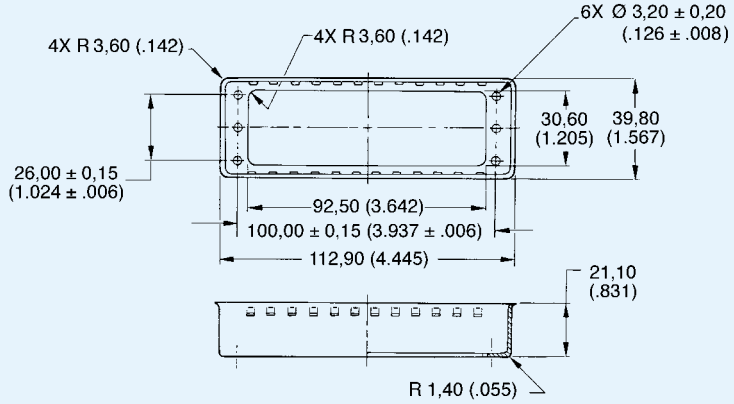
Metal Shells for EMI/RFI Shielding (Optional for DL5-260 Connector)

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

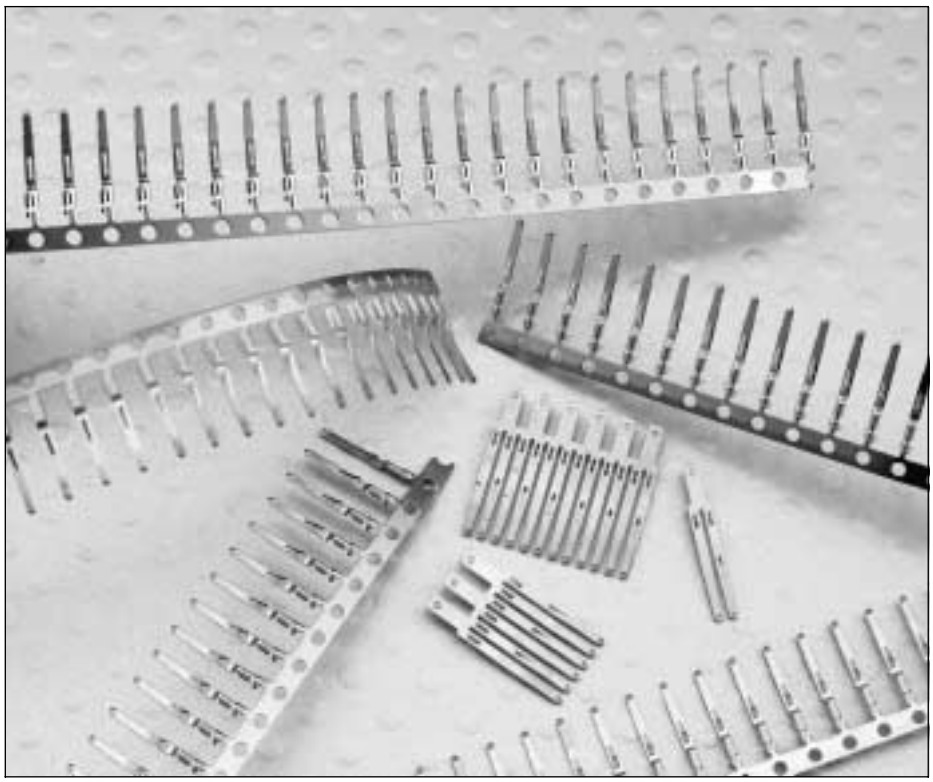
Contacts

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.



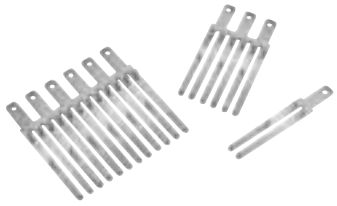
Materials and Finishes

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

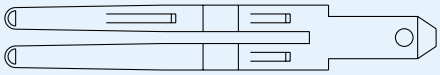
6 Pair/3Pair/1 Pair



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

Material:	Copper Alloy
Finish:	20μ inch in mating area/ gold flash on balance (terminating end)

1 Pair

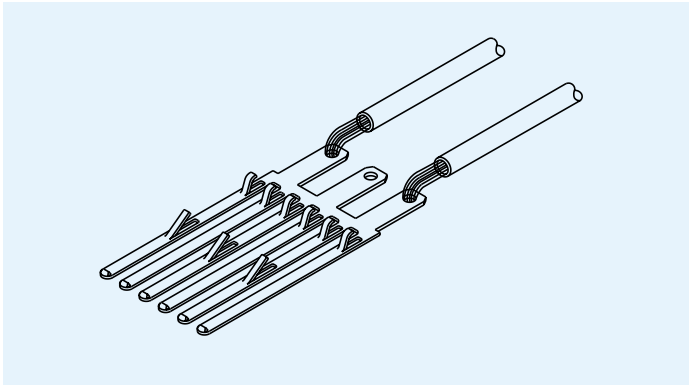


Buss Contact

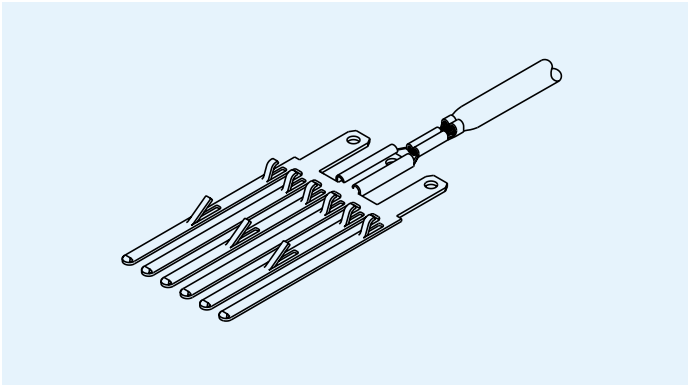
Description	Part Number
1 Pair	030-7380-001
2 Pair	030-7380-002
3 Pair	030-7380-003
4 Pair	030-7380-004
5 Pair	030-7380-005
6 Pair	030-7380-006

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)

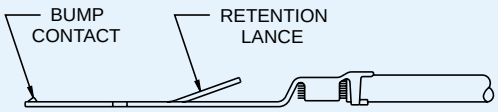
Receptacle (Flat)

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

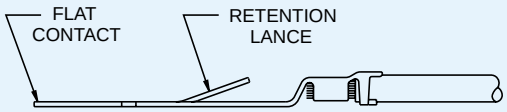
Note: For more information on tools and assembly, see pages 54-59.

♦ 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

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

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

Plug (Bump)

Receptacle (Flat)

Wire Accommodation	Plug 50μInch Gold Bump ●	Receptacle 50μInch Gold Flat ●	Plug and Receptacle 20μInch 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 50μ inch gold (bump) contact on plug side and 50μ inch 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).

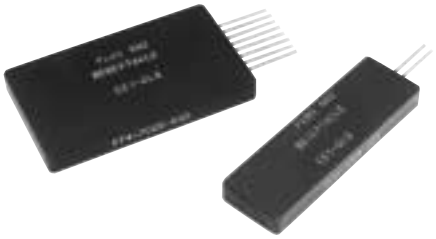
Tooling

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

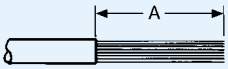
Hand Crimp Tool with Replaceable Jaw Set

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.

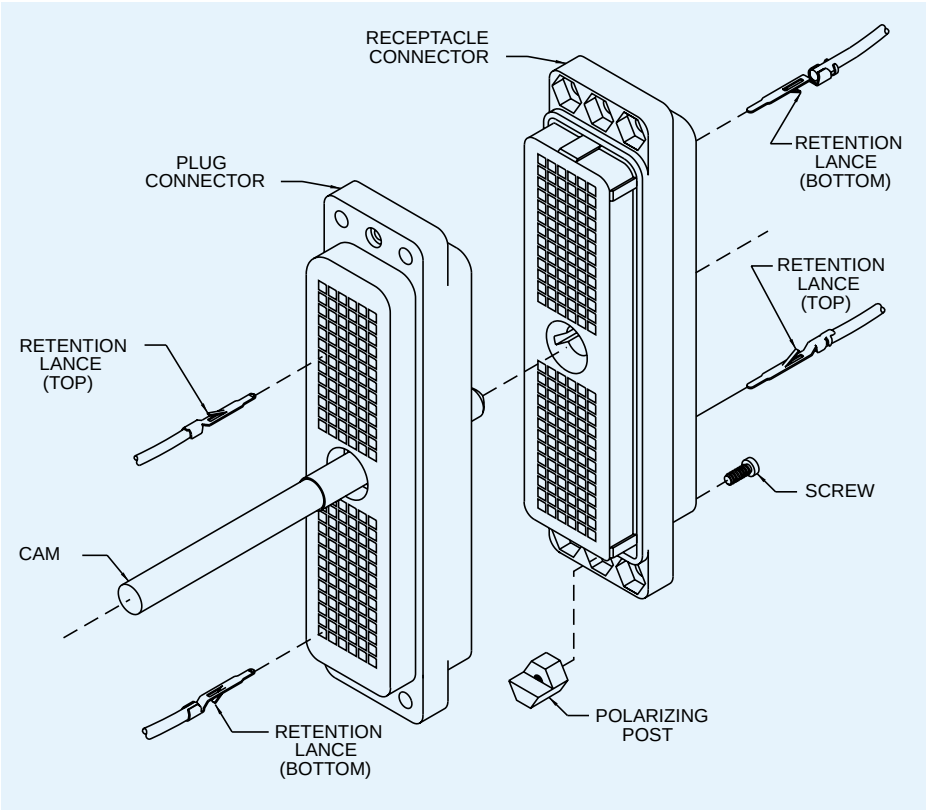
Plug:

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:

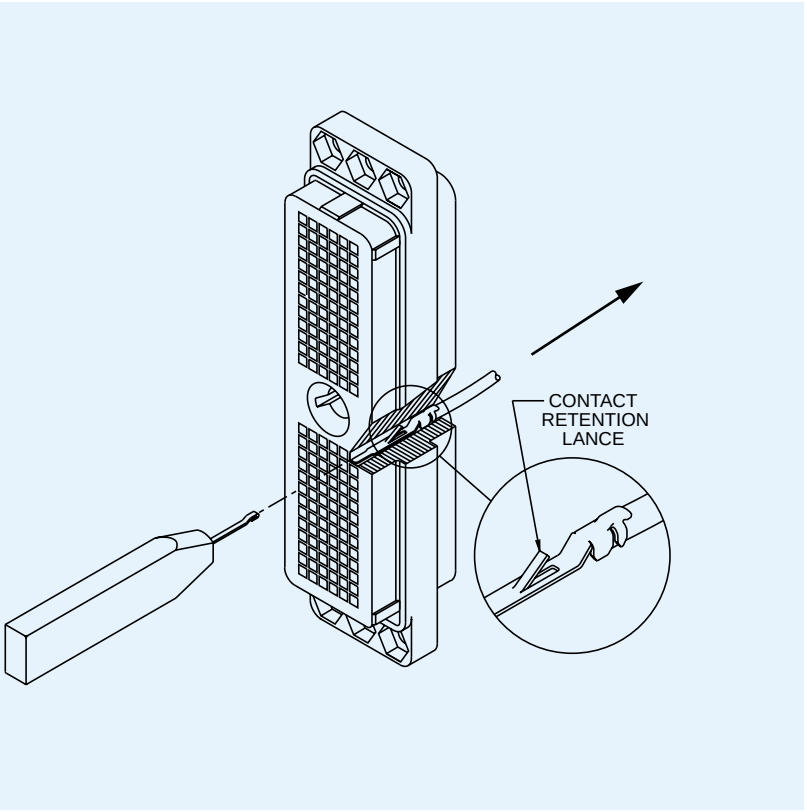
Step 1. With the retention lance positioned *toward* the shaft hole, insert contacts from the rear of the receptacle.



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.

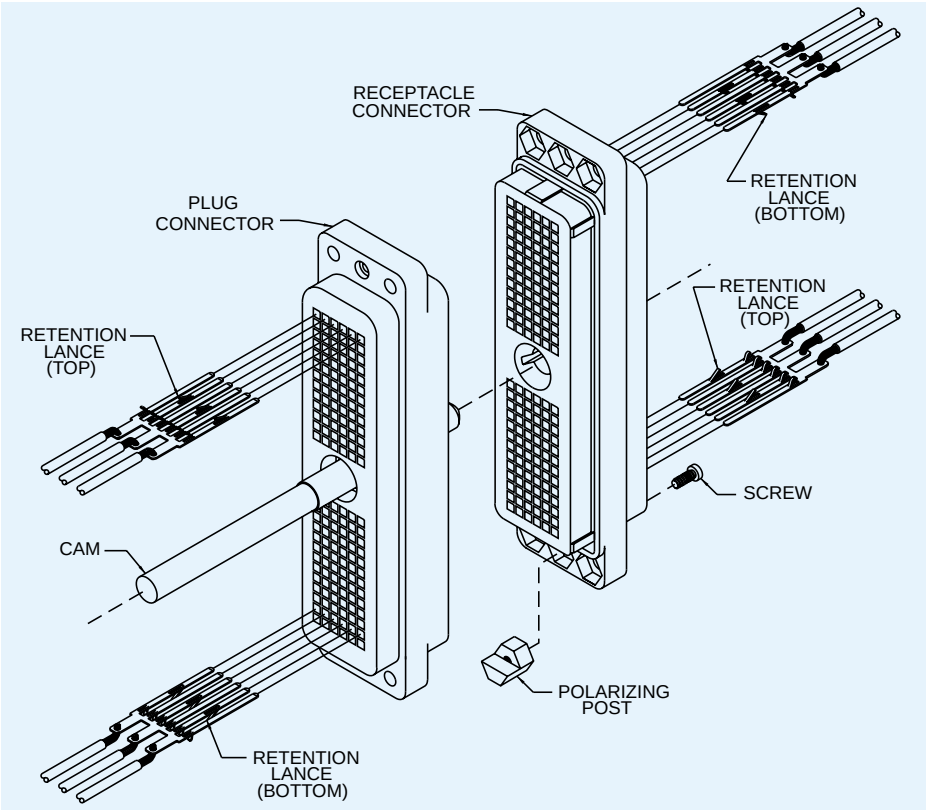
Plug:

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:

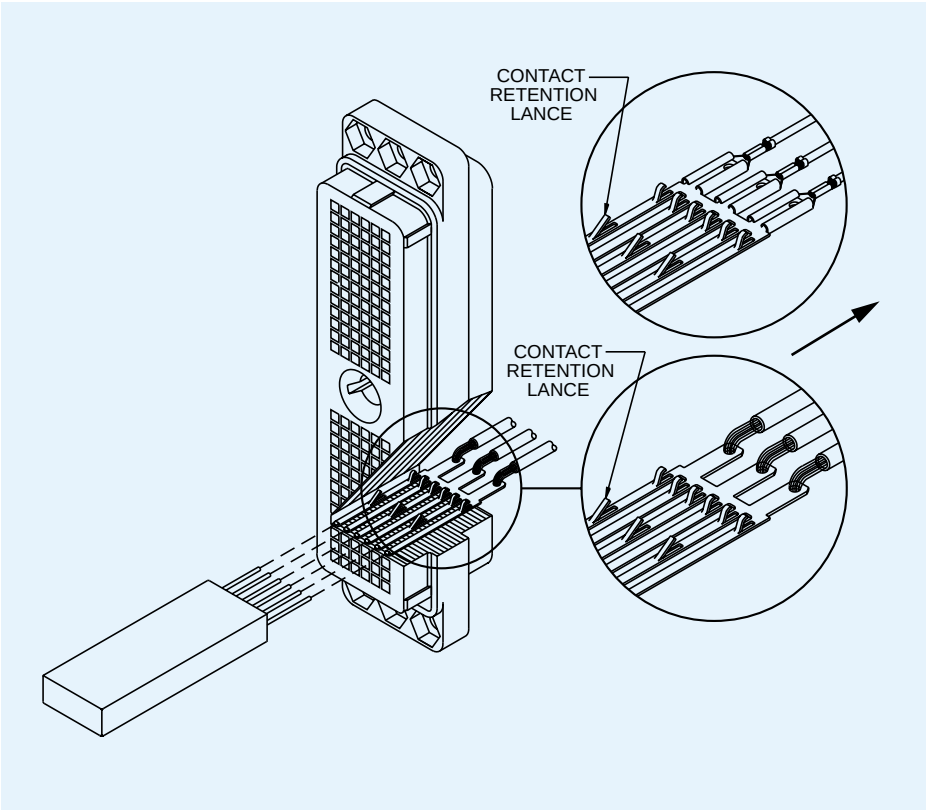
Step 1. With the retention lance positioned *toward* the shaft hole, insert contacts from the rear of the receptacle.



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

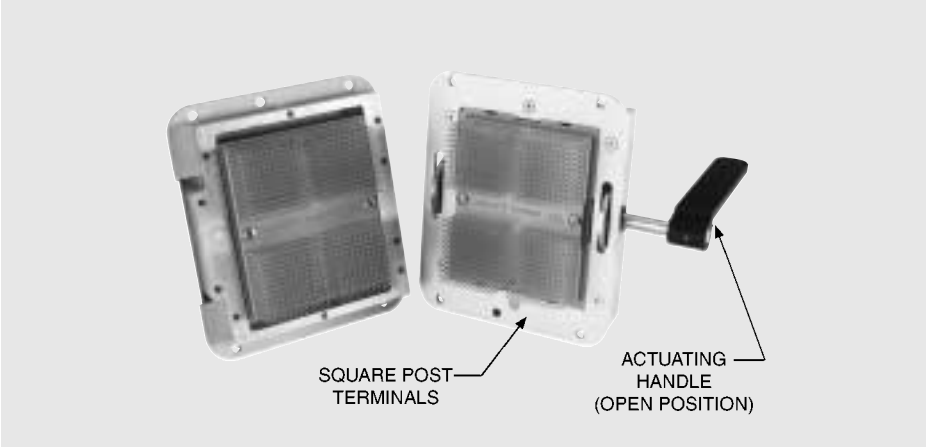
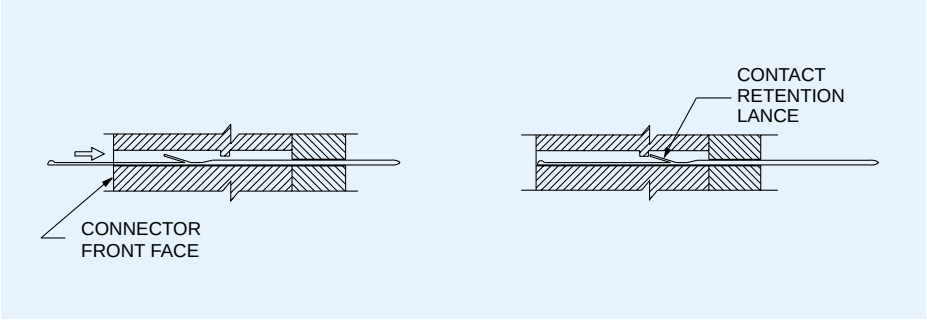


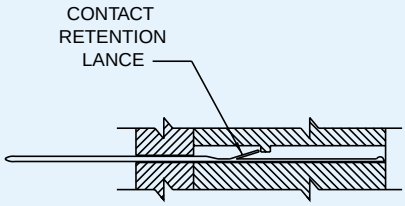
Figure 2

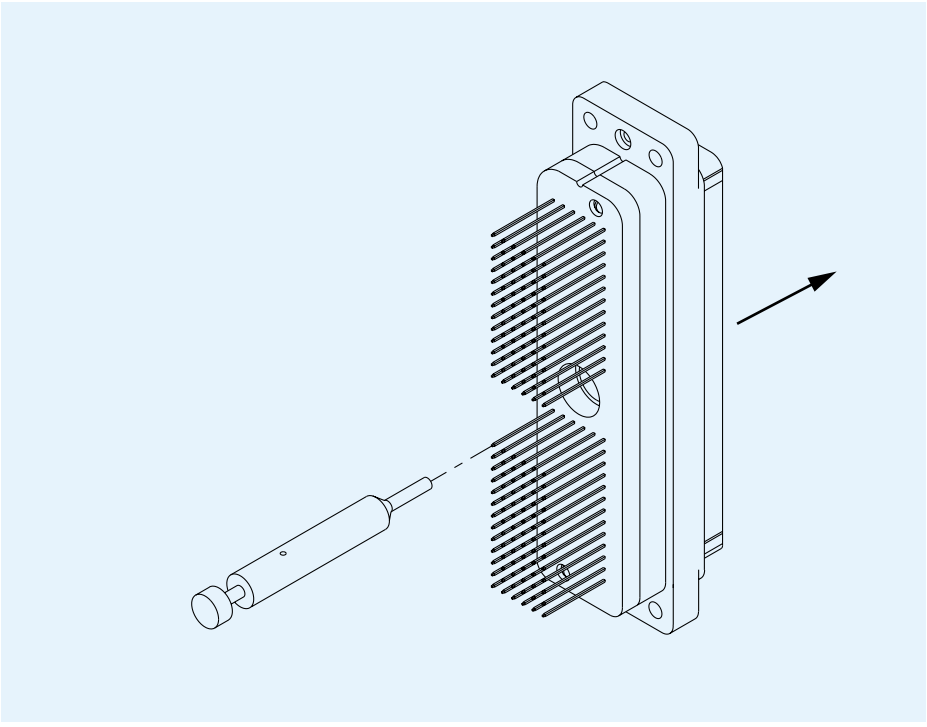


Contact Removal for Square Post Contacts

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.

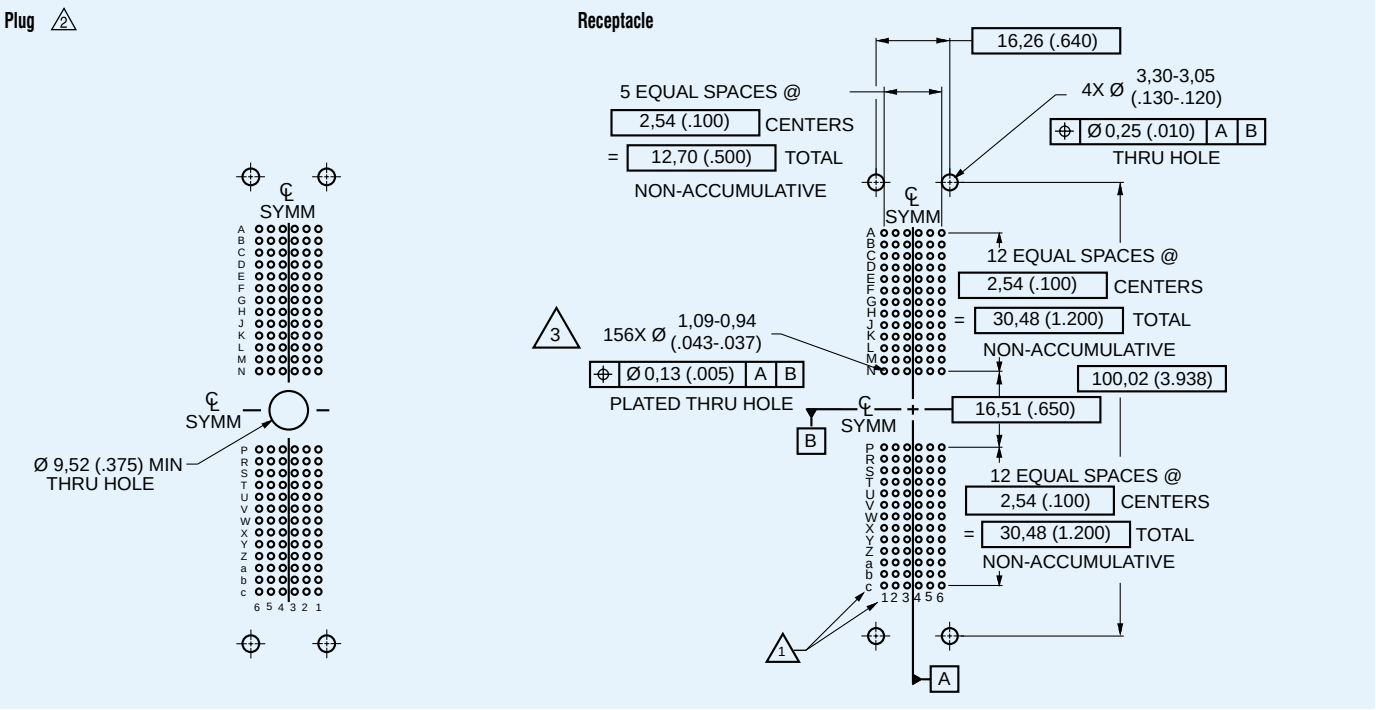
Machine Strip/Crimp Rate:
1200+ per hour

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

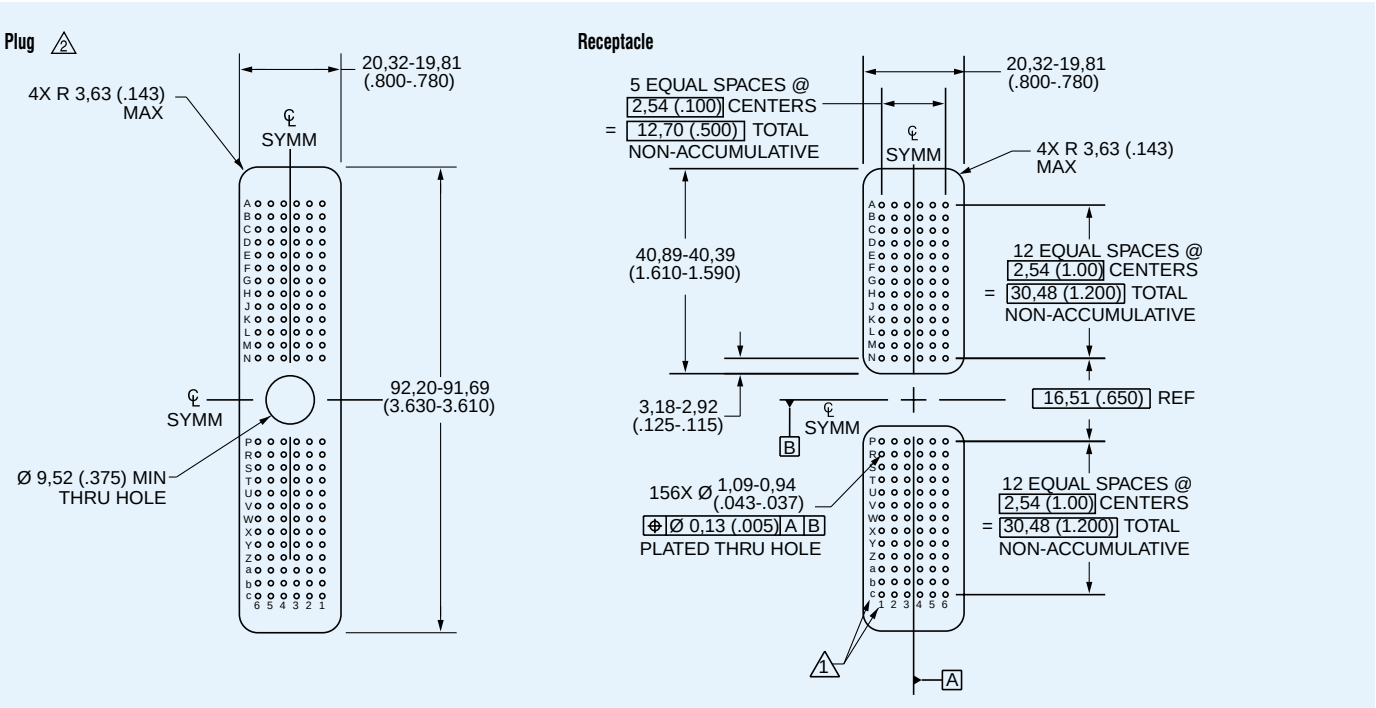
*For other geographical regions, contact Cannon for details.

DL1/DLM1/DLD1 Printed Circuit Board Hole Patterns

DL1-156/DLM1-156



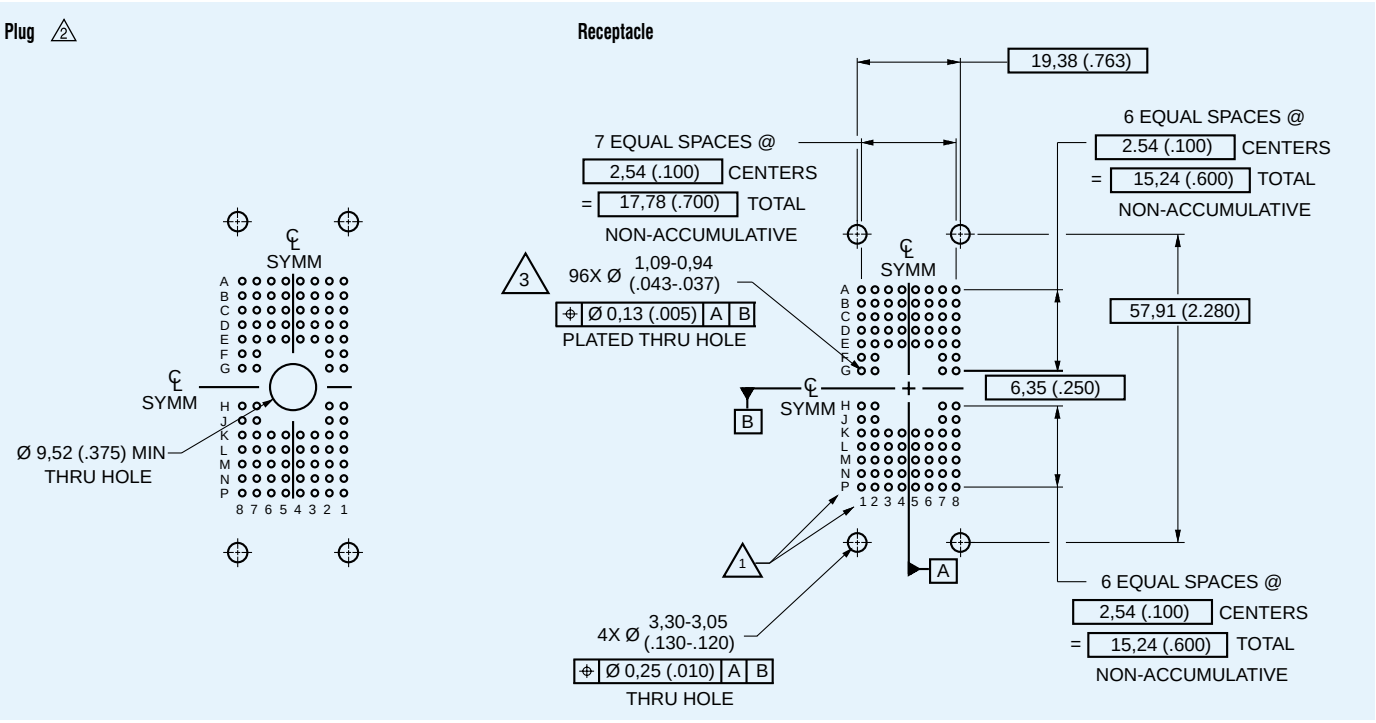
DLD1-156



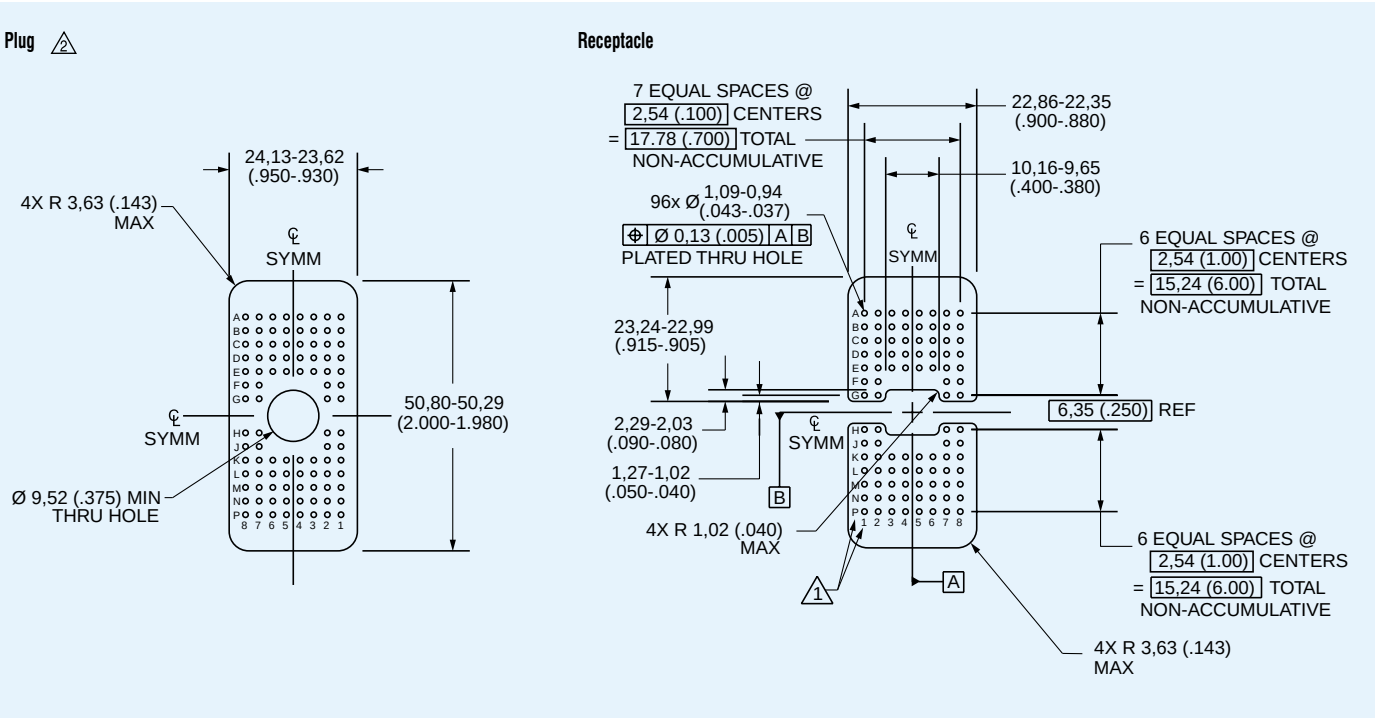
Notes:
1. Contact hole cavity identification shown is typical as viewed from top surface of P.C. board.
2. All plug layout dimensions not shown are similar to the receptacle dimensions.
3. Plated through (THRU) hole diameters shown are for □ 0,64 (.025) post contacts. PC/RC contact plated through (THRU) 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



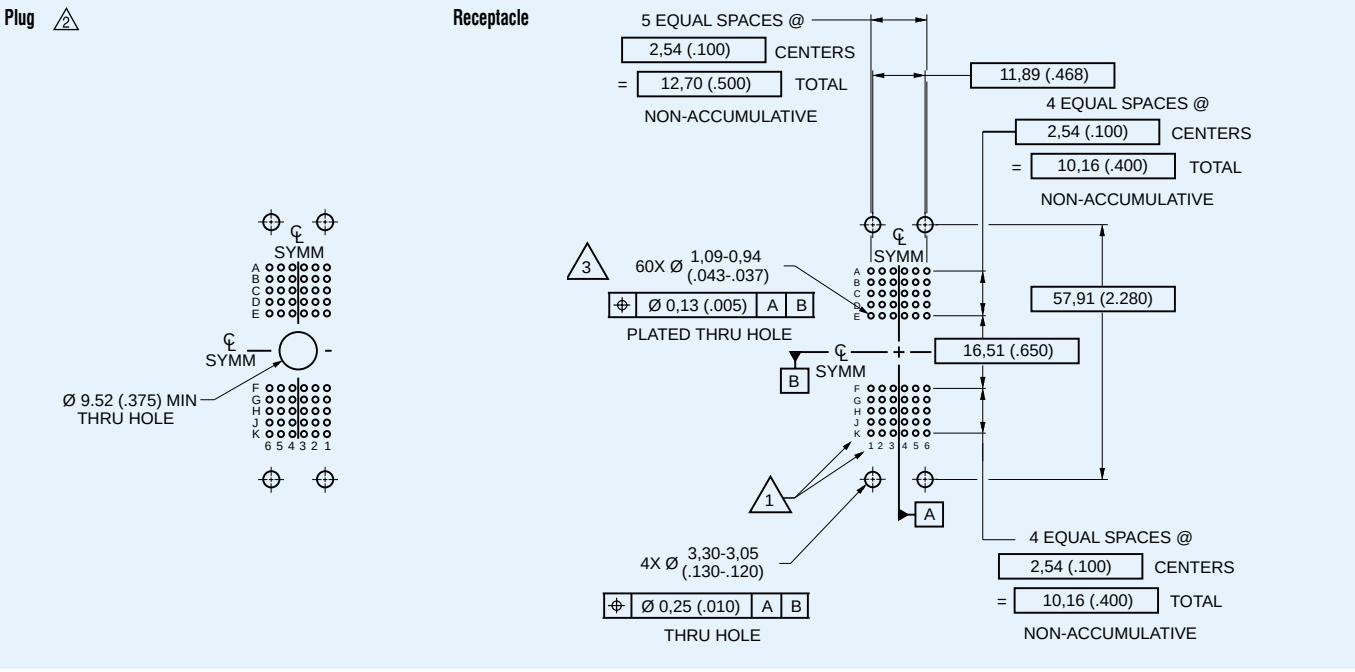
DLD2-96



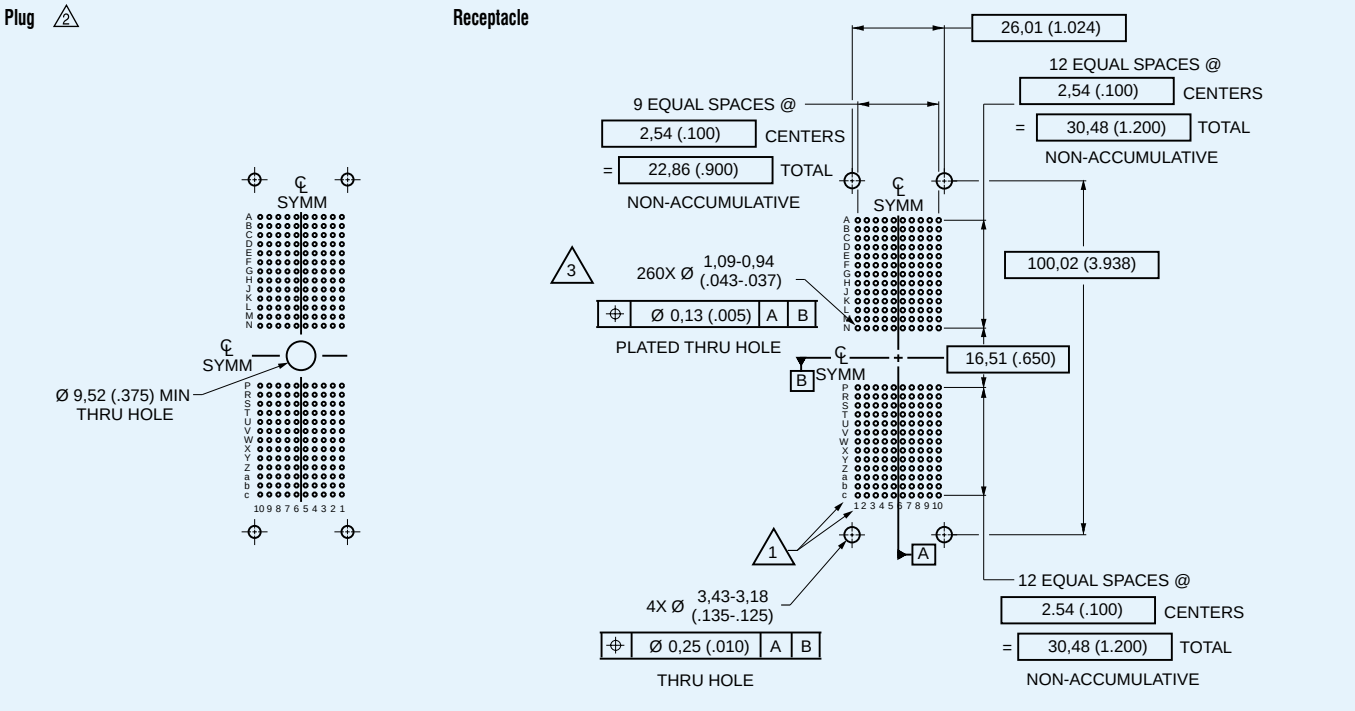
Notes:
1. Contact hole cavity identification shown is typical as viewed from top surface of P.C. board.
2. All plug layout dimensions not shown are similar to the receptacle dimensions.
3. Plated through (THRU) hole diameters shown are for □ 0,64 (.025) post contacts. PC/RC contact plated through (THRU) 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



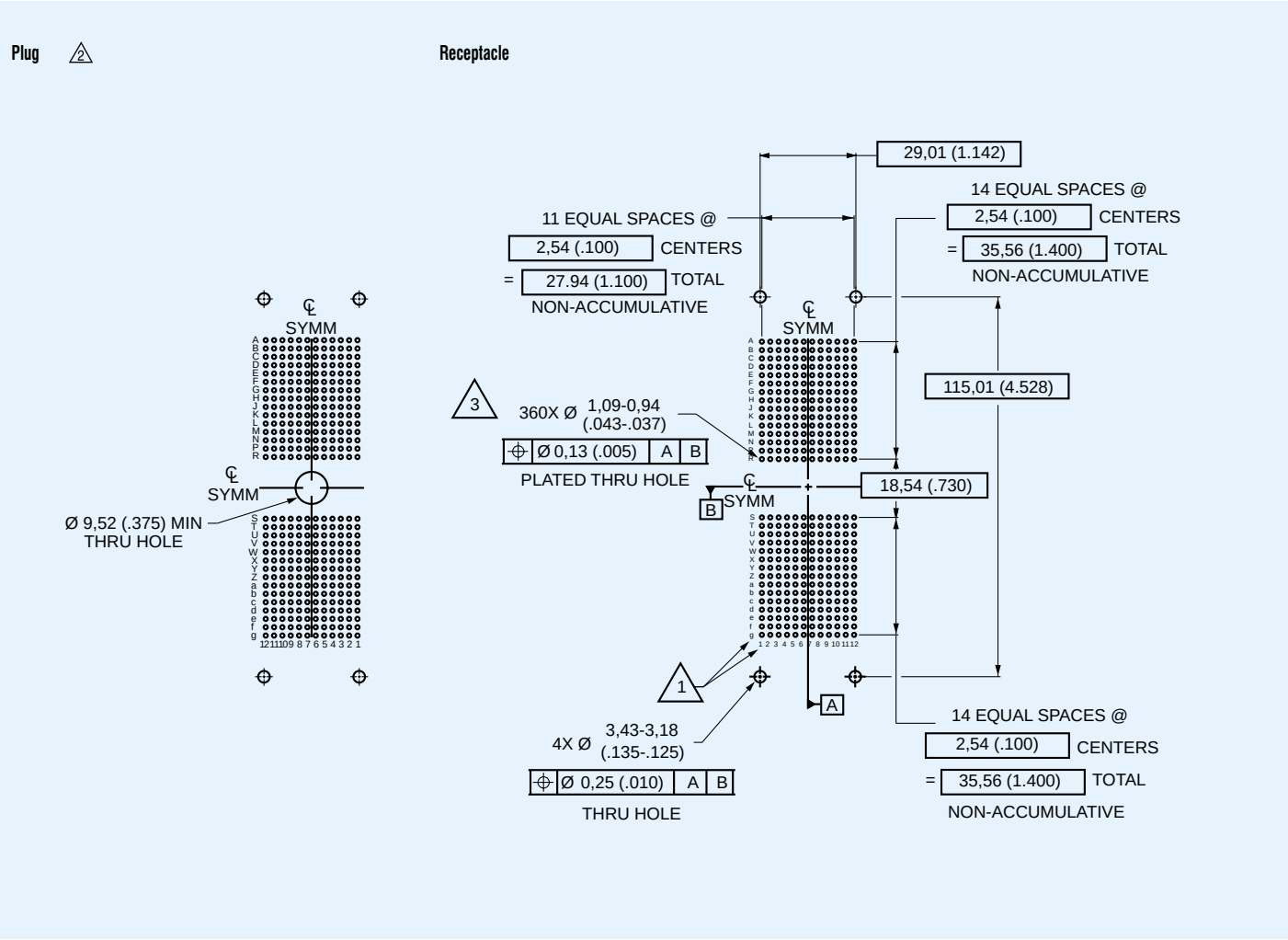
DL5-260/DLM5-260



Notes:
1. Contact hole cavity identification shown is typical as viewed from top surface of P.C. board.
2. All plug layout dimensions not shown are similar to the receptacle dimensions.
3. 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.

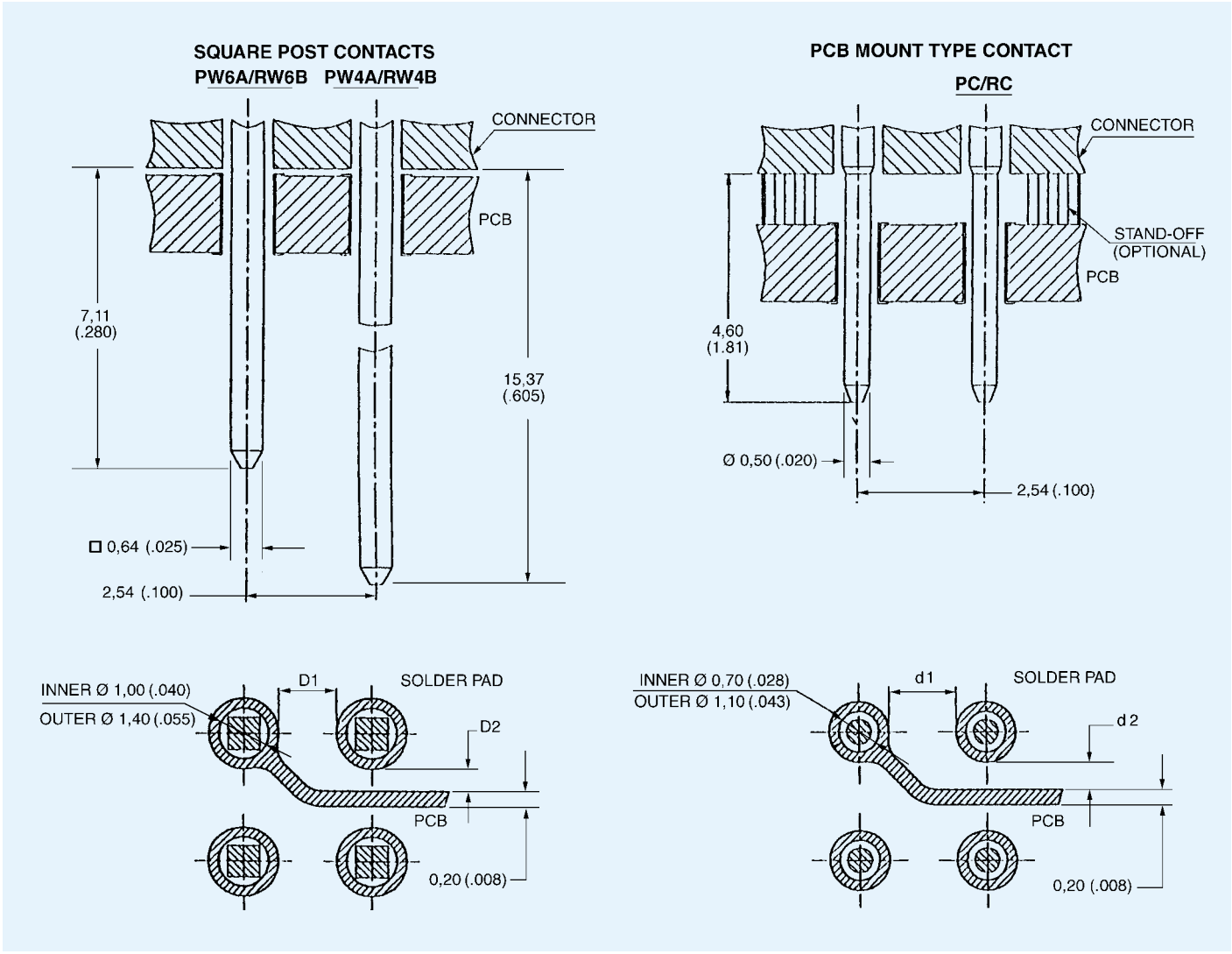
DLM6 Printed Circuit Board Hole Patterns

DLM6-360



Notes:
1. Contact hole cavity identification shown is typical as viewed from top surface of P.C. board.
2. All plug layout dimensions not shown are similar to the receptacle dimensions.
3. 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.

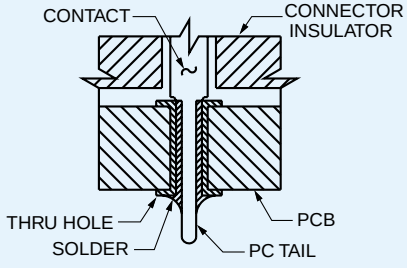
	Dimensions
D1	1,14 (.045)
D2	0,47 (.018)
d1	1,44 (.057)
d2	0,62 (.024)

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.

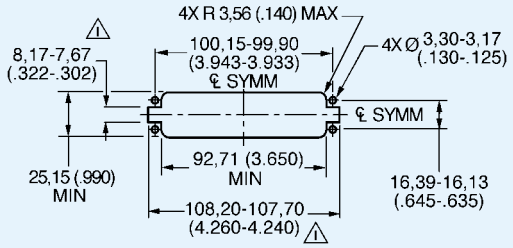
However, a smaller diameter contact results in higher impedance.

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



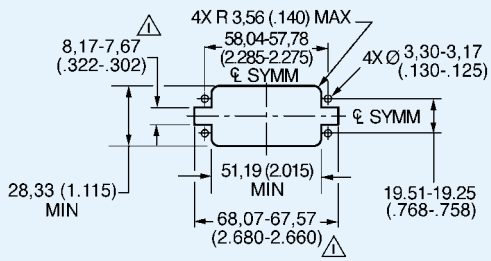
DL/DLM Panel Cutouts and Mounting Hole Patterns

DL1-156/DLM1-156



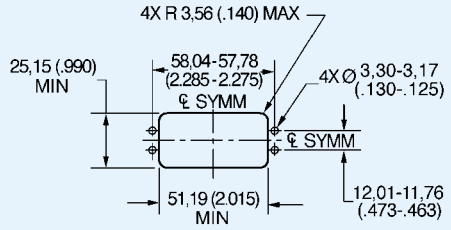
1 Required for Center Mounting Polarization Only

DL2-96/DLM2-96

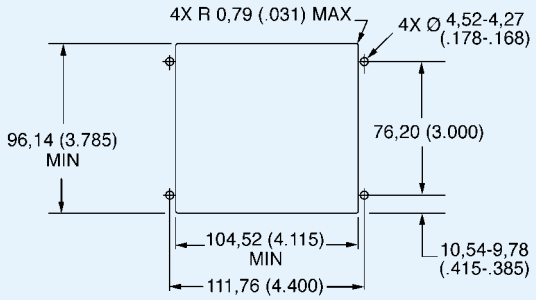


1 Required for Center Mounting Polarization Only

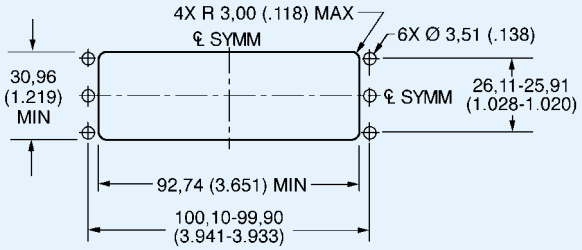
DL3-60/DLM3-60



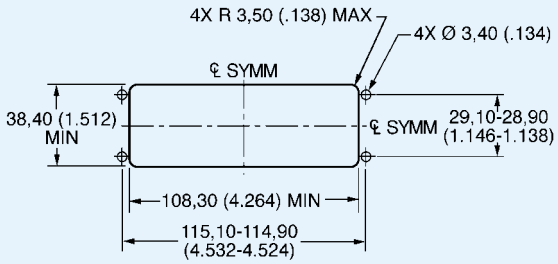
DL4-624



DL5-260/DLM5-260

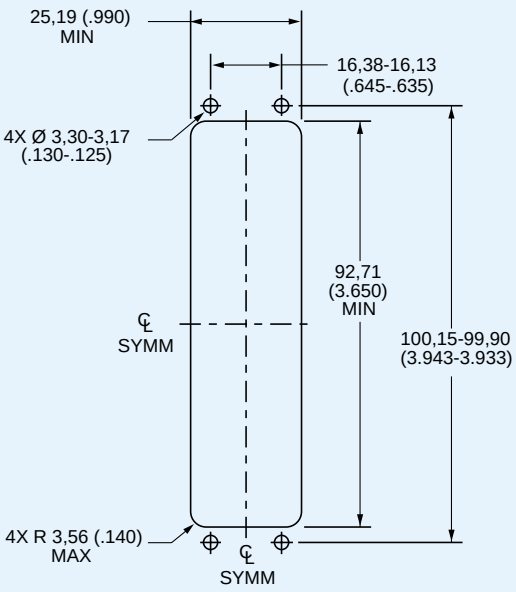


DLM6-360

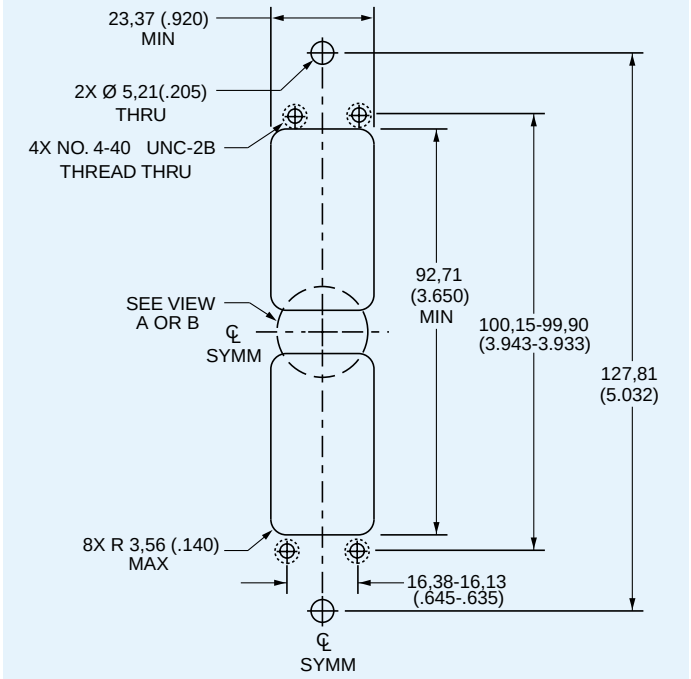


DLD1 Panel Cutouts and Mounting Hole Patterns

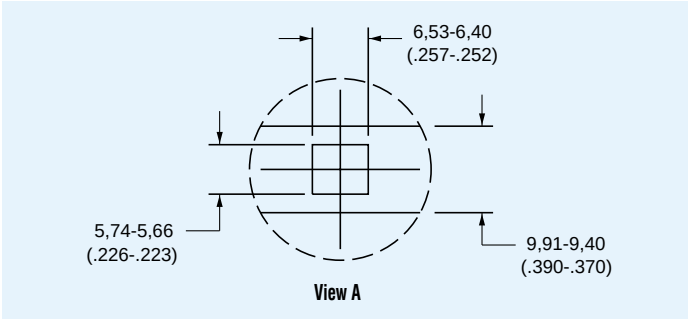
DLD1-156 Plug



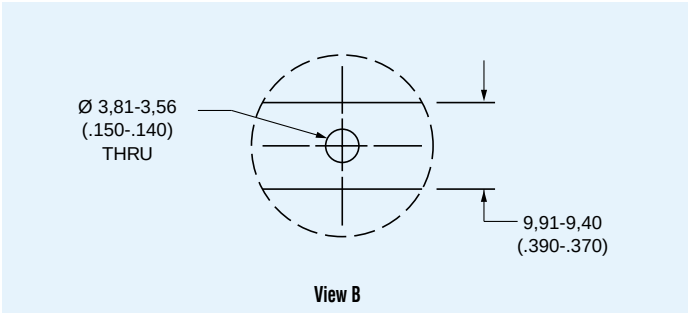
DLD1-156 Receptacle



Front Panel Bridge

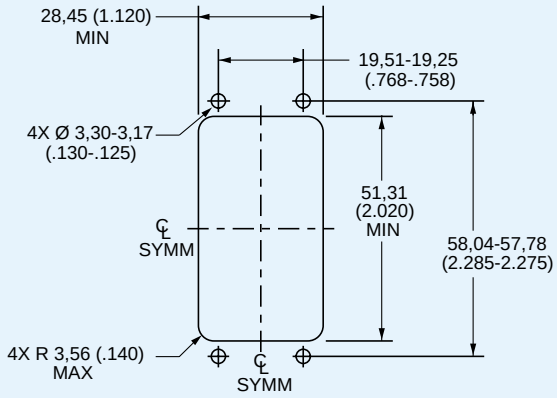


Rear Panel Bridge

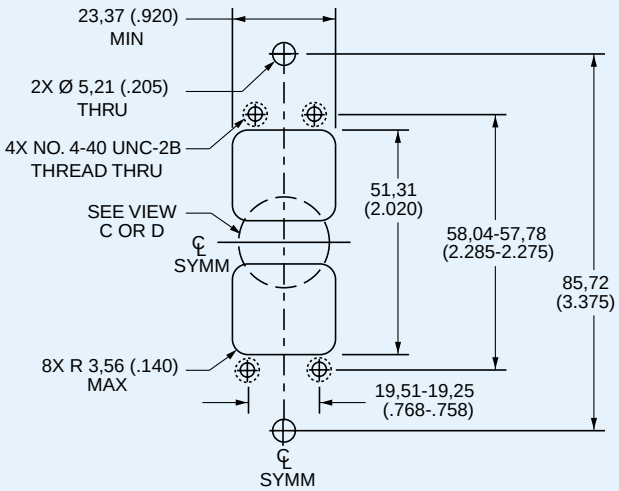


DLD2 Panel Cutouts and Mounting Hole Patterns

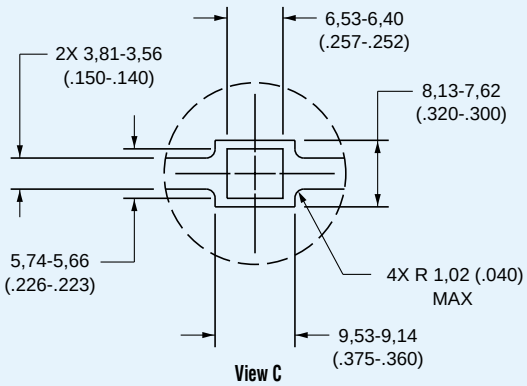
DLD2-96 Plug



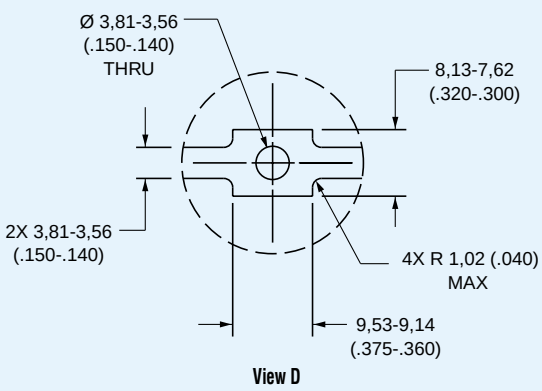
DLD2-96 Receptacle



Front Panel Bridge



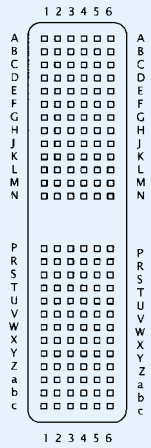
Rear Panel Bridge



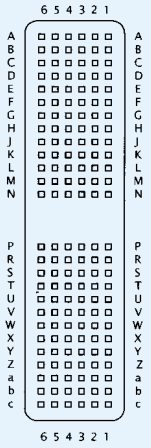
Contact Cavity Arrangements – Rear View

DL1-156/DLM1-156/DLD1-156

Plug

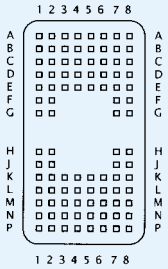


Receptacle

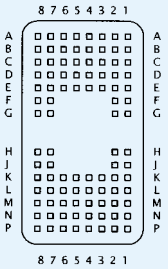


DL2-96/DLM2-96/DLD2-96

Plug

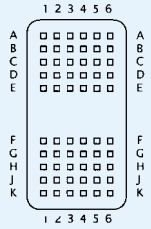


Receptacle

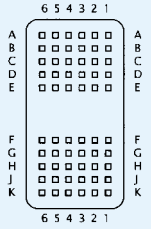


DL3-60/DLM3-60

Plug



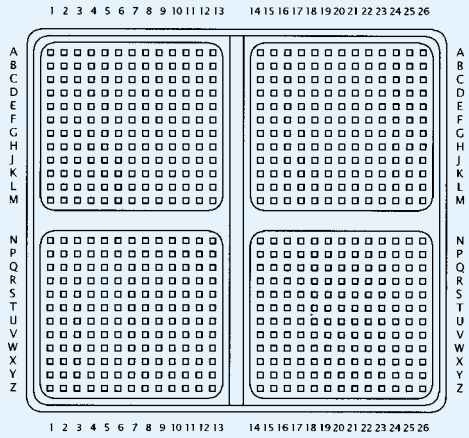
Receptacle



Contact Cavity Arrangements – Rear View

DL4-624

Plug



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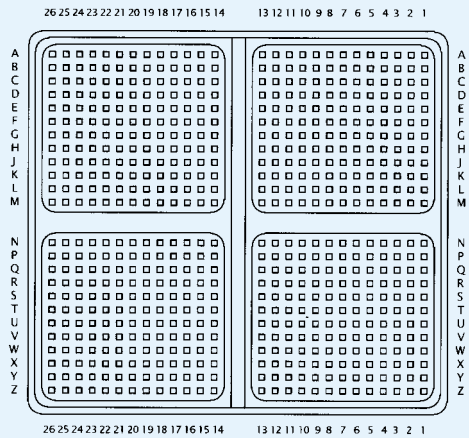
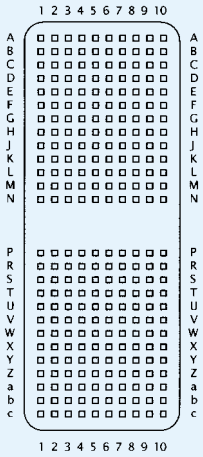
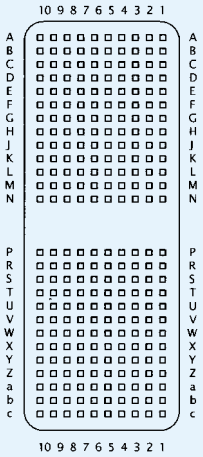


DL5-260/DLM5-260

Plug

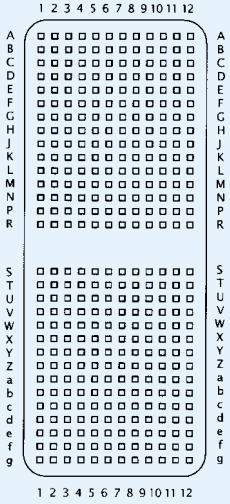


Receptacle

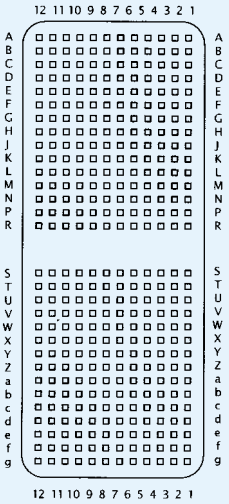


DLM6-360

Plug



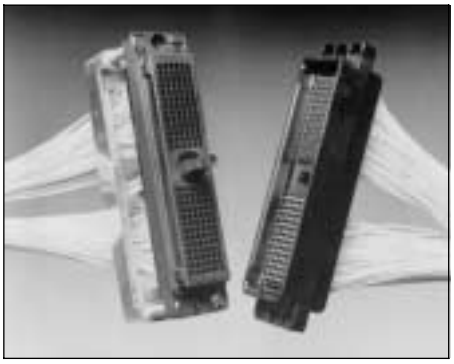
Receptacle



Reader's Resource

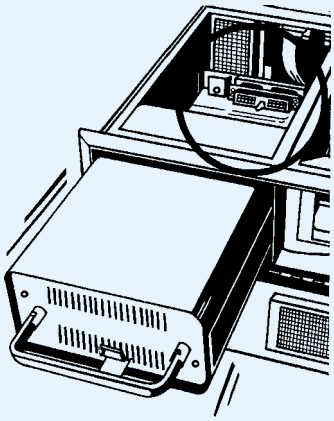
DLD Drawer — Assembly Dimensions

DLD

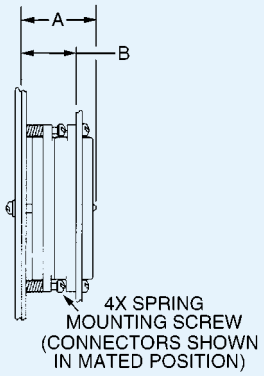


The DLD Drawer features ZIF assembly for greater contact life and eliminates the rod normally used in such products.

DLD Drawer Receptacle



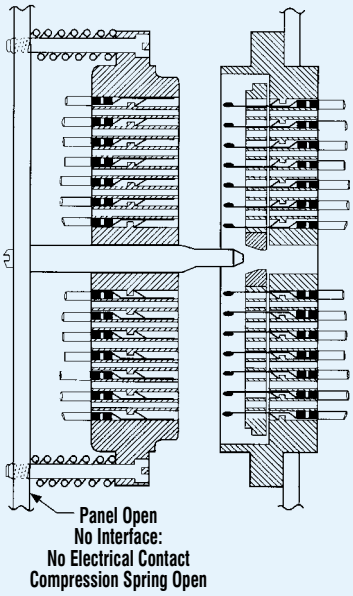
DLD Assembly Dimensions



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)

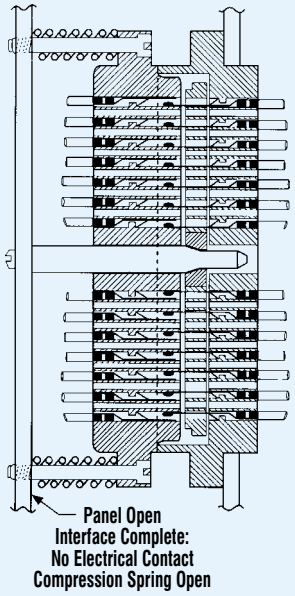
DLD Drawer — Mating Sequence

Figure 1



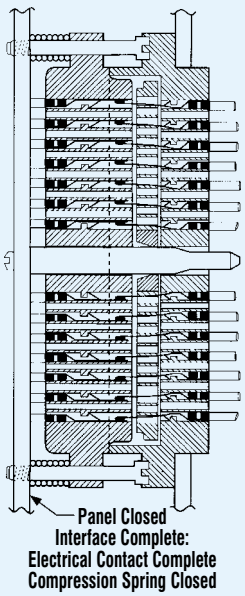
Contacts aligned.

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.

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- Experience
- Reliability
- Responsiveness

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

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- The products you bring to the world.
- The service you require from suppliers to compete in the world.

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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 DLM1/2/3 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.

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