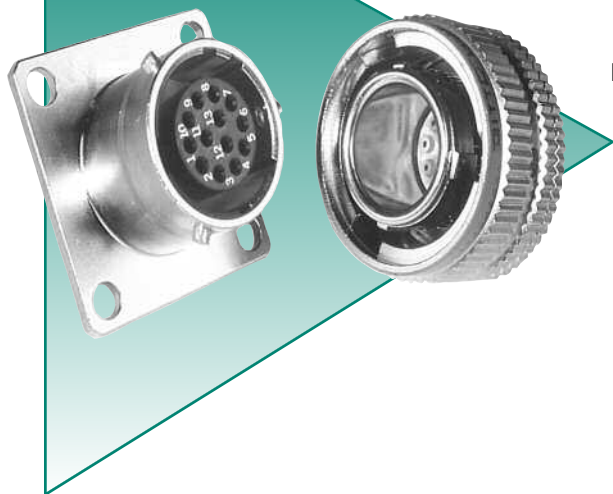


## MIL-DTL-38999 Series I



KJL MIL-DTL-38999 Series I connectors offer high density contact arrangements in a miniature circular shell. Originally designed for the especially demanding requirements of today's high performance military and commercial aircraft, these connectors are finding their way into applications needing extremely reliable interconnections. KJL's features include, total environmental sealing, wide operating temperature range (-65°C to 200°C), quick mating three point bayonet coupling, 100% scoop proof shell design, EMI-RFI shielding, and they are available in a rugged 500 hour salt spray plating.

## Applications

- High Performance Military Aircraft
- Commercial Airlines
- Communications Equipment
- Armored Personnel Carriers & Tanks
- Missiles
- Shipboard
- Medical Instrumentation
- High Reliability Test Equipment

## Features

**Quick Mating**

A three point bayonet coupling system that not only makes the KJLs quick mating but also provides an audible and tactile "click," along with visual verification of mated connectors via a sighting hole and high-visibility, bright blue painted bayonet pins.

**Shielded Interconnect**

KJL plugs feature high quality grounding springs that provide 360 degrees of EMI/RFI shielding protection. These springs ground the barrel of the KJL plugs to the inside wall of the KJL receptacles with a wiping action that offers effective protection from reception or transmission of electronic noise.

**Many Contact Layouts and Styles**

KJL connectors come in a wide variety of contact sizes and layouts up to 128 contacts. Printed circuit board, fiber optic, thermocouple, and coax style contacts are available for special applications.

**Utilizes High-Quality Military Contacts**

For standard applications, KJLs come with crimp style military contacts design to resist bending and provide reliable performance under the most rigorous conditions.

**Corrosion Resistant**

KJLs are available with cadmium over nickel plating that has met and passed the 500 hour military salt spray corrosion tests.

**Full Metal Contact Retention Clips**

ITT Cannon's KJL connectors utilize full metal retention clips in their insulators (unlike some manufacturers that use plastic clips), which assures the highest level of serviceability and unparalleled contact retention.

## Technical Specifications

### MATERIALS & FINISHES

Shell	Aluminum alloy
Bayonet Pins	Passivated stainless steel per QQ-S-763
Plating	A-Clear Chromate over cadmium over electroless nickel per QQ-P-416 B-Olive drab chromate over cadmium over electroless nickel per QQ-P-416 F-Electroless nickel per QQ-N-290 (N - Commercial)
Contacts	Copper alloy
Plating	Gold plated, 50 microinches per MIL-G-45204 type II, grade C, class I
Insulator	Hard plastic wafer which contains metal retention tines for high reliability retention of crimp contacts
Grommet & Seals	Silicone based elastomer
Grounding Springs	Beryllium copper

### ELECTRICAL DATA

Operating Voltage (Vac rms) & Test Voltage (Unmated Condition)

Test Voltages	Service Rating			
	N	M	I	II
Sea Level	1000	1300	1800	2300
100,000 feet	200	200	200	200

Current Rating by contact size and wire accommodation (Test Amps)

Wire Size	22D	22M*	22*	20	16	12
28	1.5	1.5	-	-	-	-
26	2.0	2.0	-	-	-	-
24	3.0	3.0	3.0	3.0	-	-
22	-	-	5.0	5.0	-	-
20	-	-	-	7.5	7.5	-
18	-	-	-	-	10.0	-
16	-	-	-	-	13.0	-
14	-	-	-	-	-	17.0
12	-	-	-	-	-	23.0

Contact Resistance of mated contacts end to end

Contact Size	Maximum Millivolt Drop
22D	40
22M*	30
22*	40
20	35
16	25
12	25

### MECHANICAL

Operating Temperature A Plating -65°C to 150°C (-85°F to 302°F)  
B Plating -65°C to 175°C (-85°F to 347°F)  
F (N) Plating -65°C to 200°C (-85°F to 392°F)

Sealing Against sand, dust per MIL-STD-202 & ice resistance

Wire Sealing Range

Contact Size	Minimum inches	Maximum inches	Minimum mm	Maximum mm
22D	0.030	0.054	0.76	1.37
22M*	0.030	0.050	0.76	1.27
22*	0.034	0.060	0.86	1.52
20	0.040	0.083	1.02	2.11
16	0.065	0.109	1.65	2.77
12	0.097	0.142	2.46	3.61

\* inactive for new designs

## Technical Specifications

### Insulation Strip Length

Contact Size	Strip Length
22*, 22D or 22M*	.125 (3.18)
20	.188 (4.77)
16	.188 (4.77)
12	.188 (4.77)

Mating Life	500 cycles minimum															
Salt Spray	Finish A: 48 hour per MIL-STD-1344A method 1001 condition B Finish B: 500 hour per MIL-STD 1344A method 1001 condition C Finish F: 48 hour per MIL-STD-1344A method 1001 condition B															
Heat	Finish A: 150°C (302°F) Finish B: 175°C (347°F) Finish F: 200°C (392°F) 1000 hours to MIL-STD-1344 method 1005															
Chemical Resistance	Lubricating oils, hydraulic fluids, coolants, deicing fluids per MIL-STD-1344A Method 1016 condition a-1															
Sine Vibration	30g at ambient temperature with simulated accessory load															
Random Vibration	49.5 grms at ambient temperatures															
Shock	300g ±15% half sine wave magnitude for 3 ±1 milliseconds															
EMI Shielding Effectiveness	100 MHz to 10 GHz - minimum attenuation of 50dB															
Contact Type	Crimp, fiber optic, coax, twinax, or printed circuit															
Number of Circuits	3 to 128															
Contact Insertion	Insertion from rear of connector with simple plastic or high quality metal hand tool. Extraction from rear with simple plastic or high-quality metal hand tools.															
Contact Retention	Per MIL-DTL-38999 tested to MIL-STD-1344A method 2007 <table><tr><th>Contact</th><th>Axial load Newtons ±10%</th><th>Axial load Pounds ±10%</th></tr><tr><td>22*, 22D, 22M*</td><td>44</td><td>10</td></tr><tr><td>20</td><td>67</td><td>15</td></tr><tr><td>16</td><td>111</td><td>25</td></tr><tr><td>12</td><td>111</td><td>25</td></tr></table>	Contact	Axial load Newtons ±10%	Axial load Pounds ±10%	22*, 22D, 22M*	44	10	20	67	15	16	111	25	12	111	25
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22*, 22D, 22M*	44	10														
20	67	15														
16	111	25														
12	111	25														
Polarization	Three point bayonet coupling, five keyways with optional master keyway rotations, note insert and four minor keyways remain fixed.															
Approvals	MIL-DTL-38999															

\* inactive for new designs

## Cross Section

