cannon

# 38999-Style Connectors

ITT

ENGINEERED FOR LIFE

# Cannon 38999-Style Series I, II, III Connectors

ITT Cannon connectors set the industry standard for performance and reliability in the most demanding conditions and harshest environments. Our 38999-Style Series I, II, III Connectors are designed to withstand the extreme shock, exposure and vibration that are commonplace in Defense and Commercial Aerospace applications.

We offer lightweight, space-saving solutions to our military customers, coupled with high bandwidth and high power for severe service application needs. More than a century of experience, coupled with unparalleled engineering and testing resources, has established ITT Cannon as one of the premier providers of interconnect solutions worldwide.

With a proven track record for engineering and manufacturing excellence, ITT Cannon continues to deliver a broad range of innovative products and solutions that enable our customers to meet their most demanding design requirements, where impeccable reliability and safety are essential.

Example Application Areas

- Defense
  - Military aircraft
  - Military communication systems
  - Hand held and vehicle platforms
  - Military ground support systems
  - Military computer systems
  - Harsh environment platforms
  - Blind mate applications
  - High density, low signal platforms
  - Hand held and vehicle platforms
  - Unmanned systems
- Aerospace
  - Aircraft engines
  - General electric testing equipment
  - Commercial business aviation
  - Aerospace launch vehicles

# 38999-Style Connectors: Precision Engineered, Lightweight & Rugged

ITT Cannon's 38999-Style Series I, II, III Connectors are designed to tackle the most extreme conditions with exceptional versatility in the harshest environments. Small, lightweight and highly reliable, our D38999-Style connectors deliver consistency and performance when it matters most.

### D38999-Style Series I (KJL)

ITT Cannon KJL 38999-Style Series I connectors offer high-density contact arrangements in a light-weight miniature circular connector. ITT Cannon KJL series connectors are an industry standard for military and aerospace applications. The environmentally sealed KJL series features quick-mating, three-point bayonet coupling and operates across a wide temperature range.

### D38999-Style Series II (KJ)

ITT Cannon KJ 38999-Style Series II are a weight-reduced and low profile circular connector ideally suited for avionic applications where space and weight are prime considerations. It offers high-density contact arrangements in a light-weight miniature circular connector. ITT Cannon KJ series connectors feature a quick-mating, three-point bayonet coupling, are environmentally-sealed and operate across a wide temperature range. ITT Cannon KJ series mil spec connectors were originally designed for military vehicles and are now industry standard aerospace and military connectors.

### 38999-Style Series III (KJB)

The de-facto standard circular connector for use in harsh military and aerospace environments, ITT Cannon's KJB 38999-Style Series III Connectors offer high-density contact arrangements in a light-weight miniature circular connector. ITT Cannon's KJB series connectors have quick-mating, triple-lead threaded, self-locking coupling, are environmentally-sealed and operate across a wide temperature range. These connectors were originally designed for military vehicles and are now use for multiple applications throughout the Aerospace & Defense Industry.

### 38999-Style Series III Composite (KJB)

A lightweight standard circular connector for use in military and aerospace environments with significant weight savings over aluminium-bodied D38999-Style. High density layouts with up to 128 data connections and power contacts rated up to 23A. Features a triple-start coupling with anti-decoupling ratchet for high vibration applications, Cadmium and Electroless Nickel platings, 100 percent scoop-proof contacts and rated to 1500 mating cycles.

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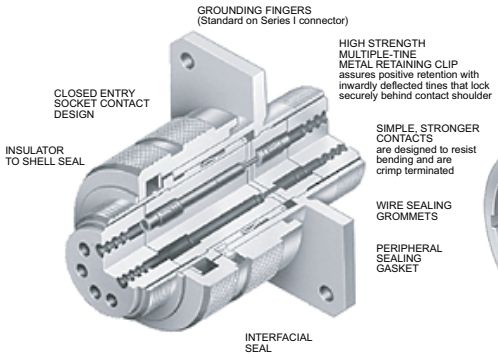
## In addition to our 38999-style series, we also offer these connectivity solutions:

**Combo D-Sub** Product offering includes ability to integrate signal and coax, high power, and high voltage.

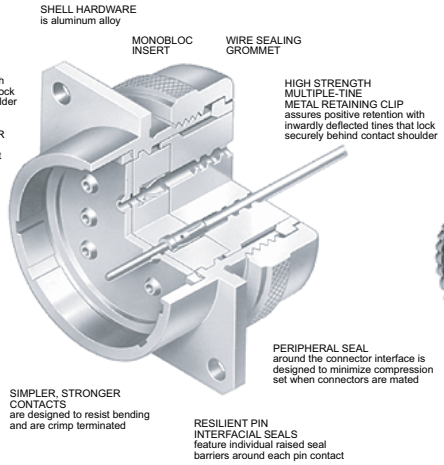
**CA-Bayonet –** Signal and power connectors with exceptional sealing against the ingress of fluids and will withstand the effects of high vibrations.

**Microminiature –** High performance and reliability with exceptional versatility. Available in rectangular, circular and strip configurations, many of our connectors are designed to be comparable to the MIL-DTL-83513 specification.

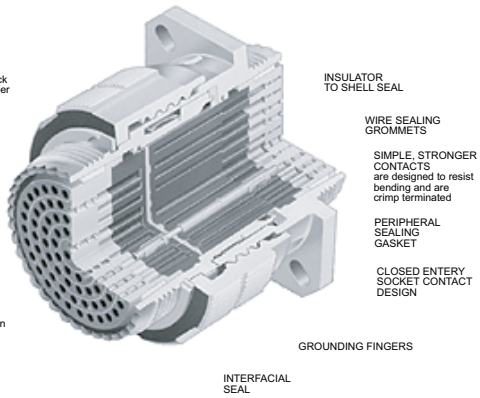
**SERIES I**




**SERIES II**




**SERIES III**




- Corrosion and zinc resistant shells of aluminum alloy with cadmium and zinc over nickel plating withstand a 500 hour salt spray exposure
- Rear release crimp snap-in contacts
- High contact density
- Standard MIL-C-39029 contacts, MIL-I-81969 application tools and MIL-STD 1560 insert arrangements

- Special/custom capabilities
- 100% scoop-proof - Series I and III
- Light weight /Low Profile - Series II
- Operates under severe high temperature vibration testing through 200 C - engineered for high density circuitry - Series III

- Interfacial seal helps prevent electrolytic erosion of contacts - Series III
- Superior EMI shielding provides outstanding protection up to 65dB at 10 GHZ. - Series III

## Specification Comparison

| Design Criteria | Series I | Series II | Series III (Aluminum) | Series III (Composite) |
|---|---|---|---|---|
| Low Profile/Light Weight | no | yes | no | yes |
| Scoop Proof | yes | no | yes | yes |
| Coupling System | Bayonet | Bayonet | Triple Start Thread | Triple Start Thread |
| Electrolytic Erosion | no | no | yes | yes |
| Durability (Cycles) | 500 | 250 | 500 | 1500 |
| High Impact Shock | yes | no | yes | yes |
| External Bending Moment | | | | |
| Shell Size 25 | 650 in/lbs | 150 in/lbs | 1000 in/lbs | 1000 in/lbs |
| Random Vibration "J" | 49.5G, Ambient | 43.7G, Ambient | 49.5G, Ambient | 49.5G, Ambient |
| Sine Vibration | 60G | | 60G | 60G |
| Sand, Dust, Ice | yes | | yes | yes |
| Shell Size | 9-25 | 8-24 | 9-25 | 9-25 |

## Contact Rating

| Contact Size | Test Current DC Test Amperage | Maximum Millivolt Drop* | Crimp Well Data: Well Diameter | Crimp Well Data: Well Depth |
|---|---|---|---|---|
| 22D | 5 | 40 | .0345 ± .0010 | .157/.141 |
| 22M** | 3 | 30 | .0280 ± .0010 | .157/.141 |
| 22** | 5 | 40 | .0365 ± .0010 | .157/.141 |
| 20 | 7.5 | 35 | .0470 ± .0010 | .229/.209 |
| 16 | 13 | 25 | .0670 ± .0010 | .229/.209 |
| 12 | 23 | 25 | .1000 ± .0020 | .229/.209 |

* Maximum millivolt drop data is determined by measuring resistance of mated contacts from end to en
** For reference only

Dimensions shown in inches (mm)
Specifications and dimensions subject to change

**DISCLAIMER: Our facility is not currently certified by the DLA and this product is not covered by the QPL/QML. Mil-Spec part numbers are only for cross reference to the Commercial Equivalent.*

## Performance and Material Specifications

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### MATERIALS AND FINISHES

| | Aluminum | | Composite | |
|---|---|---|---|---|
| | **Receptacle** | **Grounded Plug** | **Receptacle** | **Grounded Plug** |
| Shell | Aluminum alloy | Aluminum alloy* | Thermoplastic | Thermoplastic |
| Insulator | High grade plastic | High grade plastic | High grade plastic | High grade plastic |
| Contacts | Copper alloy, gold plate | Copper alloy, gold plate | Copper alloy, gold plate | Copper alloy, gold plate |
| Grommet and Seal | Silicone base elastomer | Silicone base elastomer | Silicone base elastomer | Silicone base elastomer |
| Jam Nut | Aluminum alloy | - | - | - |
| Grounding Spring | - | Beryllium copper | - | Beryllium copper |

*Finish as noted in How To Order sections.

### ELECTRICAL DATA

Contact Size: 22D, 22M*, 22*, 20, 16 and 12

**Contact Rating and Wire Size Accomodation**

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

*For reference only

**Service Rating**

| Altitude | Service Rating M | | Service Rating N | | Service Rating I | | Service Rating II | |
|---|---|---|---|---|---|---|---|---|
| | Mated | Unmated | Mated | Unmated | Mated | Unmated | Mated | Unmated |
| Sea Level | 1300 | 1300 | 1000 | 1000 | 1800 | 1800 | 2300 | 2300 |
| 50,000 ft. | 800 | 550 | 600 | 400 | 1000 | 600 | 1000 | 800 |
| 70,000 ft. | 800 | 350 | 600 | 260 | 1000 | 400 | 1000 | 500 |
| 100,000 ft. | 800 | 200 | 600 | 200 | 1000 | 200 | 1000 | 200 |

Test voltage, AC (rms), work voltage to be determined by application

## Test Data

| Test Description | Parameters |
|---|---|
| Durability | 500 cycles of mating and unmating, 250 cycles for Series II with spring fingers |
| Temperature Range | Class F, N; - 65ºC (-85ºF) to + 200ºC (+392ºF) Class A; - 65ºC (-85ºF) to + 150ºC (+302ºF)<br>Class B,W: - 65ºC (-85ºF) to + 175ºC (+347ºF) |
| Vibration | Mated connectors are vibrated with weights to simulate rear accessory loads to the following levels:<br>Sine Vibration: Up to 60 G's - Series I & III (at rated temperature - Series III)<br>Not applicable for Series II.<br>Random Vibration: 43.7 Grms at rated temperature - Series III<br>49.5 Grms at Ambient Temperature - Series I & III<br>43.7 Grms at Ambient Temperature - Series II |
| EMI Shielding Effectiveness | Class F: EMI leakage attenuation, greater than 90dB at 100Mhz, greater than 65dB at 10 GHz. Shell to shell conductivity, 1.0 millivolt max. resistance.<br>Class W: EMI leakage attenuation, greater than 90dB at 100 MHz, greater than 50dB at 10 GHz. Shell to shell conductivity, 2.5 millivolt max. |
| Corrosion Resistant | Class B, W, and Z will withstand 500 hours salt spray.<br>Class A, F, N, will withstand 48 hours salt spray. |
| Fluid Immersion | Connectors are fluid resistant to many fuels, solvents, coolants and oils. |
| High Impact Shock | Mated conectors terminated with MIL-C-915 cable and environmentally sealed backshells will withstand high impact shock per MIL-S-901. Applicable to Series I & III only. |
| Altitude | Designed to operate between sea level and 100,000 ft. above sea level. |
| Other Environments | Mated connectors shall withstand sand and dust per method 110 of MIL-STD-202 and be ice resistant. Applicable to Series I & III only. |

NOTE: For hermetic standard or test data please consult ITT.

## Insert Availability and Identification

*DISCLAIMER: Our facility is not currently certified by the DLA and this product is not covered by the QPL/QML. Mil-Spec part numbers are only for cross reference to the Commercial Equivalent.*

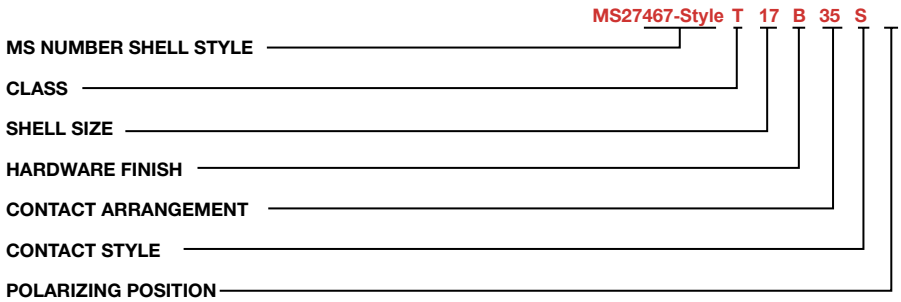
| Series II | Series I & III | Service Rating | Total Contacts | Contact Size | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | 22D | 20 | 16 | 12 | 8 |
| 8-35 | 9-35 | M | 6 | 6 | | | | |
| 8-98 | 9-98 | I | 3 | | 3 | | | |
| | 11-4 | I | 4 | | 4 | | | |
| 10-5 | 11-5 | I | 5 | | 5 | | | |
| 10-35 | 11-35 | M | 13 | 13 | | | | |
| 10-98 | 11-98 | I | 6 | | 6 | | | |
| 10-99 | 11-99 | I | 7 | | 7 | | | |
| 12-3 | | II | 3 | | | 3 | | |
| 12-4 | 13-4 | I | 4 | | | 4 | | |
| 12-8 | 13-8 | I | 8 | | 8 | | | |
| 12-35 | 13-35 | M | 22 | 22 | | | | |
| 12-98 | 13-98 | I | 10 | | 10 | | | |
| 14-5 | 15-5 | II | 5 | | | 5 | | |
| 14-15 | 15-15 | I | 15 | | 14 | 1 | | |
| 14-18 | 15-18 | I | 18 | | 18 | | | |
| | 15-19 | I | 19 | | 19 | | | |
| 14-35 | 15-35 | M | 37 | 37 | | | | |
| 14-97 | 15-97 | I | 12 | | 8 | 4 | | |
| 16-6 | 17-6 | I | 6 | | | | 6 | |
| 16-8 | 17-8 | II | 8 | | | 8 | | |
| 16-26 | 17-26 | I | 26 | | 26 | | | |
| 16-35 | 17-35 | M | 55 | 55 | | | | |
| 16-99 | 17-99 | I | 23 | | 21 | 2 | | |
| 18-11 | 19-11 | II | 11 | | | 11 | | |
| 18-28 | 19-28 | I | 28 | | 26 | 2 | | |
| 18-30 | 19-30 | I | 30 | | 29 | 1 | | |
| 18-32 | 19-32 | I | 32 | | 32 | | | |
| 18-35 | 19-35 | M | 66 | 66 | | | | |
| | 21-11 | I | 11 | | | | 11 | |
| 20-16 | 21-16 | II | 16 | | | 16 | | |
| 20-35 | 21-35 | M | 79 | 79 | | | | |
| 20-39 | 21-39 | I | 39 | | 37 | 2 | | |
| 20-41 | 21-41 | I | 41 | | 41 | | | |
| | 21-75 | M | 4 | | | | | 4*** |
| 22-21 | 23-21 | II | 21 | | | 21 | | |
| 22-32 | 23-32 | I | 32 | | 32 | | | |
| 22-35 | 23-35 | M | 100 | 100 | | | | |
| 22-53 | 23-53 | I | 53 | | 53 | | | |
| 22-55 | 23-55 | I | 55 | | 55 | | | |
| 24-4 | 25-4 | I | 56 | | 48 | 8 | | |
| | 25-19 | I | 19 | | | | 19 | |
| 24-24 | 25-24 | I | 24 | | | 12 | 12 | |
| 24-29 | 25-29 | I | 29 | | | 29 | | |
| 24-35 | 25-35 | M | 128 | 128 | | | | |
| | 25-37 | I | 37 | | | 37 | | |
| | 25-43 | I | 43 | | 23 | 20 | | |
| | 25-46 | I, Twinax | 46 | | 40 | 4 | | 2*** |
| | 25-8 | Twinax | 8 | | | | | 8*** |
| | 25-20 | N, Coax, Twinax | 30 | | 10 | 13 | 4** | 3*** |
| | 25-42 | I, Coax | 42 | | 38 | | | 4* |
| 24-61 | 25-61 | I | 61 | | 61 | | | |
| | 25-64 | I | 64 | 40 | 8 | 10 | 6 | |
| | 25-66 | I | 66 | 53 | 2 | 11 | | |

* Coax for RG-180 cables
** Coax for RG-174, -179, or -316 cables
*** Twinax for M17/176-00002 cables
(check factory for other cable applications)

## How To Order

### Military Nomenclature

*DISCLAIMER: Our facility is not currently certified by the DLA and this product is not covered by the QPL/QML. Mil-Spec part numbers are only for cross reference to the Commercial Equivalent.*




**MS NUMBER SHELL STYLE**
- MS27466 - Wall Mounting Receptacle
- MS27468 - Jam Nut Receptacle
- MS27467 - Grounded Plug
- MS27656 - Wall Mounting Receptacle (back panel mounting)
- MS27505 - Box Mounting Receptacle (back panel) (Class E)

**CLASS**
- E - Inactive for new design. Superseded by Class T.
- G - Environmental resistant Space Grade
- P - Environment - resistant with straight potting cup accessories
- T - Environment - resistant with accessory threads and teeth, except MS27505 (without rear accessory) (Class T not applicable to MS27505)

**SHELL SIZE**
9, 11, 13, 15, 17, 19, 21, 23, and 25

**HARDWARE FINISH STANDARD**
- A - Bright cadmium over electroless nickel plate, -85ºF to +302ºF (-65ºC to +150ºC)
- B - Olive drab cadmium over electroless nickel plate, -85ºF to +347ºF (-65ºC to +175ºC)
- F - Electroless nickel, -85ºF to +392ºF (-65ºC to +200ºC)

**CONTACT ARRANGEMENT**
See pages 22 and 23.

**CONTACT STYLE**
- P - Pin
- S - Socket
- *A - Less Pin Contact
- *B - Less Socket Contact

*Used only when other than power contacts are to be installed (i.e. shielded, thermocouple, etc.)

**POLARIZING POSITION**
A,B,C, and D. (No letters required for normal). See page 21.

Note: To order MS connectors less standard power contacts, purchase order must state "Less Contacts"

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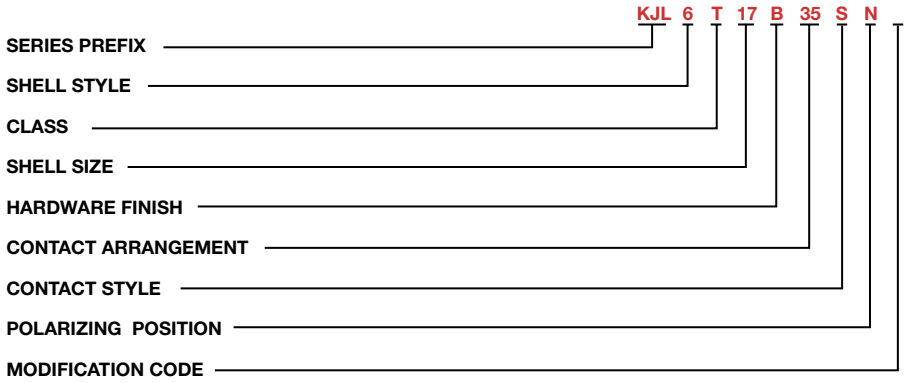
### Cannon Nomenclature




**SERIES PREFIX**
KJL - Series I-Scoop proof

**SHELL STYLE**
- 0 - Wall mounting receptacle
- 3 - Wall mounting receptacle (back panel mounting)
- 4 - Thru bulkhead receptacle*
- 5 - Box mounting receptacle (back panel mounting)
- 6 - Straight plug, grounded
- 7 - Jam nut receptacle

**CLASS**
- E - Inactive for new design. Superseded by Class T.
- G - Environmental resistant - Space Grade
- F - Environment - resistant with strain relief accessory
- P - Environment - resistant with straight potting cup accessory
- T - Environment - resistant (without rear accessory) (Class T not applicable to KJL5)

*Consult factory for availability

**SHELL SIZE**
9,11,13,15,17,19,21,23 and 25

**HARDWARE FINISH STANDARD**
- A - Bright cadmium over electroless nickel plate, -85ºF to +302ºF (-65ºC to +150ºC)
- B - Olive drab cadmium over electroless nickel plate, -85ºF to +347ºF (-65ºC to + 175ºC)
- N - Electroless nickel, -85ºF to +392ºF (-65ºC to +200ºC)
- Z - Zinc Nickel, Black
- - - (Dash) When using a finish modification code

**CONTACT ARRANGEMENT**
See pages 22 and 23.

**CONTACT STYLE**
- P - Pin
- S - Socket
- PS - Pin-Socket (Shell style 4 only)

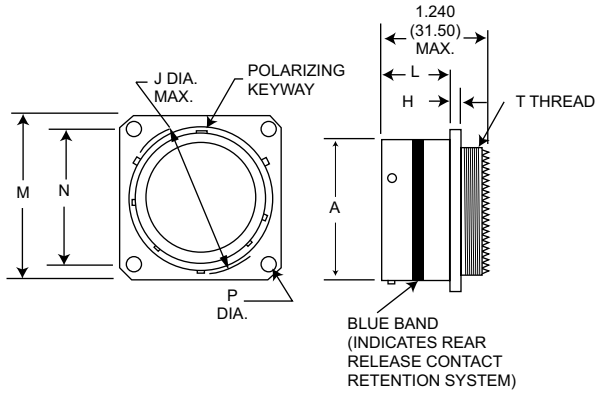
**POLARIZING POSITION**
N (normal), A, B, C, D. See page 21.

**MODIFICATION CODE**
- L - Less contacts, not stamped on connector
- 16 - Outgassed NASA space graded connector
- 17 - Clinch Nuts installed 4-40 Size 9-21, 6-32 Size 23-25)
- 27 - Outgassed, standard connector
- A296 - Black Zinc Cobalt, RoHS Compliant

## Wall Mounting Receptacle

**MS27466-Style**
**(MS service class E, P, T)**

**KJL0**



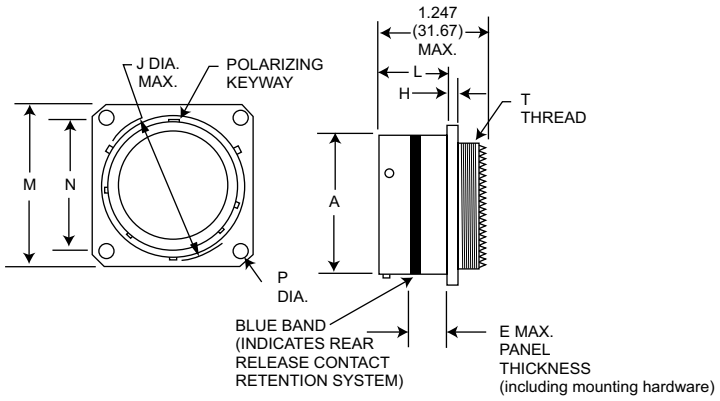

NOTE: For backshell dimensions and configurations, see pages 29 and 31.

| Shell Size | A Dia. Max. | H Max. | J Dia. Max. | L Max. | M Max. | N T.P. | P Dia. Max. | T Thread | Overall Length With Backshells F Cable Clamp | Overall Length With Backshells P Potting Max. |
|---|---|---|---|---|---|---|---|---|---|---|
| 9 | .573 (14.55) | .100 (2.54) | .662 (16.81) | .632 (16.05) | .958 (24.33) | .719 (18.26) | .138 (3.51) | 7/16-28UNEF-2A | 1.846 (46.89) | 1.451 (36.86) |
| 11 | .701 (17.81) | .100 (2.54) | .810 (20.57) | .632 (16.05) | 1.051 (26.70) | .812 (20.62) | 138 (3.51) | 9/16-24UNEF-2A | 1.846 (46.89) | 1.451 (36.86) |
| 13 | .851 (21.62) | .100 (2.54) | .960 (24.38) | .632 (16.05) | 1.145 (29.08) | .906 (23.01) | .138 (3.51) | 11/16-24UNEF-2A | 1.846 (46.89) | 1.451 (36.86) |
| 15 | .976 (24.79) | .100 (2.54) | 1.085 (27.56) | .632 (16.05) | 1.239 (31.47) | .969 (24.61) | .138 (3.51) | 13/16-20UNEF-2A | 1.846 (46.89) | 1.451 (36.86) |
| 17 | 1.101 (27.97) | .100 (2.54) | 1.210 (30.73) | .632 (16.05) | 1.332 (33.83) | 1.062 (26.97) | .138 (3.51) | 15/16-20UNEF-2A | 1.966 (49.94) | 1.451 (36.86) |
| 19 | 1.208 (30.68) | .100 (2.54) | 1.317 (33.45) | .632 (16.05) | 1.458 (37.03) | 1.156 (29.36) | .138 (3.51) | 1-1/16-18UNEF-2A | 1.966 (50.70) | 1.451 (36.86) |
| 21 | 1.333 (33.86) | .130 (3.30) | 1.442 (36.63) | .602 (15.29) | 1.582 (40.18) | 1.250 (31.75) | .138 (3.51) | 1-3/16-18UNEF-2A | 1.966 (50.70) | 1.451 (36.86) |
| 23 | 1.458 (37.03) | .130 (3.30) | 1.567 (39.80) | .602 (15.29) | 1.708 (43.38) | 1.375 (34.93) | .157 (3.99) | 1-5/16-18UNEF-2A | 1.966 (50.70) | 1.451 (36.86) |
| 25 | 1.583 (40.21) | .130 (3.30) | 1.692 (42.98) | .602 (15.29) | 1.832 (46.53) | 1.500 (38.10) | .157 (3.99) | 1-7/16-18UNEF-2A | 1.966 (50.70) | 1.451 (36.86) |

## Wall Mounting Receptacle (Back Panel)

**MS27656-Style**
**(MS service class E, P, T)**

**KJL3**




NOTE: For backshell dimensions and configurations, see pages 29 and 31.

| Shell Size | A Dia. Max. | E Max. | H Max. | J Dia. Max. | L Max. | M Max. | N T.P. | P Dia. Max. | T Thread | Overall Length With Backshells F Cable Clamp | Overall Length With Backshells P Potting Max. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9 | .573 (14.55) | .234 (5.94) | .100 (2.54) | .662 (16.81) | .820 (20.83) | .958 (24.33) | .719 (18.26) | .138 (3.51) | 7/16-28UNEF-2A | 1.805 (45.85) | 1.410 (35.81) |
| 11 | .701 (17.81) | .234 (5.94) | .100 (2.54) | .810 (20.57) | .820 (20.83) | 1.051 (26.70) | .812 (20.62) | 138 (3.51) | 9/16-24UNEF-2A | 1.805 (45.85) | 1.410 (35.81) |
| 13 | .851 (21.62) | .234 (5.94) | .100 (2.54) | .960 (24.38) | .820 (20.83) | 1.145 (29.08) | .906 (23.01) | .138 (3.51) | 11/16-24UNEF-2A | 1.805 (45.85) | 1.410 (35.81) |
| 15 | .976 (24.79) | .234 (5.94) | .100 (2.54) | 1.085 (27.56) | .820 (20.83) | 1.239 (31.47) | .969 (24.61) | .138 (3.51) | 13/16-20UNEF-2A | 1.805 (45.85) | 1.410 (35.81) |
| 17 | 1.101 (27.97) | .234 (5.94) | .100 (2.54) | 1.210 (30.73) | .820 (20.83) | 1.332 (33.83) | 1.062 (26.97) | .138 (3.51) | 15/16-20UNEF-2A | 1.935 (48.90) | 1.410 (35.81) |
| 19 | 1.208 (30.68) | .234 (5.94) | .100 (2.54) | 1.317 (33.45) | .820 (20.83) | 1.458 (37.03) | 1.156 (29.36) | .138 (3.51) | 1-1/16-18UNEF-2A | 1.955 (49.66) | 1.410 (35.81) |
| 21 | 1.333 (33.86) | .204 (5.18) | .130 (3.30) | 1.442 (36.63) | .790 (20.07) | 1.582 (40.18) | 1.250 (31.75) | .138 (3.51) | 1-3/16-18UNEF-2A | 1.955 (49.66) | 1.410 (35.81) |
| 23 | 1.458 (37.03) | .204 (5.18) | .130 (3.30) | 1.567 (39.80) | .790 (20.07) | 1.708 (43.38) | 1.375 (34.93) | .157 (3.99) | 1-5/16-18UNEF-2A | 1.955 (49.66) | 1.410 (35.81) |
| 25 | 1.583 (40.21) | .193 (4.90) | .130 (3.30) | 1.692 (42.98) | .790 (20.07) | 1.832 (46.53) | 1.500 (38.10) | .157 (3.99) | 1-7/16-18UNEF-2A | 1.955 (49.66) | 1.410 (35.81) |

Performance Specifications-Pages 3 and 4. Contacts, Sealing Plugs, Assembly Tools - Pages 24, 31, and 32. Contact Arrangements - Pages 22 and 23.

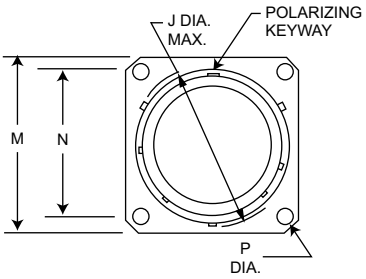
Dimensions shown in inches (mm)
Specifications and dimensions subject to change

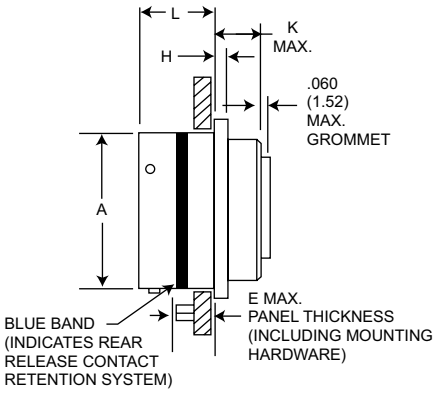
***DISCLAIMER:** Our facility is not currently certified by the DLA and this product is not covered by the QPL/QML. Mil-Spec part numbers are only for cross reference to the Commercial Equivalent.*

## Box Mounting Receptacle (Back Panel)

**MS27505E-Style**
**(MS service class E)**

**KJL5E**



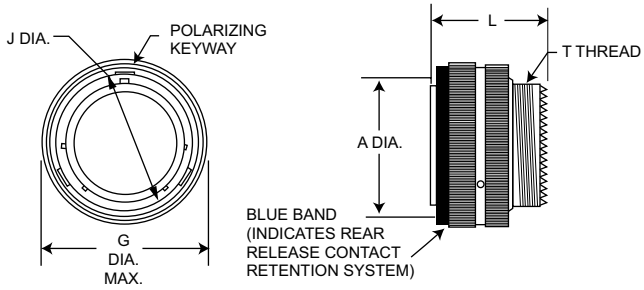

NOTE: This connector does not accommodate backshells.

| Shell Size | A Dia. Max. | E Max. | H Max. | J Dia. Max. | K Max. | L Max. | M Max. | N T.P. | P Dia. Max. |
|---|---|---|---|---|---|---|---|---|---|
| 9 | .573 (14.55) | .234 (5.94) | .100 (2.54) | .662 (16.81) | .219 (5.56) | .820 (20.83) | .958 (24.33) | .719 (18.26) | .138 (3.51) |
| 11 | .701 (17.81) | .234 (5.94) | .100 (2.54) | .810 (20.57) | .219 (5.56) | .820 (20.83) | 1.051 (26.70) | .812 (20.62) | 138 (3.51) |
| 13 | .851 (21.62) | .234 (5.94) | .100 (2.54) | .960 (24.38) | .219 (5.56) | .820 (20.83) | 1.145 (29.08) | .906 (23.01) | .138 (3.51) |
| 15 | .976 (24.79) | .234 (5.94) | .100 (2.54) | 1.085 (27.56) | .219 (5.56) | .820 (20.83) | 1.239 (31.47) | .969 (24.61) | .138 (3.51) |
| 17 | 1.101 (27.97) | .234 (5.94) | .100 (2.54) | 1.210 (30.73) | .219 (5.56) | .820 (20.83) | 1.332 (33.83) | 1.062 (26.97) | .138 (3.51) |
| 19 | 1.208 (30.68) | .234 (5.94) | .100 (2.54) | 1.317 (33.45) | .219 (5.56) | .820 (20.83) | 1.458 (37.03) | 1.156 (29.36) | .138 (3.51) |
| 21 | 1.333 (33.86) | .204 (5.18) | .130 (3.30) | 1.442 (36.63) | .250 (6.35) | .790 (20.07) | 1.582 (40.18) | 1.250 (31.75) | .138 (3.51) |
| 23 | 1.458 (37.03) | .204 (5.18) | .130 (3.30) | 1.567 (39.80) | .250 (6.35) | .790 (20.07) | 1.708 (43.38) | 1.375 (34.93) | .157 (3.99) |
| 25 | 1.583 (40.21) | .193 (4.90) | .130 (3.30) | 1.692 (42.98) | .250 (6.35) | .790 (20.07) | 1.832 (46.53) | 1.500 (38.10) | .157 (3.99) |

## Straight Plug Grounded

**MS2746-Style**
**(MS service class E, P, T)**

**KJL6**




NOTE: For backshell dimensions and configurations, see pages 29 and 31.

| Shell Size | A Max. | G Dia. Max. | J Dia. Max. | (Class T) L Max. | T Thread | Overall Length With Backshells F Cable Clamp | P Potting Max. |
|---|---|---|---|---|---|---|---|
| 9 | .585 (14.86) | .859 (21.82) | .483 (12.27) | 1.234 (31.34) | 7/16-28UNEF-2A | 1.793 (45.54) | 1.671 (42.44) |
| 11 | .717 (18.21) | .984 (24.99) | .611 (15.52) | 1.234 (31.34) | 9/16-24UNEF-2A | 1.793 (45.54) | 1.671 (42.44) |
| 13 | .866 (22.00) | 1.156 (29.36) | .760 (19.30) | 1.234 (31.34) | 11/16-24UNEF-2A | 1.793 (45.54) | 1.671 (42.44) |
| 15 | .990 (25.15) | 1.281 (32.54) | .885 (22.48) | 1.234 (31.34) | 13/16-20UNEF-2A | 1.793 (45.54) | 1.671 (42.44) |
| 17 | 1.115 (28.32) | 1.406 (35.71) | 1.010 (25.65) | 1.234 (31.34) | 15/16-20UNEF-2A | 1.913 (48.59) | 1.671 (42.44) |
| 19 | 1.222 (31.04) | 1.516 (38.51) | 1.115 (28.32) | 1.234 (31.34) | 1-1/16-18UNEF-2A | 1.943 (49.35) | 1.671 (42.44) |
| 21 | 1.347 (34.21) | 1.641 (41.68) | 1.240 (31.50) | 1.234 (31.34) | 1-3/16-18UNEF-2A | 1.943 (49.35) | 1.766 (44.86) |
| 23 | 1.472 (37.39) | 1.766 (44.86) | 1.365 (34.67) | 1.234 (31.34) | 1-5/16-18UNEF-2A | 1.943 (49.35) | 1.766 (44.86) |
| 25 | 1.597 (40.56) | 1.891 (48.03) | 1.490 (37.85) | 1.234 (31.34) | 1-7/16-18UNEF-2A | 1.943 (49.35) | 1.766 (44.86) |

Performance Specifications-Pages 3 and 4.
Contacts, Sealing Plugs, Assembly Tools - Pages 24, 31 and 32.
Contact Arrangements - Pages 22 and 23.

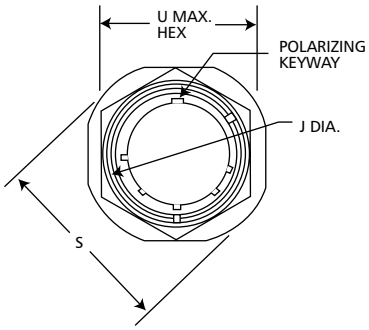
***DISCLAIMER:** Our facility is not currently certified by the DLA and this product is not covered by the QPL/QML. Mil-Spec part numbers are only for cross reference to the Commercial Equivalent.*

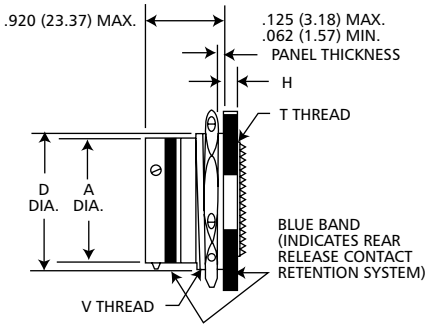
Dimensions shown in inches (mm)
Specifications and dimensions subject to change

## Jam Nut Receptacle

MS27468-Style
(MS service class E,P,T)

KJL7



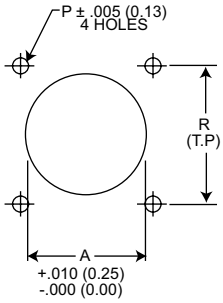

NOTE: For backshell dimensions and configurations, see pages 29 and 31.

| Shell Size | A Dia. Max. | D Max. | H Max. | J Dia. Max. | S Dia. Max. | T Thread | U Max. Hex. | V Thread Class 2A | Overall Length With Backshells F Cable Clamp | Overall Length With Backshells P Potting Max. |
|---|---|---|---|---|---|---|---|---|---|---|
| 9 | .573 (14.55) | .655 (16.64) | .120 (3.05) | .662 (16.81) | 1.204 (30.58) | 7/16-28UNEF-2A | .892 (22.66) | 11/16-24UNEF | 1.846 (46.89) | 1.451 (36.86) |
| 11 | .701 (17.81) | .755 (19.18) | .120 (3.05) | .810 (20.57) | 1.391 (35.33) | 9/16-24UNEF-2A | 1.017 (25.83) | 13/16-24UNEF | 1.846 (46.89) | 1.451 (36.86) |
| 13 | .851 (21.62) | .942 (23.93) | .120 (3.05) | .960 (24.38) | 1.516 (35.51) | 11/16-24UNEF-2A | 1.205 (30.61) | 1-20UNEF | 1.846 (46.89) | 1.451 (36.86) |
| 15 | .976 (24.79) | 1.066 (27.08) | .120 (3.05) | 1.085 (27.56) | 1.641 (41.68) | 13/16-20UNEF-2A | 1.329 (33.76) | 1-1/8-18UNEF | 1.846 (46.89) | 1.451 (36.86) |
| 17 | 1.101 (27.97) | 1.191 (30.25) | .120 (3.05) | 1.210 (30.73) | 1.766 (44.86) | 15/16-20UNEF-2A | 1.455 (36.96) | 1-1/4-18UNEF | 1.966 (49.94) | 1.451 (36.86) |
| 19 | 1.208 (30.68) | 1.316 (33.43) | .151 (3.84) | 1.317 (33.45) | 1.954 (49.63) | 1-1/16-18UNEF-2A | 1.579 (40.11) | 1-3/8-18UNEF | 1.996 (50.70) | 1.451 (36.86) |
| 21 | 1.333 (33.86) | 1.441 (36.60) | .151 (3.84) | 1.442 (36.63) | 2.078 (52.78) | 1-3/16-18UNEF-2A | 1.705 (43.31) | 1-1/2-18UNEF | 1.996 (50.70) | 1.451 (36.86) |
| 23 | 1.458 (37.03) | 1.566 (39.78) | .151 (3.84) | 1.567 (39.80) | 2.204 (55.98) | 1-5/16-18UNEF-2A | 1.829 (46.46) | 1-5/8-18UNEF | 1.996 (50.70) | 1.451 (36.86) |
| 25 | 1.583 (40.21) | 1.691 (42.95) | .151 (3.84) | 1.692 (42.98) | 2.328 (59.13) | 1-7/16-18UNEF-2A | 20.17 (51.23) | 1-3/4-18UNS | 1.996 (50.70) | 1.451 (36.86) |

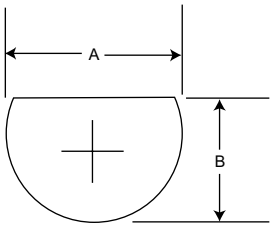
Performance Specifications-Pages 3 and 4.
Contacts, Sealing Plugs, Assembly Tools - Pages 24, 31, and 32.
Contact Arrangements - Pages 22, 23.

## Panel Cutouts

Flange Mounted Receptacles




Jam Nut Receptacles




| Shell Size | A Dia. | P Dia. | (Class T) R | Mtg. Screw | Shell Size | A +.010 (.25) -.000 (.00) | B +.000 (.00) -.010 (.25) |
|---|---|---|---|---|---|---|---|
| 9 | .665 (16.89) | .128 (3.25) | .719 (18.26) | #4 | 9 | .700 (17.78) | .670 (17.02) |
| 11 | .812 (20.62) | .128 (3.25) | .812 (20.62) | #4 | 11 | .825 (20.96) | .771 (19.58) |
| 13 | .965 (24.51) | .128 (3.25) | .906 (23.01) | #4 | 13 | 1.010 (25.65) | .955 (24.26) |
| 15 | 1.085 (27.55) | .128 (3.25) | .969 (24.61) | #4 | 15 | 1.135 (28.83) | 1.085 (27.56) |
| 17 | 1.250 (31.75) | .128 (3.25) | 1.062 (26.97) | #4 | 17 | 1.260 (32.00) | 1.210 (30.73) |
| 19 | 1.322 (33.57) | .128 (3.25) | 1.156 (29.36) | #4 | 19 | 1.385 (35.18) | 1.335 (33.91) |
| 21 | 1.447 (36.75) | .128 (3.25) | 1.250 (31.75) | #4 | 21 | 1.510 (38.35) | 1.460 (37.08) |
| 23 | 1.569 (39.85) | .154 (3.91) | 1.375 (34.93) | #6 | 23 | 1.635 (41.53) | 1.585 (40.26) |
| 25 | 1.703 (43.25) | .150 (3.81) | 1.500 (38.10) | #6 | 25 | 1.760 (44.70) | 1.710 (43.43) |

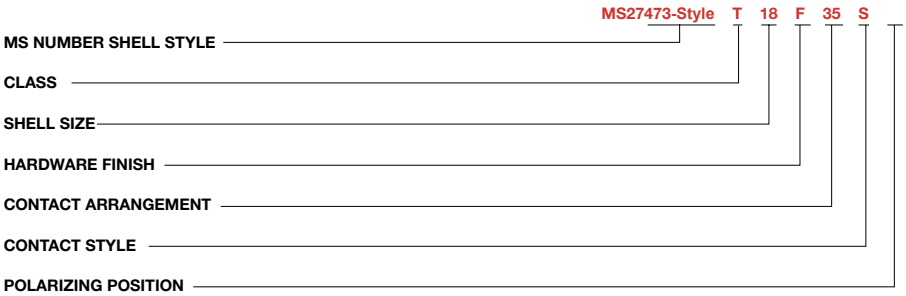
Dimensions shown in inches (mm)
Specifications and dimensions subject to change

***DISCLAIMER:** Our facility is not currently certified by the DLA and this product is not covered by the QPL/QML. Mil-Spec part numbers are only for cross reference to the Commercial Equivalent.*

## How To Order

### Military Nomenclature

*DISCLAIMER: Our facility is not currently certified by the DLA and this product is not covered by the QPL/QML. Mil-Spec part numbers are only for cross reference to the Commercial Equivalent.*




**MS NUMBER SHELL STYLE**
- MS27472 - Wall Mounting Receptacle
- MS27473 - Straight Plug
- MS27474 - Jam Nut Receptacle
- MS27484 - Grounded Plug
- MS27497 - Wall Mounting Receptacle (back panel mounting)
- MS27513 - Box Mounting Receptacle
- MS27499 - Box Mounting Receptacle (Class E)
- MS27508 - Box Mounting (back panel mounting) (Class E)

**CLASS**
- E - Environment - resistant with rear accessory (without strain relief)
- G - Environmental - resistant wall mount and jam nut receptacle and plug types. Space Grade.
- P - Enironment - resistant with straight potting cup accessories
- T - Environment - resistant (without rear accessory). (Class T not applicable to MS27499, MS27513, and MS27508.)

**SHELL SIZE**
8, 10, 12, 14, 16, 18, 20, 22, 24.

**HARDWARE FINISH STANDARD**
- A - Bright cadmium over electroless nickel plate, - 85ºF to + 302ºF (- 65ºC to + 150ºC)
- B - Olive drab cadmium over electoless nickel plate, - 85ºF to + 347ºF (- 65ºC to + 175ºC)
- F - Electroless nickel, - 85ºF to + 392ºF (-65ºC to + 200ºC)

**CONTACT ARRANGEMENT**
See pages 22 and 23.

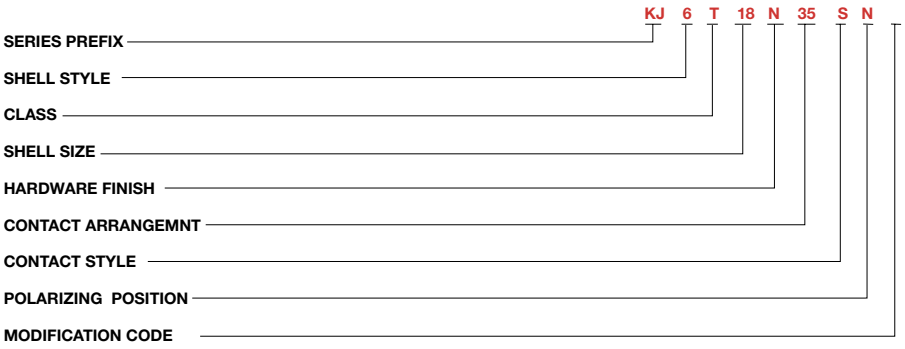
**CONTACT STYLE**
- P - Pin
- S - Socket
- *A - Less Pin Contact
- *B - Less Socket Contact

*Used only when other than power contacts are to be installed (i.e. shielded, thermocouple, etc.)

**POLARIZING POSITION**
A, B, C, and D (no letter required for normal).
See page 21.

Note: To order MS connectors less standard power contacts, purchase order must state "Less Contacts".

### ITT Nomenclature




Note KJ supplied with exact complement of contacts.

**SERIES PREFIX**
KJ - Series II - Low Profile

**SHELL STYLE**
- 0 - Wall mounting receptacle
- 2 - Box mounting receptacle
- 3 - Wall mounting receptacle (back panel mounting)
- 5 - Box mounting receptacle (back panel mounting)
- 6 - Straight plug
- G6 - Straight plug, grounded
- 7 - Jam nut receptacle

**CLASS**
- E - Environment - resistant with rear accessory (without strain relief)
- F - Environment - resistant with strain relief acccessory
- G - Environmental - resistant wall mount and jam nut receptacle and plug type. Space Grade.
- P - Environment - resistant with straight potting cup accessory
- R - Environment - resistant with full grommet seal without rear accessory; shell styles 2 and 5 only
- T - Environment - resistant (without rear accessory). (Class T not applicable to KJ2E, KJ2R, KJ5E and KJ5R.)

**SHELL SIZE**
8, 10, 12, 14, 16, 18, 20, 22, and 24.

**HARDWARE FINISH STANDARD**
- A - Bright cadmium over electroless nickel plate, - 85ºF to + 302ºF (- 65ºC to + 150ºC)
- B - Olive drab cadmium over electroless nickel plate, - 85ºF to + 347ºF (- 65ºC to + 175˚C)
- N - Electroless nickel, - 85ºF to + 392ºF (-65ºC to + 200ºC)
- Z - Zinc Nickel, Black
- - - (Dash) When using a finish modification code

**CONTACT ARRANGMENT**
See pages 22 and 23.

**CONTACT STYLE**
- P - Pin
- S - Socket

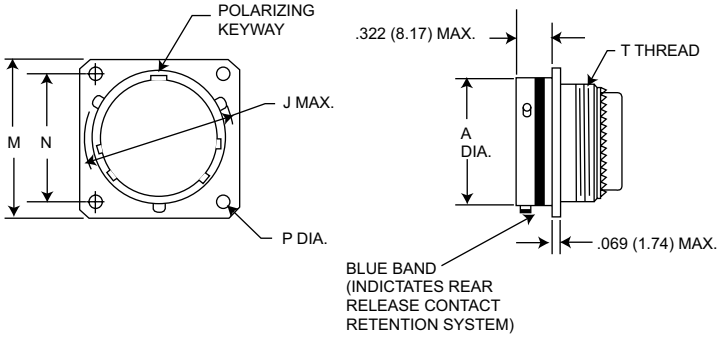
**POLARIZING POSITION**
N (normal), A, B, C, D, see page 21.

**MODIFICATION CODE**
- L - Less contacts, not stamped on connector
- 16 - Outgassed NASA space graded connector
- 17 - Clinch Nuts installed (4-40 Size 9-21)
- 27 - Outgassed, standard connector
- A296 - Black ZInc Cobalt, RoHS Compliant

## Wall Mounting Receptacle

**MS27472-Style**
**(MS service class E, P, T)**

**KJ0**



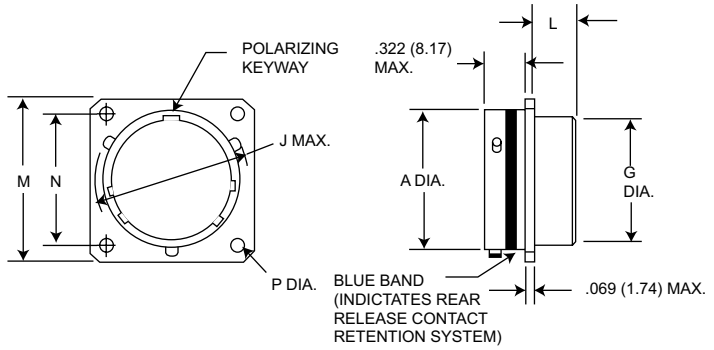

NOTE: For backshell dimensions and configurations, see pages 29 and 31.

| Shell Size | A Dia. Max. | J Dia. Max. | M Max. | N T.P | P +.005 (0.13) -.010 (0.25) | T Thread | Overall length With Backshells E Straight | F Cable Clamp | P Potting Max. |
|---|---|---|---|---|---|---|---|---|---|
| 8 | .474 (12.04) | .563 (14.30) | .828 (21.03) | .594 (15.09) | .125 (3.18) | 7/16-28UNEF-2A | .850 (21.59) | 1.555 (39.50) | 1.020 (25.91) |
| 10 | .591 (15.01) | .680 (17.27) | .954 (24.23) | .719 (18.26) | .125 (3.18) | 9/16-24UNEF-2A | .850 (21.59) | 1.555 (39.50) | 1.020 (25.91) |
| 12 | .751 (19.08) | .859 (21.82) | 1.047 (26.59) | .812 (20.62) | .125 (3.18) | 11/16-24UNEF-2A | .850 (21.59) | 1.555 (39.50) | 1.020 (25.91) |
| 14 | .876 (22.25) | .984 (24.99) | 1.141 (28.98) | .906 (23.01) | .125 (3.18) | 13/16-20UNEF-2A | .850 (21.59) | 1.790 (45.47) | 1.020 (25.91) |
| 16 | 1.001 (25.43) | 1.108 (28.14) | 1.234 (31.34) | .969 (24.61) | .125 (3.18) | 15/16-20UNEF-2A | .850 (21.59) | 1.790 (45.47) | 1.020 (25.91) |
| 18 | 1.126 (28.60) | 1.233 (31.32) | 1.328 (33.73) | 1.062 (26.97) | .125 (3.18) | 1-1/16-18UNEF-2A | .850 (21.59) | 1.790 (45.47) | 1.020 (25.91) |
| 20 | 1.251 (31.78) | 1.358 (34.49) | 1.453 (36.91) | 1.156 (27.36) | .125 (3.18) | 1-3/16-18UNEF-2A | .850 (21.59) | 1.790 (45.47) | 1.020 (25.91) |
| 22 | 1.376 (34.95) | 1.483 (37.67) | 1.578 (39.08) | 1.250 (31.76) | .125 (3.18) | 1-5/16-18UNEF-2A | .850 (21.59) | 1.930 (49.02) | 1.020 (25.91) |
| 24 | 1.501 (38.13) | 1.610 (40.89) | 1.703 (43.26) | 1.375 (34.92) | .152 (3.86) | 1-7/16-18UNEF-2A | .850 (21.59) | 1.900 (48.26) | 1.080 (27.43) |

## Box Mounting Receptacle

**MS27499E-Style**
**(MS service class E)**

**KJ2E**




NOTE: This connector does not accommodate backshells

| Shell Size | A Dia. Max. | G Dia. Max. | J Dia. Max. | L Max. | M Max. | N T.P. | P +.005 (0.13) -.010 (0.25) |
|---|---|---|---|---|---|---|---|
| 8 | .474 (12.04) | .421 (10.69) | .563 (14.30) | .312 (7.92) | .828 (21.03) | .594 (15.09) | .125 (3.18) |
| 10 | .591 (15.01) | .542 (13.77) | .680 (17.27) | .312 (7.92) | .954 (24.23) | .719 (18.26) | .125 (3.18) |
| 12 | .751 (19.08) | .667 (16.94) | .859 (21.82) | .312 (7.92) | 1.047 (26.59) | .812 (20.62) | .125 (3.18) |
| 14 | .876 (22.25) | .791 (20.09) | .984 (24.99) | .312 (7.92) | 1.141 (28.98) | .906 (23.01) | .125 (3.18) |
| 16 | 1.001 (25.43) | .916 (23.27) | 1.108 (28.14) | .312 (7.92) | 1.234 (31.34) | .969 (24.61) | .125 (3.18) |
| 18 | 1.126 (28.60) | 1.034 (26.26) | 1.233 (31.32) | .312 (7.92) | 1.328 (33.73) | 1.062 (26.97) | .125 (3.18) |
| 20 | 1.251 (31.78) | 1.158 (29.41) | 1.358 (34.49) | .312 (7.92) | 1.453 (36.81) | 1.156 (27.36) | .125 (3.18) |
| 22 | 1.376 (33.95) | 1.283 (32.59) | 1.483 (37.67) | .312 (7.92) | 1.578 (40.08) | 1.250 (31.75) | .125 (3.18) |
| 24 | 1.501 (38.13) | 1.408 (35.76) | 1.610 (40.89) | .312 (7.92) | 1.703 (43.26) | 1.375 (34.93) | .152 (3.86) |

Performance Specifications-Pages 3 and 4.
Contacts, Sealing Plugs, Assembly Tools - Pages 24, 31, and 32.
Contact Arrangements - Pages 22 and 23.

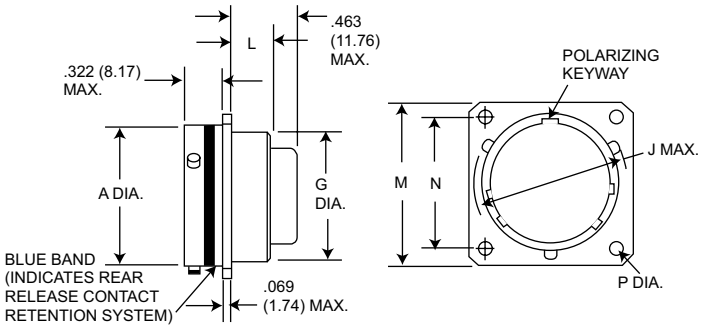
Dimensions shown in inches (mm)
Specifications and dimensions subject to change

**DISCLAIMER:* *Our facility is not currently certified by the DLA and this product is not covered by the QPL/QML. Mil-Spec part numbers are only for cross reference to the Commercial Equivalent.*

## Box Mounting Receptacle

**MS27513E-Style**
**(MS service class E)**

**KJ2R**



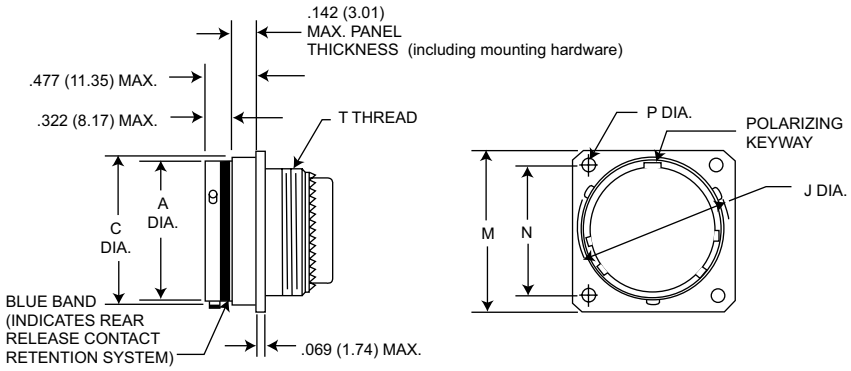

NOTE: This connector does not accommodate backshells

| Shell Size | A Dia. Max. | G Dia. Max. | J Dia. Max. | L Max. | M Max. | N T.P. | P +.005 (0.13) -.010 (0.25) |
|---|---|---|---|---|---|---|---|
| 8 | .474 (12.04) | .421 (10.69) | .563 (14.30) | .312 (7.92) | .828 (21.03) | .594 (15.09) | .125 (3.18) |
| 10 | .591 (15.01) | .542 (13.77) | .680 (17.27) | .312 (7.92) | .954 (24.23) | .719 (18.26) | .125 (3.18) |
| 12 | .751 (19.08) | .667 (16.94) | .859 (21.82) | .312 (7.92) | 1.047 (26.59) | .812 (20.62) | .125 (3.18) |
| 14 | .876 (22.25) | .791 (20.09) | .984 (24.99) | .312 (7.92) | 1.141 (28.98) | .906 (23.01) | .125 (3.18) |
| 16 | 1.001 (25.43) | .916 (23.27) | 1.108 (28.14) | .312 (7.92) | 1.234 (31.34) | .969 (24.61) | .125 (3.18) |
| 18 | 1.126 (28.60) | 1.034 (26.26) | 1.233 (31.32) | .312 (7.92) | 1.328 (33.73) | 1.062 (26.97) | .125 (3.18) |
| 20 | 1.251 (31.78) | 1.158 (29.41) | 1.358 (34.49) | .312 (7.92) | 1.453 (36.81) | 1.156 (27.36) | .125 (3.18) |
| 22 | 1.376 (33.95) | 1.283 (32.59) | 1.483 (27.67) | .312 (7.92) | 1.578 (40.08) | 1.250 (31.75) | .125 (3.18) |
| 24 | 1.501 (38.13) | 1.408 (35.76) | 1.610 (40.89) | .312 (7.92) | 1.703 (43.26) | 1.375 (34.93) | .152 (3.85) |

## Wall Mounting Receptacle

**MS27497-Style**
**(MS service class E, P, T)**

**KJ3**




NOTE: For backshell dimensions and configurations, see pages 29 and 31.

| Shell Size | A Dia. Max. | C Dia. Max. | J Dia. Max. | M Max. | N T.P | P +.005 (0.13) -.010 (0.25) | T Thread | Overall Length With Backshells E Straight | F Cable Clamp | P Potting Max. |
|---|---|---|---|---|---|---|---|---|---|---|
| 8 | .474 (12.04) | .522 (13.26) | .563 (14.30) | .828 (21.03) | .594 (15.09) | .125 (3.18) | 7/16-28UNEF-2A | .855 (21.72) | 1.570 (39.88) | 1.020 (25.91) |
| 10 | .591 (15.01) | .639 (16.23) | .680 (17.27) | .954 (24.23) | .719 (18.26) | .125 (3.18) | 9/16-24UNEF-2A | .855 (21.72) | 1.570 (39.88) | 1.020 (25.91) |
| 12 | .751 (19.08) | .808 (20.52) | .859 (21.82) | 1.047 (26.59) | .812 (20.62) | .125 (3.18) | 11/16-24UNEF-2A | .855 (21.72) | 1.570 (39.88) | 1.020 (25.91) |
| 14 | .876 (22.25) | .935 (23.75) | .984 (24.99) | 1.141 (28.98) | .906 (23.01) | .125 (3.18) | 13/16-20UNEF-2A | .855 (21.72) | 1.780 (45.21) | 1.020 (25.91) |
| 16 | 1.001 (25.43) | 1.058 (26.87) | 1.108 (28.14) | 1.234 (31.34) | .969 (24.61) | .125 (3.18) | 15/16-20UNEF-2A | .855 (21.72) | 1.780 (45.21) | 1.020 (25.91) |
| 18 | 1.126 (28.60) | 1.183 (30.05) | 1.233 (31.32) | 1.328 (33.73) | 1.062 (26.97) | .125 (3.18) | 1-1/16-18UNEF-2A | .855 (21.72) | 1.780 (45.21) | 1.020 (25.91) |
| 20 | 1.251 (31.78) | 1.308 (33.22) | 1.358 (34.49) | 1.453 (36.91) | 1.156 (29.36) | .125 (3.18) | 1-3/16-18UNEF-2A | .855 (21.72) | 1.780 (45.21) | 1.020 (25.91) |
| 22 | 1.376 (34.95) | 1.433 (36.40) | 1.483 (37.67) | 1.578 (40.08) | 1.250 (31.75) | .125 (3.18) | 1-5/16-18UNEF-2A | .855 (21.72) | 1.960 (49.78) | 1.020 (25.91) |
| 24 | 1.501 (38.13) | 1.568 (39.83) | 1.610 (40.89) | 1.703 (43.26) | 1.375 (34.93) | .152 (3.86) | 1-7/16-18UNEF-2A | .855 (21.72) | 1.960 (49.78) | 1.080 (27.43) |

Performance Specifications-Pages 3 and 4.
Contacts, Sealing Plugs, Assembly Tools - Pages 24, 31, and 32.
Contact Arrangements - Pages 22 and 23.

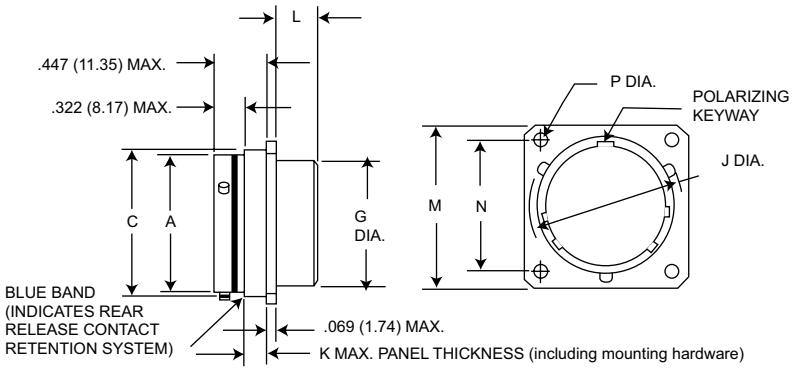
*DISCLAIMER: Our facility is not currently certified by the DLA and this product is not covered by the QPL/QML. Mil-Spec part numbers are only for cross reference to the Commercial Equivalent.

Dimensions shown in inches (mm)
Specifications and dimensions subject to change

## Box Mounting Receptacle (Back Panel)

**(MS service class E)**
**MS27508E-Style**
**(MS service class E)**

KJ5E



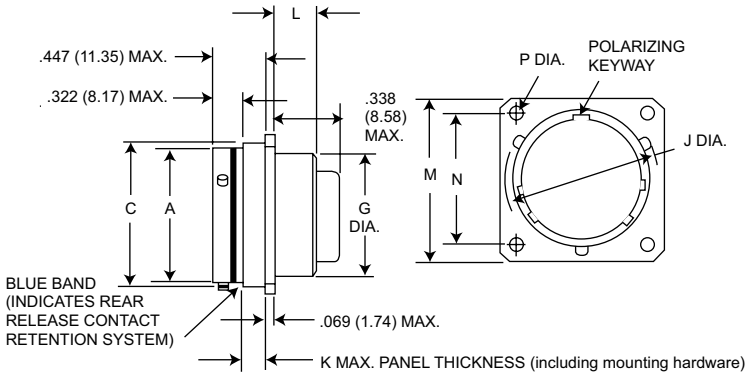

NOTE: This connector does not accommodate backshells

| Shell Size | A Dia. Max. | C Dia. Max. | G Dia. Max. | J Dia. Max. | K Max. | L Max. | M Max. | N T.P | P +.005 (0.13) -.010 (0.25) |
|---|---|---|---|---|---|---|---|---|---|
| 8 | .474 (12.04) | .522 (13.26) | .421 (10.69) | .563 (14.30) | .147 (3.73) | .185 (4.70) | .828 (21.03) | .594 (15.09) | .125 (3.18) |
| 10 | .591 (15.01) | .639 (16.23) | .542 (13.77) | .680 (17.27) | .152 (3.86) | .185 (4.70) | .954 (24.23) | .719 (18.26) | .125 (3.18) |
| 12 | .751 (19.08) | .808 (20.52) | .667 (16.94) | .859 (21.82) | .152 (3.86) | .185 (4.70) | 1.047 (26.59) | .812 (20.62) | .125 (3.18) |
| 14 | .876 (22.25) | .935 (23.75) | .791 (20.09) | .984 (24.99) | .152 (3.86) | .185 (4.70) | 1.141 (28.98) | .906 (23.01) | .125 (3.18) |
| 16 | 1.001 (25.42) | 1.058 (26.87) | .916 (23.27) | 1.108 (28.14) | .152 (3.86) | .185 (4.70) | 1.234 (31.24) | .969 (24.61) | .125 (3.18) |
| 18 | 1.126 (28.60) | 1.183 (30.05) | 1.034 (31.34) | 1.233 (31.32) | .152 (3.86) | .185 (4.70) | 1.328 (33.73) | 1.062 (26.97) | .125 (3.18) |
| 20 | 1.251 (31.77) | 1.308 (33.22) | 1.158 (34.52) | 1.358 (34.49) | .179 (4.55) | .185 (4.70) | 1.453 (36.91) | 1.156 (29.36) | .125 (3.18) |
| 22 | 1.376 (34.95) | 1.433 (36.40) | 1.283 (32.59) | 1.483 (37.67) | .179 (4.55) | .185 (4.70) | 1.578 (40.08) | 1.250 (31.75) | .125 (3.18) |
| 24 | 1.501 (38.13) | 1.568 (39.83) | 1.408 (35.76) | 1.610 (40.89) | .169 (4.29) | .185 (4.70) | 1.703 (43.66) | 1.375 (34.92) | .152 (3.86) |

## Box Mounting Receptacle (Back Panel)

No MS part number

KJ5R




NOTE: This connector does not accommodate backshells

| Shell Size | A Dia. Max. | C Dia. Max. | G Dia. Max. | J Dia. Max. | K Max. | L Max. | M Max. | N T.P | P +.005 (0.13) -.010 (0.25) |
|---|---|---|---|---|---|---|---|---|---|
| 8 | .474 (12.04) | .522 (13.26) | .421 (10.69) | .563 (14.30) | .147 (3.73) | .185 (4.70) | .828 (21.03) | .594 (15.09) | .125 (3.18) |
| 10 | .591 (15.01) | .639 (16.23) | .542 (13.77) | .680 (17.27) | .152 (3.86) | .185 (4.70) | .954 (24.23) | .719 (18.26) | .125 (3.18) |
| 12 | .751 (19.08) | .808 (20.52) | .667 (16.94) | .859 (21.82) | .152 (3.86) | .185 (4.70) | 1.047 (26.59) | .812 (20.62) | .125 (3.18) |
| 14 | .876 (22.25) | .935 (23.75) | .791 (20.09) | .984 (24.99) | .152 (3.86) | .185 (4.70) | 1.141 (28.98) | .906 (23.01) | .125 (3.18) |
| 16 | 1.001 (25.42) | 1.058 (26.87) | .916 (23.27) | 1.108 (28.14) | .152 (3.86) | .185 (4.70) | 1.234 (31.24) | .969 (24.61) | .125 (3.18) |
| 18 | 1.126 (28.60) | 1.183 (30.05) | 1.034 (31.34) | 1.233 (31.32) | .152 (3.86) | .185 (4.70) | 1.328 (33.73) | 1.062 (26.97) | .125 (3.18) |
| 20 | 1.251 (31.77) | 1.308 (33.22) | 1.158 (34.52) | 1.358 (34.49) | .179 (4.55) | .185 (4.70) | 1.453 (36.91) | 1.156 (29.36) | .125 (3.18) |
| 22 | 1.376 (34.95) | 1.433 (36.40) | 1.283 (32.59) | 1.483 (37.67) | .179 (4.55) | .185 (4.70) | 1.578 (40.08) | 1.250 (31.75) | .125 (3.18) |
| 24 | 1.501 (38.13) | 1.568 (39.83) | 1.408 (35.76) | 1.610 (40.89) | .169 (4.29) | .185 (4.70) | 1.703 (43.66) | 1.375 (34.92) | .152 (3.86) |

Performance Specifications-Pages 3 and 4.
Contacts, Sealing Plugs, Assembly Tools - Pages 24, 31, and 32.
Contact Arrangements - Pages 22 and 23.

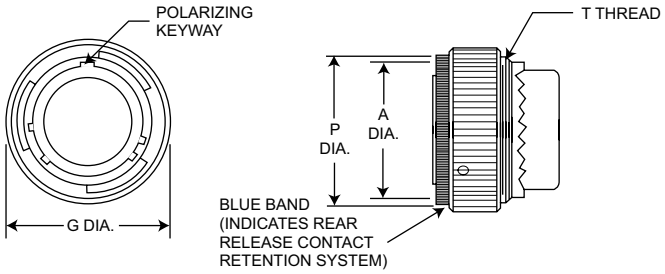
Dimensions shown in inches (mm)
Specifications and dimensions subject to change

**DISCLAIMER:* *Our facility is not currently certified by the DLA and this product is not covered by the QPL/QML. Mil-Spec part numbers are only for cross reference to the Commercial Equivalent.*

## Straight Plug

**MS27473-Style**
**(MS service class E, P, T)**

**KJ6**



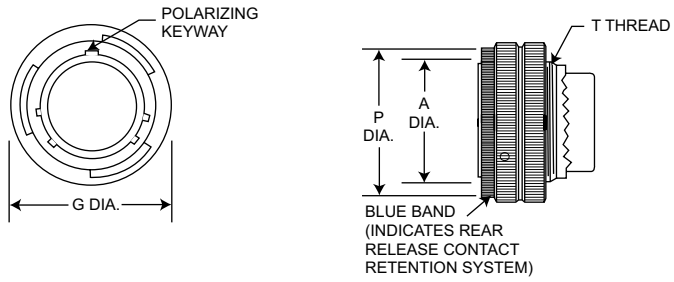

NOTE: For backshell dimensions and configurations, see pages 29 and 31.

| Shell Size | A Dia. Max. | G Dia. Max. | P Dia. Max. | T Thread | Overall Length With Backshells E Straight | F Cable Clamp | P Potting Max. |
|---|---|---|---|---|---|---|---|
| 8 | .485 (12.32) | .749 (19.02) | .630 (16.00) | 7/16-28UNEF-2A | 1.026 (26.06) | 1.555 (39.50) | 1.020 (25.91) |
| 10 | .606 (15.39) | .858 (21.79) | .752 (19.10) | 9/16-24UNEF-2A | 1.026 (26.06) | 1.555 (39.50) | 1.020 (25.91) |
| 12 | .765 (19.43) | 1.030 (26.16) | .925 (23.50) | 11/16-24UNEF-2A | 1.026 (26.06) | 1.555 (39.50) | 1.020 (25.91) |
| 14 | .890 (22.61) | 1.155 (29.34) | 1.050 (26.67) | 13/16-20UNEF-2A | 1.026 (26.06) | 1.790 (45.47) | 1.020 (25.91) |
| 16 | 1.014 (25.76) | 1.280 (32.51) | 1.172 (29.77) | 15/16-20UNEF-2A | 1.026 (26.06) | 1.790 (45.47) | 1.020 (25.91) |
| 18 | 1.140 (28.96) | 1.405 (35.69) | 1.304 (33.12) | 1-1/16-18UNEF-2A | 1.026 (26.06) | 1.790 (45.47) | 1.020 (25.91) |
| 20 | 1.264 (32.11) | 1.530 (38.86) | 1.435 (36.45) | 1-3/16-18UNEF-2A | 1.026 (26.06) | 1.790 (45.47) | 1.020 (25.91) |
| 22 | 1.389 (35.28) | 1.640 (40.66) | 1.560 (39.62) | 1-5/16-18UNEF-2A | 1.026 (26.06) | 1.930 (49.02) | 1.020 (25.91) |
| 24 | 1.514 (38.46) | 1.765 (44.83) | 1.688 (42.88) | 1-7/16-18UNEF-2A | 1.104 (28.04) | 1.930 (49.02) | 1.080 (27.43) |

## Straight Plug Grounded

MS27484-**Style**
(MS service class E, P, T)

KJG6




NOTE: For backshell dimensions and configurations, see pages 29 and 31.

| Shell Size | A Dia. Max. | G Dia. Max. | P Dia. Max. | T Thread | Overall Length With Backshells E Straight | F Cable Clamp | P Potting Max. |
|---|---|---|---|---|---|---|---|
| 8 | .485 (12.32) | .749 (19.02) | .630 (16.00) | 7/16-28UNEF-2A | 1.026 (26.06) | 1.555 (39.50) | 1.020 (25.91) |
| 10 | .606 (15.39) | .858 (21.79) | .752 (19.10) | 9/16-24UNEF-2A | 1.026 (26.06) | 1.555 (39.50) | 1.020 (25.91) |
| 12 | .765 (19.43) | 1.030 (26.16) | .925 (23.50) | 11/16-24UNEF-2A | 1.026 (26.06) | 1.555 (39.50) | 1.020 (25.91) |
| 14 | .890 (22.61) | 1.155 (29.34) | 1.050 (26.67) | 13/16-20UNEF-2A | 1.026 (26.06) | 1.790 (45.47) | 1.020 (25.91) |
| 16 | 1.014 (25.76) | 1.280 (32.51) | 1.172 (29.77) | 15/16-20UNEF-2A | 1.026 (26.06) | 1.790 (45.47) | 1.020 (25.91) |
| 18 | 1.140 (28.96) | 1.405 (35.69) | 1.304 (33.12) | 1-1/16-18UNEF-2A | 1.026 (26.06) | 1.790 (45.47) | 1.020 (25.91) |
| 20 | 1.264 (32.11) | 1.530 (38.86) | 1.435 (36.45) | 1-3/16-18UNEF-2A | 1.026 (26.06) | 1.790 (45.47) | 1.020 (25.91) |
| 22 | 1.389 (35.28) | 1.640 (40.66) | 1.560 (39.62) | 1-5/16-18UNEF-2A | 1.026 (26.06) | 1.930 (49.02) | 1.020 (25.91) |
| 24 | 1.514 (38.46) | 1.765 (44.83) | 1.688 (42.88) | 1-7/16-18UNEF-2A | 1.104 (28.04) | 1.930 (49.02) | 1.080 (27.43) |

Performance Specifications-Pages 3 and 4.
Contacts, Sealing Plugs, Assembly Tools - Pages 24, 31, and 32.
Contact Arrangements - Pages 22 and 23.

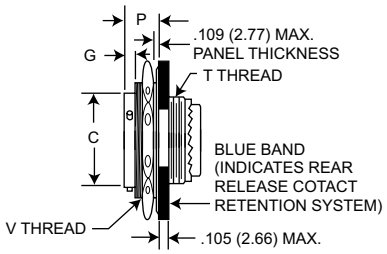
ITT

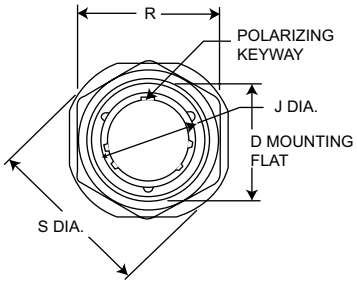
**DISCLAIMER:* *Our facility is not currently certified by the DLA and this product is not covered by the QPL/QML. Mil-Spec part numbers are only for cross reference to the Commercial Equivalent.*

## Jam Nut Receptacle

**MS27474-Style**
**(MS service class E, P, T)**

**KJ7**




NOTE: For backshell dimensions and configurations, see pages 29 and 31.

| Shell Size | C Dia. Max. | D Max. | G Max. | J Max. | P Max. | R Max. Hex. | S Dia. Max. | T Thread | V Thread | Overall length With Backshells E Straight | F Cable Clamp | P Potting Max. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8 | .474 (12.04) | .818 (20.78) | .145 (3.68) | .563 (14.30) | .443 (11.25) | 1.079 (27.41) | 1.381 (35.08) | 7/16-28UNEF-2A | 7/8-20UNEF-2A | .840 (21.34) | 1.555 (39.50) | 1.020 (25.91) |
| 10 | .591 (15.01) | .942 (23.93) | .145 (3.68) | .680 (17.27) | .443 (11.25) | 1.205 (30.61) | 1.506 (38.25) | 9/16-24UNEF-2A | 1-20UNEF-2A | .840 (21.34) | 1.555 (39.50) | 1.020 (25.91) |
| 12 | .751 (19.08) | 1.066 (27.08) | .145 (3.68) | .859 (21.82) | .443 (11.25) | 1.329 (33.76) | 1.631 (41.43) | 11/16-24UNEF-2A | 1-1/8-18UNEF-2A | .840 (21.34) | 1.555 (39.50) | 1.020 (25.91) |
| 14 | .876 (22.25) | 1.191 (30.25) | .145 (3.68) | .984 (24.99) | .443 (11.25) | 1.455 (36.96) | 1.756 (44.60) | 13/16-20UNEF-2A | 1-1/4-18UNEF-2A | .840 (21.34) | 1.790 (45.47) | 1.020 (25.91) |
| 16 | 1.001 (25.43) | 1.321 (33.55) | .145 (3.68) | 1.108 (28.14) | .443 (11.25) | 1.579 (40.11) | 1.944 (49.38) | 1-15/16-20UNEF-2A | 1-3/8-18UNEF-2A | .840 (21.34) | 1.790 (45.47) | 1.020 (25.91) |
| 18 | 1.126 (28.60) | 1.441 (36.60) | .145 (3.68) | 1.233 (31.32) | .443 (11.25) | 1.705 (43.31) | 2.022 (51.36) | 1-1/16-18UNEF-2A | 1-1/2-18UNEF-2A | .840 (21.34) | 1.790 (45.47) | 1.020 (25.91) |
| 20 | 1.251 (31.78) | 1.566 (39.78) | .171 (4.34) | 1.358 (34.49) | .469 (11.91) | 1.829 (46.46) | 2.147 (54.53) | 1-3/16-18UNEF-2A | 1-5/8-18UNEF-2A | .840 (21.34) | 1.790 (45.47) | 1.020 (25.91) |
| 22 | 1.376 (33.95) | 1.691 (42.95) | .171 (4.34) | 1.483 (37.67) | .469 (11.91) | 2.017 (51.23) | 2.271 (57.68) | 1-5/16-18UNEF-2A | 1-3/4-18UNS-2A | .840 (21.34) | 1.930 (49.02) | 1.020 (25.91) |
| 24 | 1.501 (38.13) | 1.816 (46.13) | .171 (4.34) | 1.610 (40.89) | .469 (11.91) | 2.142 (54.41) | 2.396 (60.86) | 1-7/16-18UNEF-2A | 1-7/8-18UNS-2A | .860 (21.84) | 1.900(48.26) | 1.080 (27.43) |

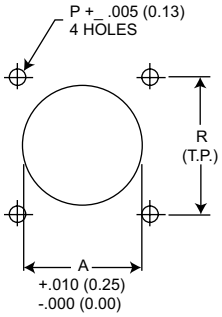
Performance Specifications-Pages 3 and 4.

Contacts, Sealing Plugs, Assembly Tools - Pages 24, 31, and 32.

Contact Arrangements - Pages 22 and 23.

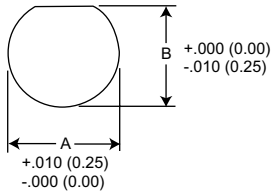
## Panel Cutouts

**Flange Mounted Receptacle**




| Shell Size | A Dia. | P Dia. | R | Mfg. Screw |
|---|---|---|---|---|
| 8 | .610 (15.49) | .125 (3.18) | .594 (15.09) | #4 |
| 10 | .734 (18.64) | .125 (3.18) | .719 (18.26) | #4 |
| 12 | .860 (21.84) | .125 (3.18) | .812 (20.62) | #4 |
| 14 | .985 (25.02) | .125 (3.18) | .906 (23.01) | #4 |
| 16 | 1.110 (28.19) | .125 (3.18) | .969 (24.61) | #4 |
| 18 | 1.234 (31.34) | .125 (3.18) | 1.062 (26.97) | #4 |
| 20 | 1.360 (35.54) | .125 (3.18) | 1.156 (29.36) | #4 |
| 22 | 1.484 (37.69) | .125 (3.18) | 1.250 (31.75) | #4 |
| 24 | 1.611 (40.92) | .152 (3.86) | 1.375 (34.93) | #6 |

**Jam Nut Receptacle**




| Shell Size | A Dia. | B Dia. |
|---|---|---|
| 8 | .885 (22.48) | .830 (21.08) |
| 10 | 1.010 (25.65) | .955 (24.26) |
| 12 | 1.135 (28.82) | 1.085 (27.56) |
| 14 | 1.260 (32.00) | 1.210 (30.73) |
| 16 | 1.385 (35.18) | 1.335 (33.91) |
| 18 | 1.510 (38.35) | 1.460 (37.08) |
| 20 | 1.635 (41.53) | 1.585 (40.26) |
| 22 | 1.760 (44.70) | 1.710 (43.43) |
| 24 | 1.885 (47.88) | 1.835 (46.61) |

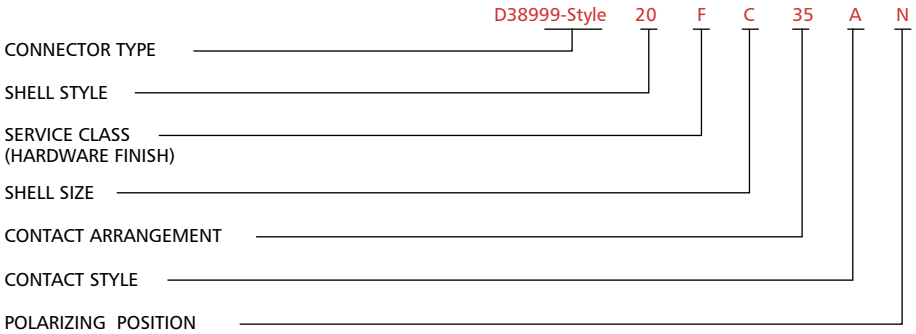
Dimensions shown in inches (mm)
Specifications and dimensions subject to change

***DISCLAIMER:** Our facility is not currently certified by the DLA and this product is not covered by the QPL/QML. Mil-Spec part numbers are only for cross reference to the Commercial Equivalent.*

## How To Order

Military Nomenclature

*DISCLAIMER: Our facility is not currently certified by the DLA and this product is not covered by the QPL/QML. Mil-Spec part numbers are only for cross reference to the Commercial Equivalent.*




**CONNECTOR TYPE**
D38999-Style Series III

**SHELL STYLE**
D38999/20-Style - Wall mount receptacle
D38999/24-Style - Jam nut receptacle
D38999/26-Style - Straight Plug, Grounded

**SERVICE CLASS**
(Hardware Finish)
F - Electroless nickel - 85ºF to +392ºF (-65ºC to +200ºC)
G - Electroless nickel plated. Space Grade.
W - Olive drab cadmium over electroless nickel plate, -85ºF to +347ºF (-65ºC to +175ºC)

SHELL SIZE

| A | B | C | D | E | F | G | H | J | Military Designation |
|---|---|---|---|---|---|---|---|---|---|
| 9 | 11 | 13 | 15 | 17 | 19 | 21 | 23 | 25 | Cannon Designation |

**CONTACT ARRANGEMENT**
See pages 22, 23.

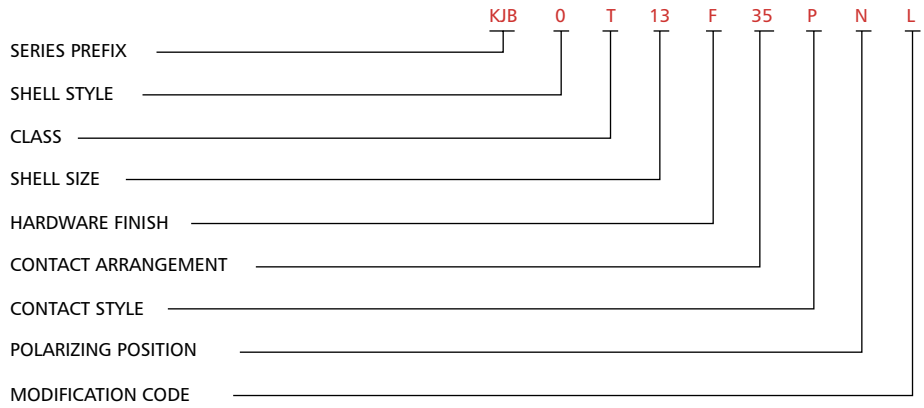
**CONTACT STYLE**
P - Pin contacts
S - Socket contact
A - Less Pin contacts*
B - Less Socket contact*

* Used only when other than power contacts are to be installed (i,e., shielded, thermocouple, etc.)

**POLARIZING POSITION**
N (normal), A, B, C, D, E. See page 19.

Note: To order MS connectors less standard power contacts, purchase order must state "Less Contacts".

Cannon Nomenclature




**SERIES PREFIX**
KJA/KJB* - Series III - Scoop proof, threaded coupling

**SHELL STYLE**
0 - Wall mount receptacle
5 - Box mount receptacle*
6 - Straight plug
7 - Jam nut receptacle

**CLASS**
T - Environment-resistant (without rear accessory)

* Consult factory for availability

SHELL SIZE

| 9 | 11 | 13 | 15 | 17 | 19 | 21 | 23 | 25 | Cannon Designation |
|---|---|---|---|---|---|---|---|---|---|
| A | B | C | D | E | F | G | H | J | Military Designation |

**HARDWARE FINISH**
F - Electroless nickel, - 85ºF to +392ºF (-65ºC to +200ºC)
G - Electroless nickel plated. Space Grade.
W - Olive drab cadmium over electroless nickel plate, -85ºF to +347ºF (-65ºC to +175ºC)
Z - Zinc Nickel, Black
- - (Dash) When using a finish modification code

**CONTACT ARRANGEMENTS**
See pages 22 and 23.

**CONTACT STYLE**
P -Pin contacts
S -Socket contacts

**POLARIZING POSITION**
N (normal) A, B, C, D, E. See page 19.

**MODIFICATION CODE**
L - Less contacts, not stamped on connector
16 - Outgassed NASA space graded connector
17 - Clinch Nuts installed (4-40 Size 9-21, 6-32 Size 23-25)
27 - Outgassed, standard connector
A296 Black Zinc Cobalt, RoHS Compliant

See page 26 for ordering PC Standoff Contacts using modification codes.



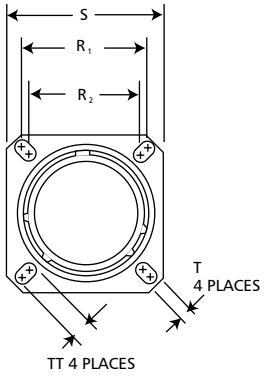
**DISCLAIMER: Our facility is not currently certified by the DLA and this product is not covered by the QPL/QML. Mil-Spec part numbers are only for cross reference to the Commercial Equivalent.*

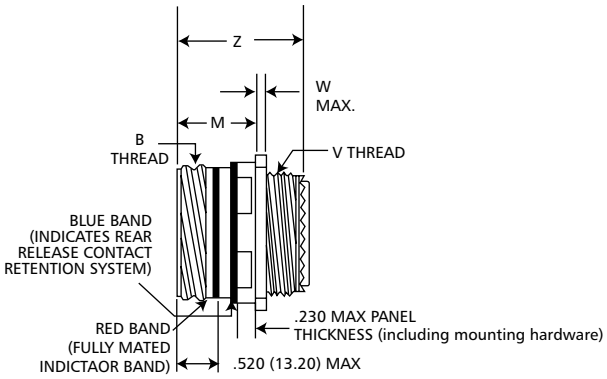
Dimensions shown in inches (mm)
Specifications and dimensions subject to change

## Wall Mount Receptacle

D38999/20-Style

KJA0/KJB0



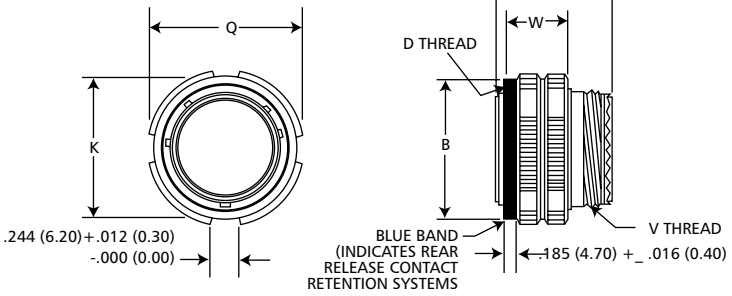




| Shell Size | MS Shell size Code | B Thread Class 2A (Plated) | M +.000 (.000) -.005 (.130) | R 1 | R 2 | S +_.012 (.300) | T +.004 (.100) -.002 (.050) | TT +.004 (.100) -.002 (.050) | Metric V Thread (Plated) | W Max. | Z +.005 (.130) -.010 (.250) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9 | A | .6250-0.1P-0.3L-TS | .820 (20.83) | .719 (18.26) | .594 (15.09) | .938 (23.83) | .128 (3.25) | .216 (5.49) | M12X1-6g0.100R | .098 (2.50) | 1.235 (31.36) |
| 11 | B | .7500-0.1P-0.3L-TS | .820 (20.83) | .812 (20.62) | .719 (18.26) | 1.031 (26.19) | .128 (3.25) | .194 (4.93) | M15X1-6g0.100R | .098 (2.50) | 1.235 (31.36) |
| 13 | C | .8750-0.1P-0.3L-TS | .820 (20.83) | .906 (23.01) | .812 (20.62) | 1.125 (28.58) | .128 (3.25) | .194 (4.93) | M18X1-6g0.100R | .098 (2.50) | 1.235 (31.36) |
| 15 | D | 1.0000-0.1P-0.3L-TS | .820 (20.83) | .969 (24.61) | .906 (23.01) | 1.219 (30.96) | .128 (3.25) | .173 (4.39) | M22X1-6g0.100R | .098 (2.50) | 1.235 (31.36) |
| 17 | E | 1.1875-0.1P-0.3L-TS | .820 (20.83) | 1.062 (26.97) | .969 (24.61) | 1.312 (33.32) | .128 (3.25) | .194 (4.93) | M25X1-6g0.100R | .098 (2.50) | 1.235 (31.36) |
| 19 | F | 1.2500-0.1P-0.3L-TS | .820 (20.83) | 1.156 (29.36) | 1.062 (26.97) | 1.438 (36.53) | .128 (3.25) | .194 (4.93) | M28X1-6g0.100R | .098 (2.50) | 1.235 (31.36) |
| 21 | G | 1.3750-0.1P-0.3L-TS | .790 (20.07) | 1.250 (31.75) | 1.156 (29.36) | 1.562 (39.67) | .128 (3.25) | .194 (4.93) | M31X1-6g0.100R | .126 (3.20) | 1.235 (31.36) |
| 23 | H | 1.5000-0.1P-0.3L-TS | .790 (20.07) | 1.375 (34.92) | 1.250 (31.75) | 1.688 (42.88) | .154 (3.91) | .242 (6.15) | M34X1-6g0.100R | .126 (3.20) | 1.235 (31.36) |
| 25 | J | 1.6250-0.1P-0.3L-TS | .790 (20.07) | 1.500 (38.10) | 1.375 (34.92) | 1.812 (46.02) | .154 (3.91) | .242 (6.15) | M37X1-6g0.100R | .126 (3.20) | 1.235 (31.36) |

## Straight Plug Grounded

D38999/26-Style

KJA6/KJB6




| Shell Size | MS Shell size Code | B +.008 (.200) -.000 (.000) | D Thread Class 2B (Plated) | K Max. | L Max. | Q Dia Max. | Metric V Thread (Plated) | W +.008 (.200) -.004 (.100) |
|---|---|---|---|---|---|---|---|---|
| 9 | A | .724 (18.40) | .6250-0.1P-0.3L-TS | .748 (19.00) | 1.234 (31.34) | .859 (21.82) | M12X1-6g0.100R | .760 (19.30) |
| 11 | B | .831 (21.10) | .7500-0.1P-0.3L-TS | .862 (21.90) | 1.234 (31.34) | .969 (24.61) | M15X1-6g0.100R | .760 (19.30) |
| 13 | C | 1.000 (25.40) | .8750-0.1P-0.3L-TS | 1.027 (26.10) | 1.234 (31.34) | 1.141 (28.98) | M18X1-6g0.100R | .760 (19.30) |
| 15 | D | 1.130 (28.70) | 1.0000-0.1P-0.3L-TS | 1.153 (29.30) | 1.234 (31.34) | 1.266 (32.16) | M22X1-6g0.100R | .760 (19.30) |
| 17 | E | 1.268 (32.20) | 1.1875-0.1P-0.3L-TS | 1.291 (32.80) | 1.234 (31.34) | 1.391 (35.53) | M25X1-6g0.100R | .760 (19.30) |
| 19 | F | 1.374 (34.90) | 1.2500-0.1P-0.3L-TS | 1.398 (35.50) | 1.234 (31.34) | 1.500 (38.10) | M28X1-6g0.100R | .760 (19.30) |
| 21 | G | 1.500 (38.10) | 1.3750-0.1P-0.3L-TS | 1.524 (38.70) | 1.234 (31.34) | 1.625 (41.28) | M31X1-6g0.100R | .760 (19.30) |
| 23 | H | 1.618 (41.40) | 1.5000-0.1P-0.3L-TS | 1.642 (41.70) | 1.234 (31.34) | 1.750 (44.45) | M34X1-6g0.100R | .760 (19.30) |
| 25 | J | 1.744 (44.30) | 1.6250-0.1P-0.3L-TS | 1.768 (44.90) | 1.234 (31.34) | 1.875 (47.62) | M37X1-6g0.100R | .760 (19.30) |

Performance Specifications-Pages 3 and 4.

Contacts, Sealing Plugs, Assembly Tools - Pages 24, 31, and 32.

Contact Arrangements - Pages 22 and 23.

Dimensions shown in inches (mm)
Specifications and dimensions subject to change

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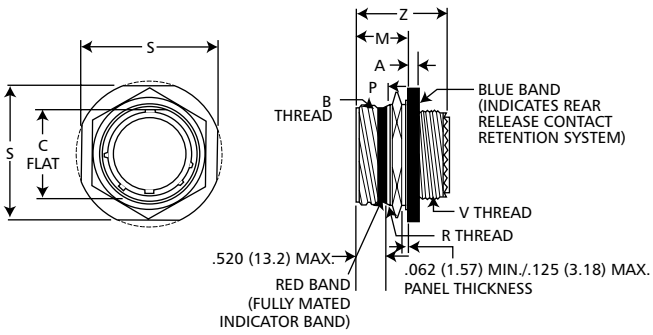
## Jam Nut Receptacle

D38999/24-Style KJA7/KJB7

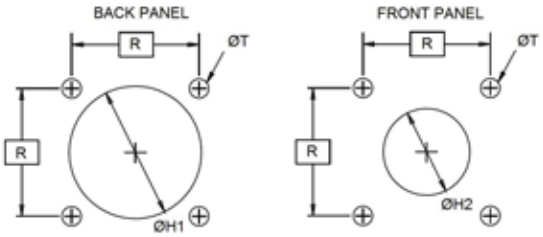



| Shell Size | MS Shell size Code | A +.010 (.250) -.005 (.130) | B Thread Class 2A (Plated) | C +.004 (.100) -.010 (.250) | Z +.005 (.130) -.040 (.100) | M +.005 (.130) -.004 (.100) | P +.016 (.410) -.004 (.100) | S | Metric R Thread (Plated) | Metric V Thread (Plated) |
|---|---|---|---|---|---|---|---|---|---|---|
| 9 | A | .104 (2.64) | .6250-0.1P-0.3L-TS | .651 (16.53) | 1.243 (31.57) | .871 (22.12) | .555 (14.10) | 1.062 (26.97) | M17X1-6g0.100R | M12X1-6g0.100R |
| 11 | B | .104 (2.64) | .7500-0.1P-0.3L-TS | .751 (19.07) | 1.243 (31.57) | .871 (22.12) | .555 (14.10) | 1.250 (31.75) | M20X1-6g0.100R | M15X1-6g0.100R |
| 13 | C | .104 (2.64) | .8750-0.1P-0.3L-TS | .938 (23.82) | 1.243 (31.57) | .878 (22.30) | .563 (14.30) | 1.375 (34.92) | M25X1-6g0.100R | M18X1-6g0.100R |
| 15 | D | .104 (2.64) | 1.0000-0.1P-0.3L-TS | 1.062 (26.97) | 1.243 (31.57) | .878 (22.30) | .563 (14.30) | 1.500 (38.10) | M28X1-6g0.100R | M22X1-6g0.100R |
| 17 | E | .104 (2.64) | 1.1875-0.1P-0.3L-TS | 1.187 (30.15) | 1.243 (31.57) | .878 (22.30) | .563 (14.30) | 1.625 (41.28) | M32X1-6g0.100R | M25X1-6g0.100R |
| 19 | F | .135 (3.43) | 1.2500-0.1P-0.3L-TS | 1.312 (33.32) | 1.243 (31.57) | .878 (22.30) | .563 (14.30) | 1.812 (46.02) | M35X1-6g0.100R | M28X1-6g0.100R |
| 21 | G | .135 (3.43) | 1.3750-0.1P-0.3L-TS | 1.437 (36.50) | 1.243 (31.57) | .878 (22.30) | .563 (14.30) | 1.938 (49.23) | M38X1-6g0.100R | M31X1-6g0.100R |
| 23 | H | .135 (3.43) | 1.5000-0.1P-0.3L-TS | 1.562 (39.67) | 1.243 (31.57) | .878 (22.30) | .563 (14.30) | 2.062 (52.37) | M41X1-6g0.100R | M34X1-6g0.100R |
| 25 | J | .135 (3.43) | 1.6250-0.1P-0.3L-TS | 1.687 (42.85) | 1.243 (31.57) | .878 (22.30) | .563 (14.30) | 2.188 (55.38) | M44X1-6g0.100R | M37X1-6g0.100R |

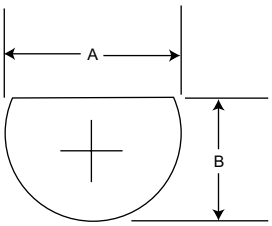
Performance Specifications-Pages 3 and 4.
Contacts, Sealing Plugs, Assembly Tools - Pages 24, 31, and 32.
Contact Arrangements - Pages 22 and 23.

## Panel Cutouts

**Wall Mounted Receptacle**




**Jam Nut Receptacle**




| Shell Size | A +.010 (.25) -.000 (.00) | B +.000 (.00)* -.010 (.25) | ØH1 (Min.) | ØH2 (Min.) | R (TP) | ØT ±.050 (.13) |
|---|---|---|---|---|---|---|
| 9 | .693 (17.6) | .657 (16.70) | .656 (16.66) | .516 (13.11) | .719 (18.26) | .128 (3.25) |
| 11 | .825 (20.96) | .771 (19.58) | .796 (20.22) | .625 (15.88) | .812 (20.62) | .128 (3.25) |
| 13 | 1.010 (25.65) | .955 (24.26) | .922 (23.42) | .750 (19.05) | .906 (23.01) | .128 (3.25) |
| 15 | 1.135 (28.83) | 1.085 (27.56) | 1.047 (26.59) | .906 (23.01) | .969 (24.61) | .128 (3.25) |
| 17 | 1.260 (32.00) | 1.210 (30.73) | 1.219 (30.96) | 1.016 (25.81) | 1.062 (26.97) | .128 (3.25) |
| 19 | 1.385 (35.18) | 1.335 (33.91) | 1.297 (32.94) | 1.141 (28.98) | 1.156 (29.36) | .128 (3.25) |
| 21 | 1.510 (38.35) | 1.460 (37.08) | 1.422 (36.12) | 1.266 (36.16) | 1.250 (31.75) | .128 (3.25) |
| 23 | 1.635 (41.53) | 1.585 (40.26) | 1.547 (39.29) | 1.375 (34.92) | 1.375 (34.92) | .154 (391) |
| 25 | 1.760 (44.70) | 1.710 (43.43) | 1.672 (42.47) | 1.484 (37.69) | 1.500 (38.10) | .150 (3.81) |

* For Dimension B, Shell Size 9 only, tolerance is ±.004 (.10)

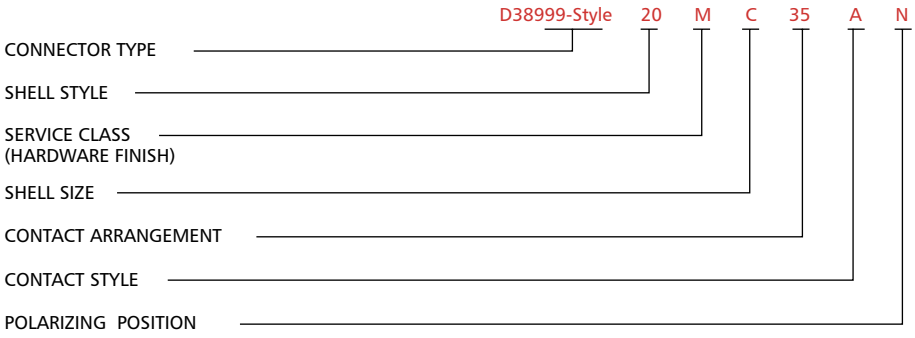
*DISCLAIMER: Our facility is not currently certified by the DLA and this product is not covered by the QPL/QML. Mil-Spec part numbers are only for cross reference to the Commercial Equivalent.*

Dimensions shown in inches (mm)
Specifications and dimensions subject to change

## How To Order

Military Nomenclature

*DISCLAIMER:Our facility is not currently certified by the DLA and this product is not covered by the QPL/QML. Mil-Spec part numbers are only for cross reference to the Commercial Equivalent.*




**CONNECTOR TYPE**
D38999/ - 38999-Style Series III

**SHELL STYLE**
D38999/20 - Wall mount receptacle
D38999/26 - Straight Plug, Grounded

**SERVICE CLASS**
(Hardware Finish)
J - Olive drab cadmium over electroless nickel plate, -85ºF to +347ºF (-65ºC to +175ºC)
M - Electroless nickel - 85ºF to +392ºF (-65ºC to +200ºC), RoHS Compliant

SHELL SIZE

| A | B | C | D | E | F | G | H | J | Military Designation |
|---|---|---|---|---|---|---|---|---|---|
| 9 | 11 | 13 | 15 | 17 | 19 | 21 | 23 | 25 | Cannon Designation |

**CONTACT ARRANGEMENT**
See pages 22, 23.

**CONTACT STYLE**
H - Pin conatcts (1500 cycle)
J - Socket contacts (1500 cycle)
P - Pin conatcts
S - Socket contact
A - Less Pin contacts*
B - Less Socket contact*

* Used only when other than power contacts are to be installed (i,e., shielded, thermocouple, etc.)

**POLARIZING POSITION**
N (normal), A, B, C, D, E. See page 21.

Note: To order MS connectors less standard power contacts, purchase order must state "Less Contacts".

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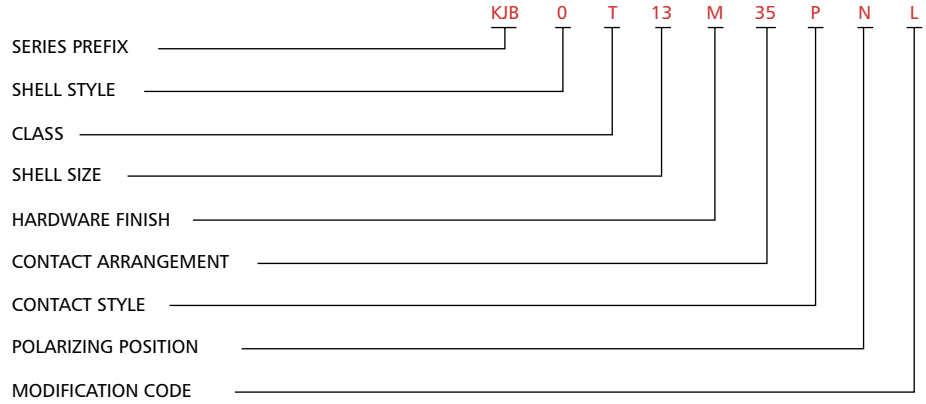
Cannon Nomenclature




**SERIES PREFIX**
KJB* - Series III - Scoop proof, threaded coupling

**SHELL STYLE**
0 - Wall mount receptacle
6 - Straight plug

**CLASS**
T - Environment-resistant (without rear accessory)

* Consult factory for availability

SHELL SIZE

| 9 | 11 | 13 | 15 | 17 | 19 | 21 | 23 | 25 | Cannon Designation |
|---|---|---|---|---|---|---|---|---|---|
| A | B | C | D | E | F | G | H | J | Military Designation |

**HARDWARE FINISH**
J - Olive drab cadmium over electroless nickel plate, -85ºF to +347ºF (-65ºC to +175ºC)
M - Electroless nickel, - 85ºF to +392ºF (-65ºC to +200ºC), RoHS Compliant

**CONTACT ARRANGEMENTS**
See pages 22 and 23.

**CONTACT STYLE**
H - Pin conatcts (1500 cycle)
J - Socket contacts (1500 cycle)
P - Pin contacts
S - Socket contacts

**POLARIZING POSITION**
N (normal) A, B, C, D, E. See page 21.

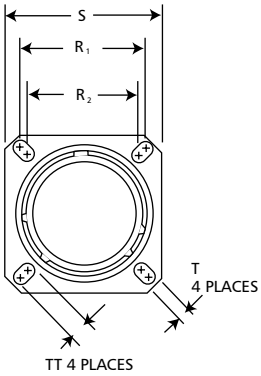
**MODIFICATION CODE**
L - Less contacts, not stamped on connector

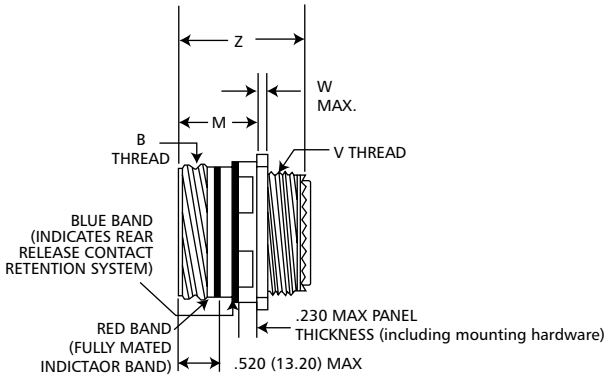
Dimensions shown in inches (mm)
Specifications and dimensions subject to change

*DISCLAIMER: Our facility is not currently certified by the DLA and this product is not covered by the QPL/QML. Mil-Spec part numbers are only for cross reference to the Commercial Equivalent.

## Wall Mount Receptacle

D38999/20-Style KJB0T

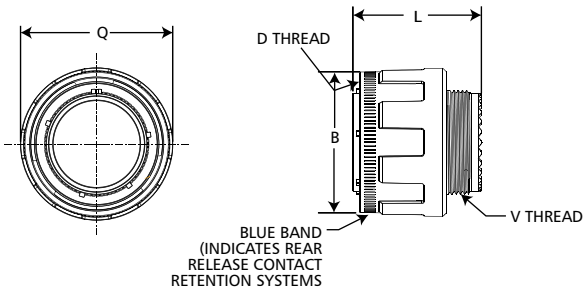



| Shell Size | MS Shell size Code | B Thread Class 2A (Plated) | M +.000 (.000) -.005 (.130) | R 1 | R 2 | S +_.012 (.300) | T +.004 (.100) -.002 (.050) | TT +.004 (.100) -.002 (.050) | Metric V Thread (Plated) | W Max. | Z +.005 (.130) -.010 (.250) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9 | A | .6250-0.1P-0.3L-TS | .768 (19.50) | .719 (18.26) | .594 (15.09) | .938 (23.83) | .128 (3.25) | .216 (5.49) | M12X1-6g0.100R | .143 (3.63) | 1.255 (32.00) |
| 11 | B | .7500-0.1P-0.3L-TS | .768 (19.50) | .812 (20.62) | .719 (18.26) | 1.031 (26.19) | .128 (3.25) | .194 (4.93) | M15X1-6g0.100R | .143 (3.63) | 1.255 (32.00) |
| 13 | C | .8750-0.1P-0.3L-TS | .768 (19.50) | .906 (23.01) | .812 (20.62) | 1.125 (28.58) | .128 (3.25) | .194 (4.93) | M18X1-6g0.100R | .143 (3.63) | 1.255 (32.00) |
| 15 | D | 1.0000-0.1P-0.3L-TS | .768 (19.50) | .969 (24.61) | .906 (23.01) | 1.219 (30.96) | .128 (3.25) | .173 (4.39) | M22X1-6g0.100R | .143 (3.63) | 1.255 (32.00) |
| 17 | E | 1.1875-0.1P-0.3L-TS | .768 (19.50) | 1.062 (26.97) | .969 (24.61) | 1.312 (33.32) | .128 (3.25) | .194 (4.93) | M25X1-6g0.100R | .143 (3.63) | 1.255 (32.00) |
| 19 | F | 1.2500-0.1P-0.3L-TS | .768 (19.50) | 1.156 (29.36) | 1.062 (26.97) | 1.438 (36.53) | .128 (3.25) | .194 (4.93) | M28X1-6g0.100R | .143 (3.63) | 1.255 (32.00) |
| 21 | G | 1.3750-0.1P-0.3L-TS | .736 (18.70) | 1.250 (31.75) | 1.156 (29.36) | 1.562 (39.67) | .128 (3.25) | .194 (4.93) | M31X1-6g0.100R | .171 (4.35) | 1.255 (32.00) |
| 23 | H | 1.5000-0.1P-0.3L-TS | .736 (18.70) | 1.375 (34.92) | 1.250 (31.75) | 1.688 (42.88) | .154 (3.91) | .242 (6.15) | M34X1-6g0.100R | .171 (4.35) | 1.255 (32.00) |
| 25 | J | 1.6250-0.1P-0.3L-TS | .736 (18.70) | 1.500 (38.10) | 1.375 (34.92) | 1.812 (46.02) | .154 (3.91) | .242 (6.15) | M37X1-6g0.100R | .171 (4.35) | 1.255 (32.00) |

## Straight Plug Grounded

D38999/26-Style KJB6T




| Shell Size | MS Shell size Code | B +.008 (.200) -.000 (.000) | L Max. | Q Dia Max. |
|---|---|---|---|---|
| 9 | A | .811 (20.6) | 1.24 (31.5) | .858 (21.8) |
| 11 | B | .929 (23.6) | 1.24 (31.5) | .984 (25.0) |
| 13 | C | 1.11 (28.2) | 1.24 (31.5) | 1.157 (29.4) |
| 15 | D | 1.23 (31.3) | 1.24 (31.5) | 1.27 (32.5) |
| 17 | E | 1.35 (34.5) | 1.24 (31.5) | 1.40 (35.7) |
| 19 | F | 1.46 (37.3) | 1.24 (31.5) | 1.51 (38.5) |
| 21 | G | 1.59 (40.5) | 1.24 (31.5) | 1.64 (41.7) |
| 23 | H | 1.72 (43.7) | 1.24 (31.5) | 1.76 (44.9) |
| 25 | J | 1.84 (46.8) | 1.24 (31.5) | 1.88 (48.0) |

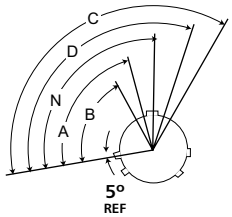
Performance Specifications-Pages 3 and 4.
Contacts, Sealing Plugs, Assembly Tools - Pages 24, 31, and 32.
Contact Arrangements - Pages 22 and 23.

*DISCLAIMER: Our facility is not currently certified by the DLA and this product is not covered by the QPL/QML. Mil-Spec part numbers are only for cross reference to the Commercial Equivalent.

Dimensions shown in inches (mm)
Specifications and dimensions subject to change

## Polarizing Positions

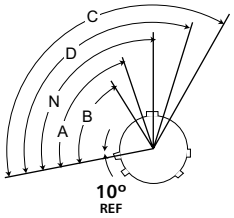
**Series I**




Front face of receptacle (plug opposite). Insert arrangement does not rotate with main key-keyway. The master key is rotated to provide shell polarization; the minor keys remain fixed.

| Shell Size | Angle of Rotation (Degrees) Normal | A | B | C | D |
|---|---|---|---|---|---|
| 9 | 95° | 77° | | | 113° |
| 11 | 95° | 81° | 67° | 123° | 109° |
| 13 | 95° | 75° | 63° | 127° | 115° |
| 15 | 95° | 74° | 61° | 129° | 116° |
| 17 | 95° | 77° | 65° | 125° | 113° |
| 19 | 95° | 77° | 65° | 125° | 113° |
| 21 | 95° | 77° | 65° | 125° | 113° |
| 23 | 95° | 80° | 69° | 121° | 110° |
| 25 | 95° | 80° | 69° | 121° | 110° |

**Series II**

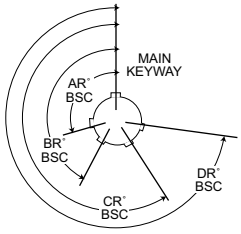



Front face of receptacle (plug opposite). Insert arrangement does not rotate with main key-keyway. The master key is rotated to provide shell polarization; the minor keys remain fixed.

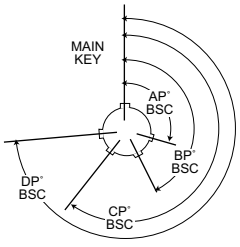
| Shell Size | Angle of Rotation (Degrees) Normal | A | B | C | D |
|---|---|---|---|---|---|
| 8 | 100° | 82° | | | 118° |
| 10 | 100° | 86° | 72° | 128° | 114° |
| 12 | 100° | 80° | 68° | 132° | 120° |
| 14 | 100° | 79° | 66° | 134° | 121° |
| 16 | 100° | 82° | 70° | 130° | 118° |
| 18 | 100° | 82° | 70° | 130° | 118° |
| 20 | 100° | 82° | 70° | 130° | 118° |
| 22 | 100° | 85° | 74° | 126° | 115° |
| 24 | 100° | 85° | 74° | 126° | 115° |

**Series III**

**RECEPTACLE**
**(Front face shown)**




**PLUG**
**(Front face shown)**




**NOTES**

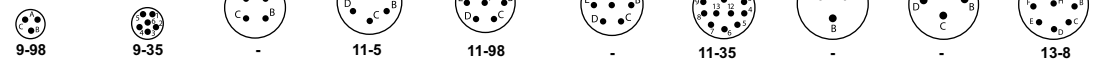
1. All Angles are BSC
2. The insert arrangement does not rotate with main key/keyway
3. All minor keys are rotated to provide shell polarization, the master key remains fixed at twelve o'clock position.
4. Polarization is different from Series I and II.

| Shell Size | Key & Keyway Arrangement identification Letter | Key Locations AR° or AP° BSC | BR° or BP° BSC | CR° or CP° BSC | DR° or DP° BSC |
|---|---|---|---|---|---|
| 9 | N | 105 | 140 | 215 | 265 |
| | A | 102 | 132 | 248 | 320 |
| | B | 80 | 118 | 230 | 312 |
| | C | 35 | 140 | 205 | 275 |
| | D | 64 | 155 | 234 | 304 |
| | E | 91 | 131 | 197 | 240 |
| 11 and 13 and 15 | N | 95 | 141 | 208 | 236 |
| | A | 113 | 156 | 182 | 292 |
| | B | 90 | 145 | 195 | 252 |
| | C | 53 | 156 | 220 | 255 |
| | D | 119 | 146 | 176 | 298 |
| | E | 51 | 141 | 184 | 242 |
| 17 and 19 | N | 80 | 142 | 196 | 293 |
| | A | 135 | 170 | 200 | 310 |
| | B | 49 | 169 | 200 | 244 |
| | C | 66 | 140 | 200 | 257 |
| | D | 62 | 145 | 180 | 280 |
| | E | 79 | 153 | 197 | 272 |
| 21 and 23 and 25 | N | 80 | 142 | 196 | 293 |
| | A | 135 | 170 | 200 | 310 |
| | B | 49 | 169 | 200 | 244 |
| | C | 66 | 140 | 200 | 257 |
| | D | 62 | 145 | 180 | 280 |
| | E | 79 | 153 | 197 | 272 |

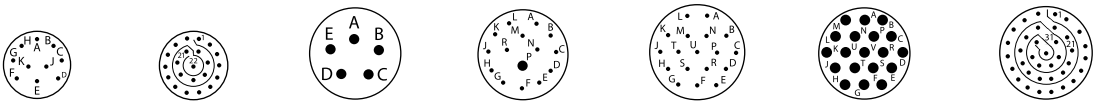
## Contact Arrangements (Engaging View Pin Insert)

* Socket insert only
** Pin insert only (Not available in socket insert Series I and III)

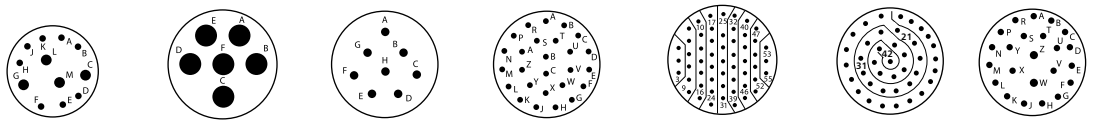
Indicates layouts are available in all shell styles including MS27499, MS27508, KJ2E and KJ5E
† Consult factory MS27505E/KJL5E insert availability



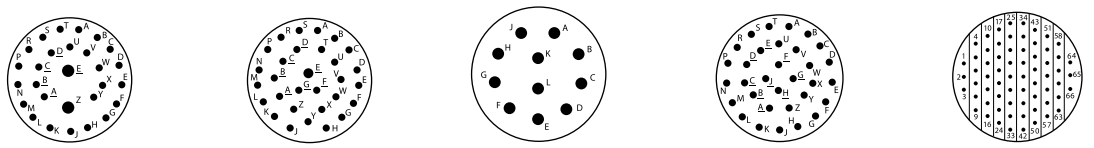
| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Series III | 9-98 | 9-35 | - | 11-5 | 11-98 | - | 11-35 | - | - | 13-8 |
| Series II | 8-98† | 8-35† | - | 10-5† | 10-98† | 10-99† | 10-35† | 12-3 | 12-4† | 12-8† |
| Series I | 9-98 | 9-35 | 11-4 | 11-5 | 11-98 | 11-99 | 11-35 | - | 13-4** | 13-8 |
| No. of Contacts | 3 #20 | 6 #22D | 4 #20 | 5 #20 | 6 #20 | 7 #20 | 13 #22D | 3 #16 | 4 #16 | 8 #20 |
| Service Ratings | I | M | I | I | I | I | M | II | I | I |



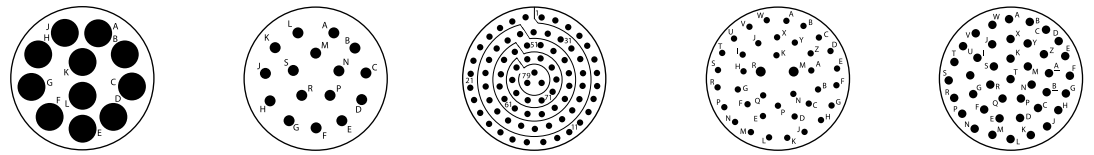
| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Series III | 13-98 | 13-35 | 15-5 | 15-15 | 15-18 | 15-19 | 15-35 |
| Series II | 12-98† | 12-35† | 14-5† | 14-15† | 14-18† | - | 14-35† |
| Series I | 13-98 | 13-35 | 15-5 | 15-15 | 15-18 | 15-19 | 15-35 |
| No. of Contacts | 10 #20 | 22 #22D | 5 #16 | 14 #20,1 #16 | 18 #20 | 19 #20 | 37 #22D |
| Service Ratings | I | M | II | I | I | I | M |



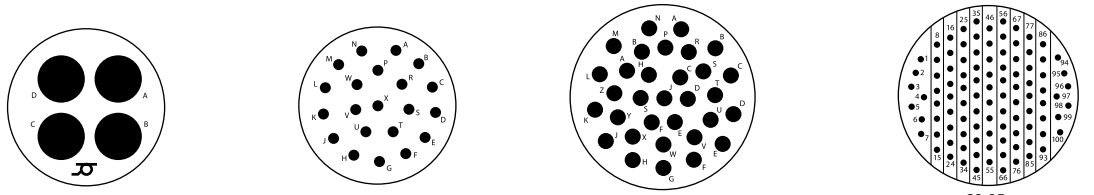
| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Series III | 15-97 | 17-6 | 17-8 | 17-26 | 17-35 | – | - |
| Series II | 14-97† | 16-6 | 16-8† | 16-26† | 16-35† | 16-42† | 16-99† |
| Series I | 15-97 | 17-6 | 17-8 | 17-26 | 17-35 | – | 17-99** |
| No. of Contacts | 8 #20,4 #16 | 6 #12 | 8 #16 | 26 #20 | 55 #22D | 42 #22 | 21 #20,2 #16 |
| Service Ratings | I | I | II | I | M | M | I |



| | | | | | | |
|---|---|---|---|---|---|---|
| Series III | - | - | 19-11 | 19-32 | 19-35 | |
| Series II | 18-28 | 18-30 | 18-11 | 18-32† | 18-35† | |
| Series I | 19-28** | 19-30** | 19-11 | 19-32 | 19-35 | |
| No. of Contacts | 26 #20,2 #16 | 29 #20, 1 #16 | 11 #16 | 32 #20 | 66 #22D | |
| Service Ratings | I | I | II | I | M | |



| | | | | | |
|---|---|---|---|---|---|
| Series III | 21-11 | 21-16 | 21-35 | 21-39 | 21-41 |
| Series II | - | 20-16† | 20-35† | 20-39† | 20-41† |
| Series I | 21-11 | 21-16 | 21-35 | 21-39 | 21-41 |
| No. of Contacts | 11 #12 | 16 #16 | 79 #22D | 37 #20,2 #16 | 41- #20 |
| Service Ratings | I | II | M | I | I |



| | | | | |
|---|---|---|---|---|
| Series III | 21-75 | 23-21 | - | 23-35 |
| Series II | - | 22-21 | 22-32 | 22-35† |
| Series I | 21-75* | 23-21 | 23-32** | 23-35 |
| No. of Contacts | 4 #8 Twinax | 21 #16 | 32 #20 | 100 #22D |
| Service Ratings | M | II | I | M |

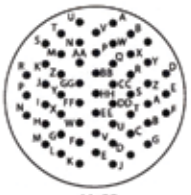
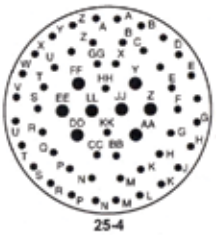


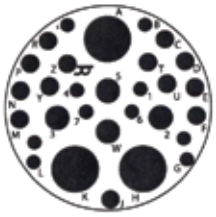
*DISCLAIMER: Our facility is not currently certified by the DLA and this product is not covered by the QPL/QML. Mil-Spec part numbers are only for cross reference to the Commercial Equivalent.*

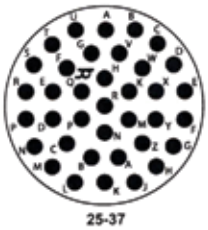
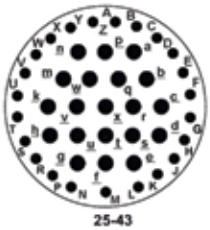
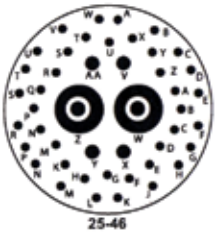
## Contact Arrangements (Engaging View Pin Insert)

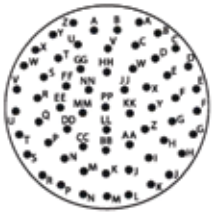
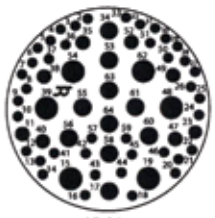
* Socket insert only
** Pin insert only (Not available in socket insert Series I and III

† Indicates layouts are available in all shell styles including MS27499, MS27508, KJ2E and KJ5E
· Consult factory for MS27505E/KJL5E insert availability

| | | | |
|---|---|---|---|
| | |  |  |
| Series III | 23-53 | 23-55 | 25-4 |
| Series II | 22-53† | 22-55† | 24-4† |
| Series I | 23-53 | 23-55 | 25-4 |
| No. of Contacts | 53 #20 | 55 #20 | 48 #20,8 #16 |
| Service Ratings | I | I | I |

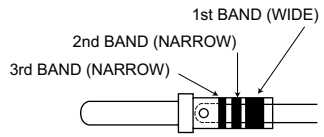
| | | | | | |
|---|---|---|---|---|---|
| | | |  | | |
| Series III | 25-8 | 25-19 | 25-20 | 25-24 | 25-29 |
| Series II | - | - | - | 24-24† | 24-29† |
| Series I | 25-8** | 25-19 | 25-20* | 25-24 | 25-29 |
| No. of Contacts | 8 #8 Twinax | 19 #12 | 3 #8 Twinax, 13 #16, 4 #12 Coax, 10 #20 | 12 #16,12 #12 | 29 #16 |
| Service Ratings | Twinax | I | N / Coax / Twinax | I | I |

| | | | | | |
|---|---|---|---|---|---|
| | |  | |  |  |
| Series III | 25-35 | 25-37 | 25-42 | 25-43 | 25-46 |
| Series II | 24-35† | - | - | - | - |
| Series I | 25-35 | 25-37* | 25-42* | 25-43 | 25-46 |
| No. of Contacts | 128 #22D | 37 #16 | 38 #20,4 #8 Coax | 23 #20,20 #16 | 40 #20,4 #16,2 #8 |
| Service Ratings | M | II I | I, Coax | I | Twinax |

| | | | |
|---|---|---|---|
| |  |  | |
| Series III | 25-61 | 25-64 | 25-66* |
| Series II | 24-61† | - | - |
| Series I | 25-61 | 25-64 | 25-66* |
| No. of Contacts | 61 #20 | 40 #22D,8 #20 10 #16,6 #12 | 53 #22D,2 #20,11 #16 |
| Service Ratings | I | I | I |

## Contacts-Pin (Series I/II/III)

**MIL-C-39029/58**




| Contact Size | Color Bands 1 | 2 | 3 | Cannon Part Number | AS39029 Military Part Number |
|---|---|---|---|---|---|
| 22D | Orange | Blue | Black | 980-0008-878 | AS39029/58-360 |
| 20 | Orange | Blue | Orange | 980-0008-879 | AS39029/58-363 |
| 16 | Orange | Blue | Yellow | 980-0008-880 | AS39029/58-364 |
| 12 | Orange | Blue | Green | 980-0008-881 | AS39029/58-365 |

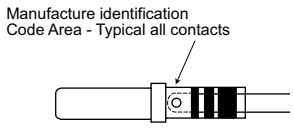
**MIL-C-39029/107** **H Contacts (1500 Cycle)**

| Contact Size | Color Bands 1 | 2 | 3 | Cannon Part Number | AS39029 Military Part Number |
|---|---|---|---|---|---|
| 22D | Blue | Red | Black | 980-0010-032 | AS39029/107-620 |
| 20 | Blue | Red | Brown | 980-0010-033 | AS39029/107-621 |
| 16 | Blue | Red | Red | 980-0010-034 | AS39029/107-622 |
| 12 | Blue | Red | Orange | 980-0010-035 | AS39029/107-623 |

| Contact Size | | Cannon Part Number | Cable Accomodations |
|---|---|---|---|
| 8 Coax | 95 Ohms | 249-2196-000 | RG-180 |
| | | 249-2196-001 | RG-174, 179, 316 |
| | | 249-2196-002 | RG-142 |
| 8 Twinax | 75 Ohms | 980-1000-012 | M17/176-00002 |
| 12 Coax | | 980-1000-016 | RG-174, 179, 316 |

## Contacts-Socket (Series II)

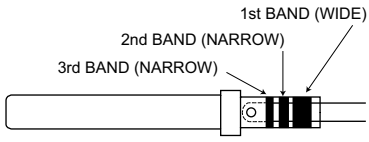
**MIL-C-39029/57** **KJ**




| Contact Size | Color Bands 1 | 2 | 3 | Cannon Part Number | AS39029 Military Part Number |
|---|---|---|---|---|---|
| 22D | Orange | Green | Yellow | 980-0008-874 | AS39029/57-354 |
| 20 | Orange | Green | Violet | 980-0008-875 | AS39029/57-357 |
| 16 | Orange | Green | Gray | 980-0008-876 | AS39029/57-358 |
| 12 | Orange | Green | White | 980-0008-877 | AS39029/57-359 |

## Contacts-Socket (Series I & III)

**MIL-C-39029/56**




| Contact Size | Color Bands 1 | 2 | 3 | Cannon Part Number | AS39029 Military Part Number |
|---|---|---|---|---|---|
| 22D | Orange | Yellow | Gray | 980-0008-870 | AS39029/56-348 |
| 20 | Orange | Green | Brown | 980-0008-871 | AS39029/56-351 |
| 16 | Orange | Green | Red | 980-0008-872 | AS39029/56-352 |
| 12 | Orange | Green | Orange | 980-0008-873 | AS39029/56-353 |

**MIL-C-39029/106** **J Contacts (1500 Cycle)**

| Contact Size | Color Bands 1 | 2 | 3 | Cannon Part Number | AS39029 Military Part Number |
|---|---|---|---|---|---|
| 22D | Blue | Brown | Yellow | 980-0008-993 | AS39029/106-614 |
| 20 | Blue | Brown | Green | 980-0008-994 | AS39029/106-615 |
| 16 | Blue | Brown | Blue | 980-0008-995 | AS39029/106-616 |
| 12 | Blue | Brown | Violet | 980-0008-996 | AS39029/106-617 |

| Contact Size | | Cannon Part Number | Cable Accomodations |
|---|---|---|---|
| 8 Coax | 95 Ohms | 249-2195-000 | RG-180 |
| | | 249-2195-001 | RG-174, 179, 316 |
| | | 249-2195-002 | RG-142 |
| 8 Twinax | 75 Ohms | 980-1000-013 | M17/176-00002 |
| 12 Coax | | 980-1000-015 | RG-174, 179, 316 |

ITT

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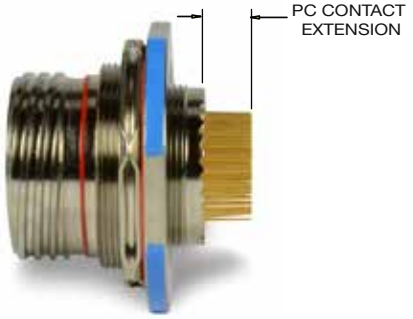
Dimensions shown in inches (mm)
Specifications and dimensions subject to change

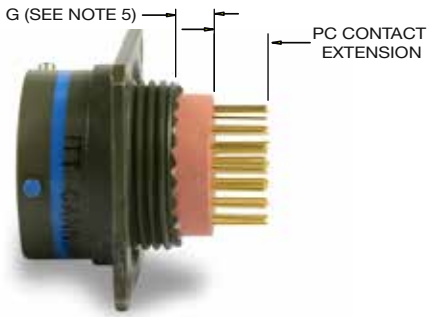
## Contacts-Printed Circuit Board

### PIN PRINTED CIRCUIT CONTACT EXTENSION FROM REAR OF CONNECTOR (MAX / MIN)

| PC CONTACT PART NUMBER | CONTACT SIZE | TAIL DIA. ±.001 | MS27466 MS27467 KJL0 | MS27656 MS27468 KJL3 / KJL7 | MS27505E KJL5E | MS27472 MS27474 KJ0 / KJ7 | MS27499E MS27508E KJ2E / KJ5E | MS27513E MS27497 / NO MS KJ2R / KJ3 / KJ5R | D38999/20-Style KJB0 KJA0 | D38999/24-Style KJA7 (9-17) | D38999/24-Style KJA7 (19-25) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 030-2097-002 | 22D | 0.020 | 0.261<br>0.189 | 0.244<br>0.176 | 0.408<br>0.376 | 0.264<br>0.226 | 0.408<br>0.376 | 0.264<br>0.226 | 0.262<br>0.200 | 0.280<br>0.216 | 0.258<br>0.198 |
| 030-2097-006 | 22D | 0.020 | 0.069<br>N/A | 0.052<br>N/A | 0.216<br>0.184 | 0.072<br>0.034 | 0.216<br>0.184 | 0.072<br>0.034 | 0.070<br>0.008 | 0.088<br>0.024 | 0.066<br>0.006 |
| 030-2097-008 | 22D | 0.020 | 0.216<br>0.144 | 0.199<br>0.131 | 0.363<br>0.331 | 0.219<br>0.181 | 0.363<br>0.331 | 0.219<br>0.181 | 0.217<br>0.155 | 0.235<br>0.171 | 0.213<br>0.153 |
| 030-2097-015 | 22D | 0.020 | 0.293<br>0.221 | 0.276<br>0.208 | 0.440<br>0.408 | 0.296<br>0.258 | 0.440<br>0.408 | 0.296<br>0.258 | 0.294<br>0.232 | 0.312<br>0.248 | 0.290<br>0.230 |
| 030-1997-006 | 20 | 0.025 | 0.166<br>0.094 | 0.149<br>0.081 | 0.313<br>0.281 | 0.169<br>0.131 | 0.313<br>0.281 | 0.169<br>0.131 | 0.167<br>0.105 | 0.185<br>0.121 | 0.163<br>0.103 |
| 030-1997-022 | 20 | 0.025 | 0.281<br>0.209 | 0.264<br>0.196 | 0.428*<br>0.396* | 0.284<br>0.246 | 0.428*<br>0.396* | 0.284<br>0.246 | 0.282<br>0.220 | 0.300<br>0.236 | 0.278<br>0.218 |
| 030-1997-030 | 20 | 0.019 | 0.364<br>0.292 | 0.347<br>0.279 | 0.511<br>0.479 | 0.367<br>0.329 | 0.511<br>0.479 | 0.367<br>0.329 | 0.365<br>0.303 | 0.383<br>0.319 | 0.361<br>0.301 |
| 030-1995-023 | 16 | 0.062 | 0.278<br>0.206 | 0.261<br>0.193 | 0.425<br>0.393 | 0.281<br>0.243 | 0.425<br>0.393 | 0.281<br>0.243 | 0.279<br>0.217 | 0.297<br>0.233 | 0.275<br>0.215 |
| 030-1995-024 | 16 | 0.062 | 0.118<br>0.046 | 0.101<br>0.033 | 0.265<br>0.233 | 0.121<br>0.083 | 0.265<br>0.233 | 0.121<br>0.083 | 0.119<br>0.057 | 0.137<br>0.073 | 0.115<br>0.055 |




(KJL0/3/7 & KJA0/7)




(KJL5E & KJ0/2E/2R/3/5E/5R/7)

### SOCKET (SERIES II) PRINTED CIRCUIT CONTACT EXTENSION FROM REAR OF CONNECTOR (MAX / MIN)

| PC CONTACT PART NUMBER | CONTACT SIZE | TAIL DIA. ±.001 | MS27472 MS27474 KJ0 / KJ7 | MS27499E MS27508E KJ2E / KJ5E | MS27513E MS27497 / NO MS KJ2R / KJ3 / KJ5R |
|---|---|---|---|---|---|
| 031-1186-006 | 22D | 0.020 | 0.179<br>0.141 | 0.323<br>0.291 | 0.179<br>0.141 |
| 031-1186-011 | 22D | 0.020 | 0.109<br>0.071 | 0.253<br>0.221 | 0.109<br>0.071 |
| 031-1186-013 | 22D | 0.020 | 0.217<br>0.179 | 0.361<br>0.329 | 0.217<br>0.179 |
| 031-1186-021 | 22D | 0.020 | 0.262<br>0.224 | 0.406<br>0.374 | 0.262<br>0.224 |
| 031-1124-021 | 20 | 0.025 | 0.247<br>0.209 | 0.391*<br>0.359* | 0.247<br>0.209 |
| 031-1123-007 | 16 | 0.062 | 0.101<br>0.063 | 0.245<br>0.213 | 0.101<br>0.063 |

### SOCKET (SERIE I & III) PRINTED CIRCUIT CONTACT EXTENSION FROM REAR OF CONNECTOR (MAX / MIN)

| PC CONTACT PART NUMBER | CONTACT SIZE | TAIL DIA. ±.001 | MS27466 MS27467 KJL0 | MS27656 MS27468 KJL3 / KJL7 | MS27505E KJL5E | D38999/20-Style KJB0 KJA0 | D38999/24-Style KJA7 (9-17) | D38999/24-Style KJA7 (19-25) |
|---|---|---|---|---|---|---|---|---|
| 031-1147-014 | 22D | 0.020 | 0.244<br>0.172 | 0.227<br>0.159 | 0.391*<br>0.359* | 0.245<br>0.183 | 0.263<br>0.199 | 0.241<br>0.181 |
| 031-1147-039 | 22D | 0.020 | 0.168<br>0.096 | 0.151<br>0.083 | 0.315*<br>0.283* | 0.169<br>0.107 | 0.187<br>0.123 | 0.165<br>0.105 |
| 031-1147-040 | 22D | 0.020 | 0.438<br>0.366 | 0.421<br>0.353 | 0.585*<br>0.553* | 0.439<br>0.377 | 0.457<br>0.393 | 0.435<br>0.375 |
| 031-1124-040 | 20 | 0.025 | 0.486<br>0.414 | 0.469<br>0.401 | 0.633<br>0.601 | 0.487<br>0.425 | 0.505<br>0.441 | 0.483<br>0.423 |
| 031-1123-020 | 16 | 0.029 | 0.272<br>0.200 | 0.255<br>0.187 | 0.419<br>0.387 | 0.273<br>0.211 | 0.291<br>0.227 | 0.269<br>0.209 |

NOTES: UNLESS OTHERWISE SPECIFIED.

1. PC CONTACTS HAVE GOLD PLATING OVER SUITABLE UNDERPLATE PER MIL-C-39029 SPECIFICATION.
2. PC CONTACT EXTENSIONS APPLY TO ITT CANNON CONNECTORS ONLY FOR ALL SHELL SIZES.
3. N/A INDICATES NO EXTENSION.
4. * INDICATES PC TAIL WITH STEP EXTENDING FROM REAR OF CONNECTOR.
5. G DIM. IS .031 +/- .016 FOR KJL5E AND .120 +/- .030 (SHELL SIZES 8 THRU 22) AND .090 +/- .050 (SHELL SIZE 24) FOR KJ0/2E/2R/3/5E/5R/7.
6. FOR OTHER SPECIFIC PC CONTACT DATA, CONSULT ITT EC, SANTA ANA, CA, USA.

Dimensions shown in inches (mm)
Specifications and dimensions subject to change

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## 38999-Style Series III Modification Codes: PC Standoff Contacts installed

KJB Wall Mount with
PC Standoff Contacts installed

HOW TO ORDER

| Modification Code | Definition |
|---|---|
| 100 | Untinned PC contacts with extensions E & E1 |
| 101 | Lead tinned PC contacts with extensions E & E1 |
| 102 | Lead-free tinned PC contacts with extensions E & E1 |
| 103 | Untinned PC contacts with extensions E & E2 |
| 104 | Lead tinned PC contacts with extensions E & E2 |
| 105 | Lead-free tinned PC contacts with extensions E & E2 |

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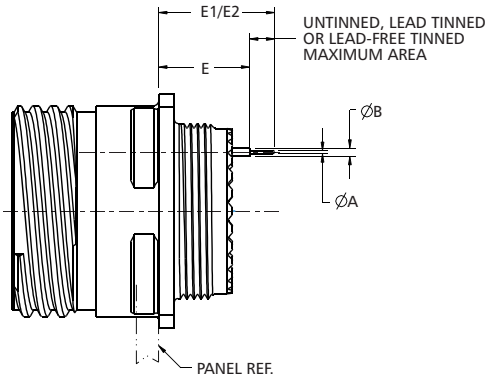
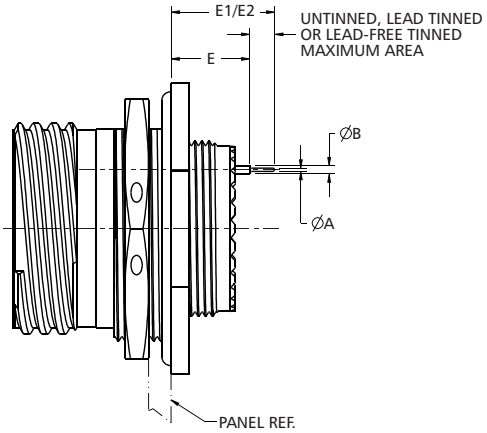



**KJB0 WALL MOUNT**




**KJB7 JAM NUT**

| Contact Style | Dimension | KJB7T (Jam Nut) 9 to 25 | KJB0T (Wall Mount) 9 to 19 | KJB0T (Wall Mount) 21 to 25 |
|---|---|---|---|---|
| P | E | .392 / .436 (9.96 / 11.07) | .459 / .503 (11.66 / 12.78) | .489 / .533 (12.42 / 13.54) |
| | E1 | .611 / .671 (15.52 / 17.04) | .687 / .738 (17.22 / 18.75) | .708 / .768 (17.98 / 19.51) |
| | E2 | .749 / .809 (19.02 / 20.54) | .816 / .876 (20.72 / 22.25) | .846 / .906 (21.48 / 23.01) |
| S | E | .392 / .436 (9.96 / 11.07) | .459 / .503 (11.66 / 12.78) | .489 / .533 (12.42 / 13.54) |
| | E1 | .611 / .671 (15.52 / 17.04) | .687 / .738 (17.22 / 18.75) | .708 / .768 (17.98 / 19.51) |
| | E2 | .749 / .809 (19.02 / 20.54) | .816 / .876 (20.72 / 22.25) | .846 / .906 (21.48 / 23.01 |

| Contact Size | ØA Max. | ØB Min. |
|---|---|---|
| 22D | .028 (.71) | .044 (1.12) |
| 20 | .036 (.91) | .052 (1.32) |
| 16 | .068 (1.73) | .084 (2.13) |

## Contact Sealing Bushings

**Size 8 Twinax Sealing Bushing** 321-1035-000
Used with the Twinax contact in Twinax layouts for sealing cable size M17/176-00002

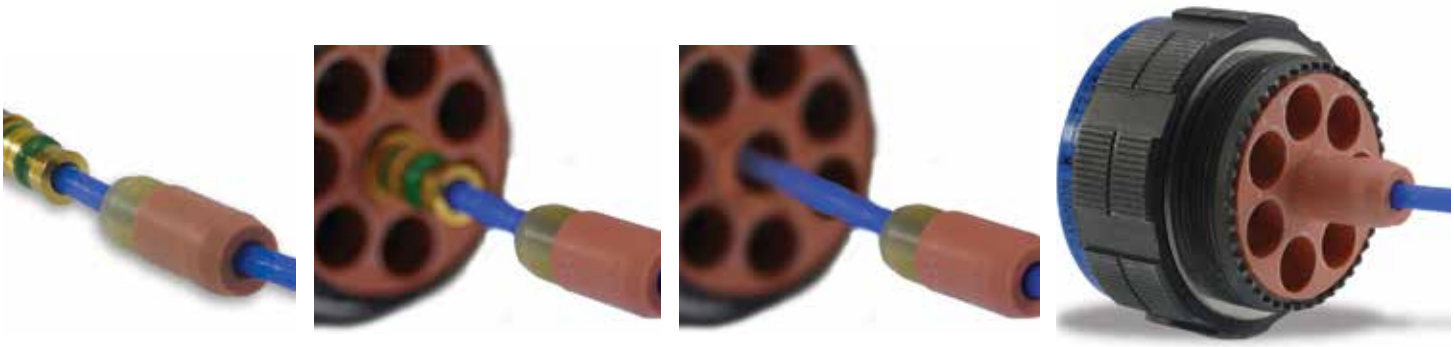
**Size 8 Coax Sealing Bushing** 321-1034-001
Used with the Coax contact in Twinax layouts for sealing cable size RG-180

Twinax Grommet

Coax Grommet

## Contact Sealing Bushing Sequence into Twinax Grommet

**(Bushing only used with Twinax grommet)**



## Wire Sizes and Diameters

| Contact Size | Wire size (AWG) | Finished wire outside dimensions | |
|---|---|---|---|
| | | Minimum | Maximum |
| 22D | 28, 26, 24, 22 | 0.030 | 0.054 |
| 22M* | 28, 26, 24 | 0.030 | 0.050 |
| 22* | 26, 24, 22 | 0.034 | 0.060 |
| 20 | 24, 22, 20 | 0.040 | 0.083 |
| 16 | 20, 18, 16 | 0.065 | 0.109 |
| 12 | 14, 12 | 0.097 | 0.142 |
| 8 Coax | RG-180 | 0.136 | 0.146 |
| 8 Twinax | M17/176-00002 | 0.124 | 0.134 |
| 12 Coax | RG174, 179, 316 | 0.094 | 0.102 |

*For reference only

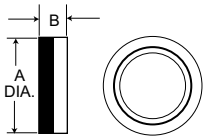
## Recommended Jam Nut Torque Values

| Series II | | Series I & III | |
|---|---|---|---|
| Shell Size | Inch-Pounds | Shell Size | Inch-Pounds |
| 8 | 46/50 | 9 | 30/36 |
| 10 | 55/60 | 11 | 40/46 |
| 12 | 70/75 | 13 | 55/60 |
| 14 | 80/85 | 15 | 70/75 |
| 16 | 90/95 | 17 | 80/85 |
| 18 | 100/110 | 19 | 90/95 |
| 20 | 110/120 | 21 | 100/110 |
| 22 | 120/130 | 23 | 110/120 |
| 24 | 140/150 | 25 | 120/130 |

## Coupling Nut Torque Values (Series I, II and III)

| Maximum engagement and disengagement | | Minimum disengagement |
|---|---|---|
| Shell Size | Inch Pound | Inch Pound |
| 8 | 8 | 2 |
| 9 | 8 | 2 |
| 10 | 12 | 2 |
| 11 | 12 | 2 |
| 12 | 16 | 2 |
| 13 | 16 | 2 |
| 14 | 20 | 4 |
| 15 | 20 | 3 |
| 16 | 24 | 4 |
| 17 | 24 | 3 |
| 18 | 28 | 5 |
| 19 | 28 | 3 |
| 20 | 32 | 6 |
| 21 | 32 | 5 |
| 22 | 36 | 7 |
| 23 | 36 | 5 |
| 24 | 36 | 7 |
| 25 | 40 | 5 |

## Backshell - Type E (Straight), Series II only

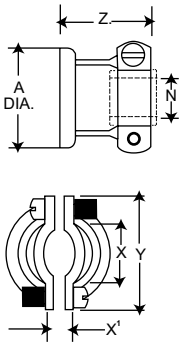



| Shell Size Series II | A Dia. Max. | B Dia. Max. |
|---|---|---|
| 8 | .580 (14.73) | .328 (8.33) |
| 10 | .705 (17.91) | .328 (8.33) |
| 12 | .830 (21.08) | .328 (8.33) |
| 14 | .955 (24.26) | .328 (8.33) |
| 16 | 1.080 (27.32) | .328 (8.33) |
| 18 | 1.205 (30.61) | .328 (8.33) |
| 20 | .330 (33.78) | .328 (8.33) |
| 22 | 1.455 (36.96) | .328 (8.33) |
| 24 | 1.555 (39.50) | .270 (6.86) |

**How To Order**

| Shell Size | Finishes A | B | C | N |
|---|---|---|---|---|
| Series II | Cadmium/Nickel-Clear Part Number | Cadmium/Nickel-O.D Part Number | Anodic Non-Cond. Part Number | Electroless Nickel Part Number |
| 8 | 057-0776-000 | 057-0862-000 | 057-0819-000 | 057-0776-002 |
| 10 | 057-0777-000 | 057-0863-000 | 057-0820-000 | 057-0777-002 |
| 12 | 057-0778-000 | 057-0864-000 | 057-0821-000 | 057-0778-002 |
| 14 | 057-0779-000 | 057-0846-000 | 057-0822-000 | 057-0779-002 |
| 16 | 057-0780-000 | 057-0847-000 | 057-0823-000 | 057-0780-002 |
| 18 | 057-0781-000 | 057-0848-000 | 057-0824-000 | 057-0781-002 |
| 20 | 057-0782-000 | 057-0849-000 | 057-0825-000 | 057-0782-002 |
| 22 | 057-0783-000 | 057-0850-000 | 057-0826-000 | 057-0783-002 |
| 24 | 057-0784-000 | 057-0851-000 | 057-0827-000 | 057-0784-002 |

## Backshell - Type F (Cable Clamp)




| Shell Size Series I | Shell Size Series II | A Max. | N Dia. Max. | X Dia. Min. | X [1] Dia. Min. | Y Max. | Z Max. |
|---|---|---|---|---|---|---|---|
| 9 | 8 | .508 (14.73) | .135 (3.43) | .234 (5.94) | .187 (4.75) | .829 (21.06) | .813 (20.65) |
| 11 | 10 | .705 (17.91) | .198 (5.03) | .297 (7.54) | .187 (4.75) | .891 (22.63) | .813 (20.65) |
| 13 | 12 | .830 (21.08) | .322 (7.18) | .422 (10.72) | .281 (7.14) | 1.016 (25.81) | .813 (20.65) |
| 15 | 14 | .955 (24.26) | .385 (9.78) | .547 (12.89) | .325 (8.26) | 1.141 (28.98) | .813 (20.65) |
| 17 | 16 | 1.080 (27.43) | .510 (12.95) | .609 (15.47) | .356 (9.04) | 1.203 (30.56) | .933 (23.70) |
| 19 | 18 | 1.205 (30.61) | .635 (16.13) | .734 (18.64) | .456 (11.58) | 1.469 (37.31) | .933 (23.70) |
| 21 | 20 | 1.330 (33.78) | .635 (16.13) | .734 (18.64) | .519 (13.18) | 1.469 (37.31) | .933 (23.70) |
| 23 | 22 | 1.455 (36.96) | .760 (19.30) | .922 (23.42) | .519 (13.18) | 1.656 (42.06) | .933 (23.70) |
| 25 | 24 | 1.555 (39.50) | .810 (20.57) | .984 (24.99) | .657 (16.69) | 1.750 (44.45) | .893 (22.68) |

**How To Order (MS Version)**

MS27506 - A - 8 - 2

**Military Designation**
MS27506 Type F Straight with Cable Clamp

**Finish**
A - Cad/Nickel (Clear)
B - Cad/Nickel (O.D)
F - Nickel (Electroless)

**Shell Size**
Series I - 9, 11, 13, 15, 17, 19, 21, 23, 25
Series II - 8, 10, 12, 14, 16, 18, 20, 22, 24

**Adapter**
Geometry - 2

| Shell Size Series I | Shell Size Series II | MS Part Number | Cannon Part Number | Finishes A Cannon | A MS | B Cannon | B MS | N Cannon | F MS |
|---|---|---|---|---|---|---|---|---|---|
| 9 | 8 | 27506-*8-2 | 057-3005-*** | -012 | A | -013 | B | -015 | F |
| 11 | 10 | 27506-*10-2 | 057-3006-*** | -011 | A | -012 | B | -014 | F |
| 13 | 12 | 27506-*12-2 | 057-3007-*** | -012 | A | -013 | B | -015 | F |
| 15 | 14 | 27506-*14-2 | 057-3008-*** | -010 | A | -011 | B | -013 | F |
| 17 | 16 | 27506-*16-2 | 057-3009-*** | -012 | A | -013 | B | -015 | F |
| 19 | 18 | 27506-*18-2 | 057-3010-*** | -013 | A | -014 | B | -016 | F |
| 21 | 20 | 27506-*20-2 | 057-3011-*** | -011 | A | -013 | B | -015 | F |
| 23 | 22 | 27506-*22-2 | 057-3012-*** | -015 | A | -016 | B | -018 | F |
| 25 | 24 | 27506-*24-2 | 057-3013-*** | -013 | A | -014 | B | -017 | F |

* MS Finish  *** Cannon Finish

## Backshell Series III

**M85049/ 38 S 9 W**

Military Designator

Type
- Straight Cable Clamp 38
- 90° with Cable Clamp 39

Configuration
- Self Locking S
- Nonself Locking*

*For Nonself locking, leave designator blank

Shell Size Series III
9, 11, 13, 15, 17, 19, 21, 23, 25

Finish
- Electroless Nickel N
- OD Cadmium over electroless nickel W

M85049/38

**Straight Cable Clamp - Nonself Locking**

| Shell Size Series III | Military Part Number Nickel | Military Part Number OD Cadmium |
|---|---|---|
| 9 | M85049/38-9W | M85049/38-9N |
| 11 | M85049/38-11W | M85049/38-11N |
| 13 | M85049/38-13W | M85049/38-13N |
| 15 | M85049/38-15W | M85049/38-15N |
| 17 | M85049/38-17W | M85049/38-17N |
| 19 | M85049/38-19W | M85049/38-19N |
| 21 | M85049/38-21W | M85049/38-21N |
| 23 | M85049/38-23W | M85049/38-23N |
| 25 | M85049/38-25W | M85049/38-25N |

**Straight Cable Clamp - Self Locking**

| Shell Size Series III | Military Part Number Nickel | Military Part Number OD Cadmium |
|---|---|---|
| 9 | M85049/38S-9W | M85049/38S-9N |
| 11 | M85049/38S-11W | M85049/38S-11N |
| 13 | M85049/38S-13W | M85049/38S-13N |
| 15 | M85049/38S-15W | M85049/38S-15N |
| 17 | M85049/38S-17W | M85049/38S-17N |
| 19 | M85049/38S-19W | M85049/38S-19N |
| 21 | M85049/38S-21W | M85049/38S-21N |
| 23 | M85049/38S-23W | M85049/38S-23N |
| 25 | M85049/38S-25W | M85049/38S-25N |

M85049/39

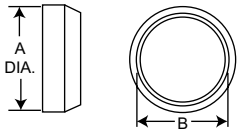
**90° with Cable Clamp - Nonself Locking**

| Shell Size Series III | Military Part Number Nickel | Military Part Number OD Cadmium |
|---|---|---|
| 9 | M85049/39-9W | M85049/39-9N |
| 11 | M85049/39-11W | M85049/39-11N |
| 13 | M85049/39-13W | M85049/39-13N |
| 15 | M85049/39-15W | M85049/39-15N |
| 17 | M85049/39-17W | M85049/39-17N |
| 19 | M85049/39-19W | M85049/39-19N |
| 21 | M85049/39-21W | M85049/39-21N |
| 23 | M85049/39-23W | M85049/39-23N |
| 25 | M85049/39-25W | M85049/39-25N |

**90° with Cable Clamp - Self Locking**

| Shell Size Series III | Military Part Number Nickel | Military Part Number OD Cadmium |
|---|---|---|
| 9 | M85049/39S-9W | M85049/39S-9N |
| 11 | M85049/39S-11W | M85049/39S-11N |
| 13 | M85049/39S-13W | M85049/39S-13N |
| 15 | M85049/39S-15W | M85049/39S-15N |
| 17 | M85049/39S-17W | M85049/39S-17N |
| 19 | M85049/39S-19W | M85049/39S-19N |
| 21 | M85049/39S-21W | M85049/39S-21N |
| 23 | M85049/39S-23W | M85049/39S-23N |
| 25 | M85049/39S-25W | M85049/39S-25N |

## Backshell - Type P (Potting Boot)




| Shell Size | | | |
|---|---|---|---|
| Series I | Series II | A Dia. Max. | B Dia. Max. |
| 9 | 8 | .598 (15.19) | .434 (11.02) |
| 11 | 10 | .723 (18.36) | .548 (13.92) |
| 13 | 12 | .847 (21.51) | .673 (17.09) |
| 15 | 14 | .969 (24.61) | .798 (20.27) |
| 17 | 16 | 1.087 (27.61) | .899 (22.83) |
| 19 | 18 | 1.211 (30.76) | 1.024 (26.01) |
| 21 | 20 | 1.336 (33.93) | 1.141 (29.98) |
| 23 | 22 | 1.461 (37.11) | 1.274 (32.36) |
| 25 | 24 | 1.586 (40.28) | 1.399 (35.53) |

How To Order (MS Version)

MS27486 - 10 - 1

**MS Designation**
**Shell Size**
Series I - 9, 11, 13, 15, 17, 19, 21, 23, 25
Series II - 8, 10, 12, 14, 16, 18, 20 , 22 , 24
1 - Straight Cup

NOTE: When ordering the MS version you must specify both MS numbers for the Potting Boot and the Adapter Ring.

| Shell Size | | MS27486 Part Number | Cannon Part Number |
|---|---|---|---|
| Series I | Series II | | |
| 9 | 8 | 27486-**-1 | 040-0185-000 |
| 11 | 10 | 27486-**-1 | 040-0169-000 |
| 13 | 12 | 27486-**-1 | 040-0170-000 |
| 15 | 14 | 27486-**-1 | 040-0171-000 |
| 17 | 16 | 27486-**-1 | 040-0172-000 |
| 19 | 18 | 27486-**-1 | 040-0173-000 |
| 21 | 20 | 27486-**-1 | 040-0174-000 |
| 23 | 22 | 27486-**-1 | 040-0175-000 |
| 25 | 24 | 27486-**-1 | 040-0176-000 |

** Only even numbered shell size is applicable.

## Potting Boot Adapter Ring

**How To Order (MS Version)**

MS27485 - A - 8

**Miltary Designation**
**Finish**
A - Cad/Nickel (Clear)
B - Cad/Nickel (O.D)
F - Nickel (Electroless)
Shell Size
Series I - 9, 11, 13, 15, 17, 19, 21, 23, 25
Series II - 8, 10, 12, 14, 16, 18, 20 , 22 , 24

NOTE: When ordering the MS version you must specify both MS numbers for the Potting Boot and the Adapter Ring.

| Shell Size | | | | Finishes | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | A Cadmium/Nickel Clear | | B Cadmium/Nickel-O.D | | N Electroless | F Nickel |
| Series I | Series II | MS27485 Part Number | Cannon Part Number | Cannon | MS | Cannon | MS | Cannon | MS |
| 9 | 8 | 27485-*-** | 237-0887-*** | -000 | A | -001 | B | -002 | F |
| 11 | 10 | 27485-*-** | 237-0874-*** | -000 | A | -001 | B | -002 | F |
| 13 | 12 | 27485-*-** | 237-0875-*** | -000 | A | -001 | B | -002 | F |
| 15 | 14 | 27485-*-** | 237-0876-*** | -000 | A | -001 | B | -002 | F |
| 17 | 16 | 27485-*-** | 237-0877-*** | -000 | A | -001 | B | -002 | F |
| 19 | 18 | 27485-*-** | 237-0878-*** | -000 | A | -001 | B | -002 | F |
| 21 | 20 | 27485-*-** | 237-0879-*** | -000 | A | -001 | B | -002 | F |
| 23 | 22 | 27485-*-** | 237-0880-*** | -000 | A | -001 | B | -003 | F |
| 25 | 24 | 27485-*-** | 237-0881-*** | -000 | A | -001 | B | -003 | F |

* MS Finish
** Only even numbered shell size is applicable
*** Cannon Finish

## Wire Sealing Plugs

| Series III Size | Series I & II Size | Part Number Cannon | Part Number MS27488 | Color Code |
|---|---|---|---|---|
| 22D | 22D | 225-1013-000 | MS27488-22-2 | Black |
| 20 | 20 | 225-0070-000 | MS27488-20-2 | Red |
| 16 | 16 | 225-0104-000 | MS27488-16-2 | Green |
| 12 | 12 | 225-0105-000 | MS27488-12-2 | Orange |

Wire sealing plugs meet MS27488 standards. The plugs are color coded according to size for easy identification. Wire sealing plugs may be ordered separately.

Dimensions shown in inches (mm)
Specifications and dimensions subject to change

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## Tools - Crimp

M22520/1-01

CBT-530



M22520/2-01

CBT-565

| Contact Size | Pin Contact Series I/II/III | | Socket Contact Series II | | Socket Contact Series I & III | |
|---|---|---|---|---|---|---|
| | Crimp Tool Part Number | Locator or Turret Part Number | Crimp Tool Part Number | Locator or Turret Part Number | Crimp Tool Part Number | Locator or Turret Part Number |
| 22D or 22M* | M22520/2-01 | M22520/2-09 | M22520/2-01 | M22520/2-06 | M22520/2-01 | M22520/2-07 |
| 22* | M22520/2-01 | M22520/2-09 | M22520/2-01 | M22520/2-06 | M22520/2-01 | M22520/2-07 |
| 20 | M22520/1-01 | M22520/1-04 OR TH 187 | M22520/1-01 | M22520/1-04 | M22520/1-01 | M22520/1-04 |
| 16 | M22520/1-01 | M22520/1-04 OR TH 187 | M22520/1-01 | M22520/1-04 | M22520/1-01 | M22520/1-04 |
| 12 | M22520/1-01 | M22520/1-04 | M22520/1-01 | M22520/1-04 | M22520/1-01 | M22520/1-04 |
| 8 Coax | | | | | | |
| Inner Conductor | Crimp Tool | Crimp Tool Locator | Outer Conductor | | Crimp Tool | Crimp Tool Locator |
| RG180 | M22520/2-01 | 995-0002-268 | RG180 | | M22520/5-01 | M22520/5-39B |
| RG 174, 179, 316 | M22520/2-01 | 995-0002-268 | RG 174, 179, 316 | | M22520/5-01 | M22520/5-37B |
| RG 142 | M22520/2-01 | 995-0002-268 | RG 142 | | M22520/5-01 | M22520/5-19B |
| 12 Coax | | | | | | |
| Inner Conductor | Crimp Tool | Crimp Tool Locator | Outer Conductor | | Crimp Tool | Crimp Tool Locator |
| RG174, 179, 316 | M22520/2-01 | M22520/2-34 | RG174, 179, 316 | | M22520/31-01 | M22520/31-02 |
| 8 Twinax | Crimp Tool | Crimp Tool Locator | | | | |
| Center Contact | M22520/2-01 | K709 | | | | |
| Intermediate Contact | M22520/5-01 | Y631 Die Closure B | | | | |
| Outer Contact | M22520/5-01 | Y631 Die Closure A | | | | |

* For reference only

## Tools - Plastic

Insertion/Extraction

| Contact Size | Cannon Description | Cannon Part Number | M81969 Part Number | Superseded Military Part Number | Insertion Color Tip | Extraction Color Tip |
|---|---|---|---|---|---|---|
| 22D | CIET-22D-01 | 274-7048-000 | M81969/14-01 | MS27534-22D | Green | White |
| 22M* | CIET-22D-01 | 274-7048-000 | M81969/14-01 | MS27534-22D | Green | White |
| 20 | CIET-20-10 | 274-7001-000 | M81969/14-10 | MS27534-20 | Red | Orange |
| 16 | CIET-16-03 | 274-7002-000 | M81969/14-03 | MS27534-16 | Blue | White |
| 12 | CIET-12-04 | 274-7003-000 | M81969/14-04 | MS27534-12 | Yellow | White |
| 8 Coax/Twinax | CET8-T | 323-7004-001 | — | — | — | — |
| 12 Coax | CIET-12-04 | 274-7003-000 | M81969/14-04 | M527534-12 | Yellow | White |

Insertion tool not required for size 8

## Tools - Metal (MS)

Insertion

Extraction

| Contact Size | Insertion | | | Extraction | | | |
|---|---|---|---|---|---|---|---|
| | MS27495 Part Number | ITT CANNON Part Number | Color Band | MS27495 Part Number | ITT CANNON Part Number | Color Band No.1 | Color Band No.2 |
| 22D OR 22M* | MS27495 A22M | 995-0001-718 | Black | MS27495 R22M | 995-0001-719 | Black | White |
| 22* | MS27495 A22 | 995-0001-720 | Brown | MS27495 R22 | 995-0001-721 | Brown | White |
| 20 | MS27495 A20 | 995-0001-716 | Red | MS27495 R20 | 995-0001-717 | Red | White |
| 16 | MS27495 A16 | 995-0001-732 | Blue | MS27495 R16 | 995-0001-731 | Blue | White |

Band No. 1 indicates tool size.
Band No. 2 indicates removal tool.
* For reference only

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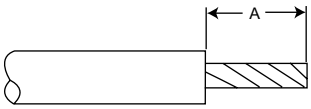
Dimensions shown in inches (mm)
Specifications and dimensions subject to change

# Assembly Instructions

## Wire Stripping

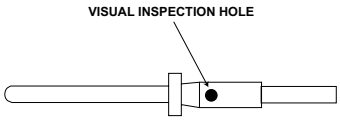
Strip insulation from end of wire to be crimped. (See table for proper stripping dimensions.) Do not cut or damage wire strands.




| Wire Size | A |
|---|---|
| 22D or 22M* | .125 (3.18) |
| 20 | .188 (4.77) |
| 16 | .188 (4.77) |
| 12 | .188 (4.77) |

* For reference only

## Contact Crimping



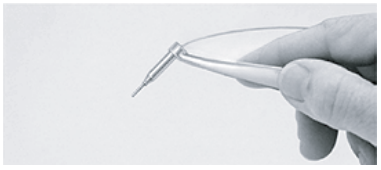

1. Insert stripped wire into contact crimp pot. Wire must be visible thru inspection hole.

2. Using correct crimp tool and locator, cycle the tool once to be sure the indentors are open. Insert contact and wire into locator. Squeeze tool handles firmly and completely to insure a proper crimp. The tool will not release unless the crimp indentors in the tool head have been fully actuated.

. Release crimped contact and wire from tool. Be certain the wire is visible thru inspection hole in contact.

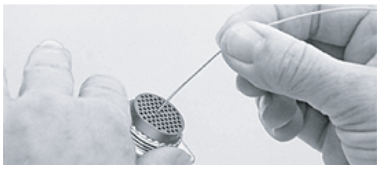
## Contact Insertion

1. Remove hardware from plug or receptacle and slip over wire bundle in proper order for reassembly.



2. Using proper plastic or metal insertion tool for corresponding contact, position wire in tip of the tool so that the tool tip butts up against the contact shoulder.

3. Press tool against contact shoulder and, with firm and even pressure, insert wired contact and tool tip into center contact cavity. A slight click may be heard as metal retaining tines snap into place behind contact shoulder.



4. Remove tool and pull back lightly on wire to make sure contact is properly seated. Repeat operation with remainder of contacts to be inserted, beginning with the center cavity and working outward in alternating rows.

5. After all contacts are inserted, fill any empty cavities with wire sealing plugs, Ressemble plug or receptacle hardware.

## Contact Extraction

1. Remove hardware from plug or receptacle and slide hardware back along wire bundle.

2. Using plastic or metal extraction tool with proper color code corresponding to contact size, place wire in tool.

3. Insert tool into contact cavity until tool tip bottoms against the contact shoulder, expanding clip retaining tines.

4. Hold wire firmly in tool and extract wired contact and tool. Repeat operation for all contacts to be extracted.

5. Fill any empty wire cavities with wire sealing plugs, and

6. Reassemble plug or receptacle.

Dimensions shown in inches (mm)
Specifications and dimensions subject to change

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## 38999-Style Specifications

The following excerpts are some of the parameter requirements of the MIL-DTL-3899 Specification.

| Test Description | Paragraph Reference | Requirements |
|---|---|---|
| Contact Retention | 4 5 19 | After preloading to 3 pounds maximum, the force shall be applied at a rate of approximately 1 pound per second and maintained at full load for 5-10 seconds. No damage to contacts or insert shall result nor shall the contacts be dislocated from their normal position in the connector more than 0.012 inch under the given load. Failure to meet these requirements shall be cause for rejection. |

| Contact Size | 22M* | 22D | 22* | 20 | 18 |
|---|---|---|---|---|---|
| Loads in Pounds ± 10% | 10 | 10 | 10 | 15 | 25 |

**Coupling Torque** — 4 5 6

For qualification testing, mating halves shall be coupled and uncoupled, measuring the torques necessary.The torques required to couple and uncouple mating connector halves shall fall within the limits specifications as follows:

| Shell Size | Torque Max. | Torque Min. | Shell Size | Torque Max. | Torque Min. | Shell Size | Torque Max. | Torque Min. | Shell Size | Torque Max. | Torque Min. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 8/9 | 8 | 2 | 14 | 20 | 4 | 18 | 28 | 5 | 22 | 36 | 7 |
| 10/11 | 12 | 2 | 15 | 20 | 3 | 19 | 28 | 3 | 23 | 36 | 5 |
| 12 | 16 | 2 | 16 | 24 | 4 | 20 | 32 | 6 | 24 | 36 | 7 |
| 13 | 16 | 2 | 17 | 24 | 3 | 21 | 32 | 5 | 25 | 40 | 5 |

**Durability** — 4 5 7

Connector halves shall be mated and unmated 250 times for Series II with ground fingers and 500 times for Series I and III at a rate not exceeding 300 cycles per hour. The test may be performed by hand or by mechanical means, but the coupling ring shall be operated as in normal service. Failure to complete this test because of mechanical malfunction shall be cause for rejection.

**Insulation Resistance** — 4 5 9

An insulation resistance test shall be performed on unmated connectors in accordance with MIL-STD-202, Method 302, Test condition B. Measurement shall be made between three pairs of adjacent contacts and the shell. Failure to meet the minimum requirement of 50,000 megohms for Classes E, P, F, R, and T shall be cause for rejection.

**Vibration** — 4 5 22

Wired, mated connectors shall be subjected to the vibration test of MIL-STD-202, Method 214, Test Condition II, except that the duration shall be one hour in each plane. Receptacles shall be mounted on the vibration fixture by normal means. All contacts shall be wired in a series circuit and 100-500 millamperes of current shall be allowed to flow through the series circuit during vibration. Suitable means shall be employed to monitor the current flow and to indicate any discontinuity of more than 1 microsecond. The wire bundle shall be damped to the nonvibrating points at least 8 inches from the rear of the connector. Current discontinuity of 1 microsecond or more, disengagement of the mated connectors, evidence of cracking, breaking, or loosening of parts shall be cause for rejection.

**Shock** — 4 5 23

Wired mated connectors shall be subjected to one shock in each direction in each of three mutually perpendicular axes. The pulse shall be approximate half sine wave of 300g ± 15% magnitude with a duration of 3 ± 1 milliseconds. Receptacles shall be mounted on a shock fixture by normal means. All contacts shall be wired in a series circuit and 100-150 ma. of current shall flow through the series circuit during shock. Suitable means shall be employed to monitor the current flow and to indicate any discontinuity of more than 1 microsecond. The wire bundle shall be clamped to fixed points at feast 8 inches from the rear of the connector, Current discontinuity of 1 microsecond or more, disengagement of the mated connectors, evidence of cracking, breaking, or loosening of parts shall be cause for rejection.

**Thermal Shock** — 4 5 4

Unmated receptacles shall be subjected to 10 cycles of thermal shock in the following manner:

Step a The receptacle shall be suspended for 10 + 1 - 0 minutes in the center of a cold water both with a volume of approximately one cubic foot. No dimension of the bath shall be less than 10 inches. The water temperature shall not exceed 4ºC (39.20ºF)

Step b The receptacle shall be suspended for 10 1 - 0 minutes in the center of a hot water bath with a volume of approximately one cubic foot. No dimension of the bath shall be less than 10 inches. The water temperature shall be not less than 94ºC (201ºF).

The time of transfer from one bath to the other shall not exceed 5 seconds. At the end of the tenth cycle, the receptacle shall have the excess moisture shaken off and shall then be dried in a forced air oven at 66±5˚C for 15 ±1 minutes. Any evidence of damage resulting from this test shall be cause for rejection.

**Altitude Immersion** — 4 5 8

Mated connectors shall be placed in a container of water at approximately 20ºC and placed in an altitude chamber. All wire ends shall be located within the chamber and exposed to the chamber atmosphere, but not submerged. The exposed wire ends shall not be sealed. A quantity of salt, 5 percent by weight, shall be added to make the water conductive. The chamber pressure shall then be reduced to approximately one inch of mercury and maintained for thirty minutes. The chamber pressure shall then be slowly returned to atmospheric. This shall be considered one cycle. Two additional cycles shall be performed. At the end of the last cycle, while the mated connectors are still submerged, the Insulation Resistance Test (room temperature), and the High Potential Test (sea level voltages) shall be performed upon the same circuits. Failure to meet an insulation resistance minimum of 2,000 megohms or any evidence of dielectric breakdown or -flashover shall be cause for rejection.

**Solvent Immersion** — 4 5 29

Unmated connectors shall be immersed fully in the applicable fluid specified below for 20 hours. After removal from the fluid, each connector shall remain for one hour in free air at room temperature.
a.) Jet fuel JP-4 to MIL-J-5624 b.) Aircraft lubricating oil to MIL-L-9236

**Corrosion** — 4 5 12

Unmated connectors and individual contact samples shall be subjected to the soft spray of MIL-STD-202, Method 101, Test Condition 8 (tin plated, Class Y receptacles-24 hours). Immediately after exposure, the surfaces of the specimens shall be thoroughly washed in tap water and dried in a circulatory oven at a temperature of 38 ±3ºC (100ºF) for a period of approximately 12 hours. Any exposure of basis metal as a result of this test, shall be cause for rejection.

**Dynamic Salt Spray** — 4 5 12 2

(Series I and 11, finish B; Series III, class W). The wired assembled plugs and receptacles shall be mated and unmated 50 cycles at a rate of 300 cycles per hour maximum. The mating and unmating shall be accomplished so that the plug and receptacle are completely separated during each cycle. The connectors shall then be subjected to the salt spray test in accordance with method 1001 of MIL-STD- 1344. The connectors shall be tested for 452 hours mated followed by 48 hours unmated. After the salt spray exposure the remaining number of durability cycles specified in 4.7.7 shall be completed.

**Temperature Durability** — 4 5 33

Wired rated connectors shall be subjected to the indicated anbient temperature for a period of 1,000 hours

| | | | |
|---|---|---|---|
| Series I and II (finish A) | $150^{+3^\circ}_{-0^\circ}$C (302° F) | Series I and II (finish B) | $175^{+3^\circ}_{-0^\circ}$C (347° F) |
| Series III (class W) | $175^{+3^\circ}_{-0^\circ}$C (347° F) | All other finishes | $200^{+3^\circ}_{-0^\circ}$C (392° F) |

* For reference only

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# Product Safety and Warranty

**1. MATERIAL CONTENT AND PHYSICAL FORM**
Electrical connectors do not usually contain hazardous materials.

Electrical connectors and individual components do not release or otherwise result in exposure to hazardous chemicals under normal conditions of use and fall under the definition of "Article," under the Hazard Communication Standard, 29 CFR 1910.1200, and are not considered hazardous materials.

Solder and fluxes can be hazardous if inhaled or absorbed through the skin and should only be used as recommended by the manufacturer. Please consult your solder and flux manufacturer for more specific application recommendations.

**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, ionization 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 carbonization 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. Always wear safety glasses to avoid potential injury to eyes during cleaning, soldering, fiber preparation, etc.

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. Proper lifting techniques shall be used for handling shipping cartons.

**4. DISPOSAL**
Please recycle, reclaim or dispose of connectors and individual components in accordance with local, state and federal laws. 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 specified application tools, cleaning materials and assembly instructions documented 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) Pressure**
All pressure information given are differential pressure limits. The specific differential pressure limits, across the connector interface, are documented in the Data Safety/ catalog

**(iv) Other important information**
Cannon continuously endeavors to improve their products. Therefore, Cannon products may deviate from the description, technical data and shape as shown in this catalog and data sheets.

Commodities in this catalog may be controlled for export or re-export under the Export Administration Regulations (EAR), Nuclear Regulatory Commission (NRC) Regulations, or by the International Traffic in Arms Regulations (ITAR) when specifically designed, modified or configured for military use.

ITT Cannon manufactures high quality products. However, these products are intended to be used in accordance with the specifications in this publication. Any use or application that deviates from the stated operating specifications is not recommended and may be unsafe. No information and data contained in this publication shall be construed to create any liability on the part of ITT.

# ITT Cannon

ITT is a focused multi-industrial company that designs and manufactures highly engineered critical components and customized technology solutions. Our customers in the energy, transportation and industrial markets depend on us to solve their most critical problems, and we focus on partnering with them to find solutions to their unique challenges. Founded in 1920, ITT is headquartered in White Plains, N.Y., with employees in more than 35 countries.

Our connector portfolio remains the most extensive in the industry, offering a reliable and cost effective range of interconnect solutions with the brands of Cannon, VEAM and BIW Connector Systems. Continuous investment in technology and research & development have enabled ITT to provide new, innovative products and solutions to markets including:

- Automotive
- Computer & Consumer Electronics
- Industrial/Instrumentation
- Military & Aerospace
- Oil & Gas
- Telecommunications/Wireless Handheld Devices
- Transportation

When you specify a Cannon, VEAM or BIW Connector Systems connector, you can rely on products that are designed, developed, and manufactured to the highest quality and reliability standards. This tradition of excellence is based on ITT's corporate culture of operating its businesses under the principles of Six Sigma. At ITT, Six Sigma is not just a quality philosophy but a complete corporate culture that drives the entire business. Our Value Based Management and Value Based Product Development systems are two cornerstones that allow for the development of both leadership and product engineering principles, ensuring our industry leading products are developed to the accepted market driven lead times. These principles have allowed ITT to become the market leader in all of our business portfolios.

## Six Sigma Manufacturing

ITT Cannon operates manufacturing facilities in the United States, Germany, Italy, Mexico, China and Japan, all of which have particular product area strengths allowing ITT to offer a truly global footprint to our customers. Our facilities are world class and accommodate full vertical integration utilizing the latest manufacturing technologies including: automated and robotic machining centers, Super Market manufacturing cells, Kanban pull systems, and automated electrical, mechanical, and optical test and inspection equipment. The combination of our manufacturing strength and our advanced manufacturing facilities allows ITT to offer products at market driven prices. Our capabilities, especially in robotics, computerized precision tooling, Kaizen Project Management, Six Sigma tools, and testing, give ITT the most optimized global manufacturing footprint in the interconnect industry.

## The Custom Difference

As the industry leader in harsh environment interconnect applications, ITT's world class engineering teams will work directly with our customers to design and develop cost effective solutions for their applications. In many cases we may modify one of our standard designs to ensure a highly reliable solution where timing is critical. Yet, in those cases where a complete custom interconnect solution is required, ITT will work with our customer's Engineers to design an interconnect solution which will be cost effective yet highly reliable. As professional consultants, our Engineering teams will provide a thorough systems and mechanical analysis of any proposed solution. These analyses provide our customers with sophisticated electrical signal and mechanical characterizations to determine the best solution for their application.

## RoHS Compliance Information

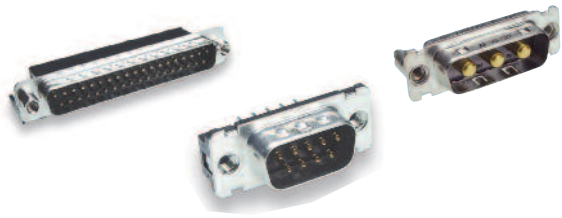
ITT has implemented a strict parts control plan for all ITT electronics plants worldwide that allows the Cannon, VEAM, and BIW Connector Systems product portfolios to meet the requirements of the European Union Directive 2002/95/EC better known as the Reduction of Hazardous Substances (RoHS) initiative. As appropriate, specific Cannon, VEAM, and BIW Connector Systems products may be ordered with an R prefix number which insures our customers will receive RoHS compliant parts for their commercial electronics applications and equipment. Since most RoHS hazardous substances center around specific metal plating and lead solder coatings, ITT's products for RoHS compliance are available in the following plating finishes: electroless nickel, stainless steel, anodize over aluminum and gold plating. It should be noted that gold plating would be recommended as the replacement for tin-lead solder when ordering board mount connectors.

## Circular/Filter/Hermetic Connectors

As a world leader in circular, filter, and hermetic connectors, ITT can leverage its design and manufacturing expertise to fit virtually any application. Our expertise includes fast positive mating for a wide range of military applications, as well as numerous sizes and contact configurations for various harsh environments.

## D-Subminiature Connectors

Cannon invented D-sub connectors in 1952. Our family of D-Subs now includes combinations of signal, power and RF, as well as severe service sealed connectors. Cannon D-Subs are available with an extensive line of backshells and accessories and are one of the most economical shielded connector solutions available.



## Fiber Optic Connectors and Cable Assemblies

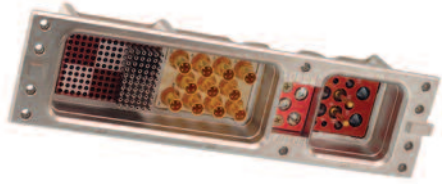
Cannon fiber optic solutions provide an excellent performance/ cost value. Performance may be tailored to the end system, with our use of superior materials and bonding agents providing highly effective solutions. Our wide variety of products include fiber optic hybrid contacts, multi-channel, rack and panel and hi-rel assemblies.

## Microminiature Connectors

Developed first by Cannon in the 1960s, Microminiature Connectors offer high performance and reliability with exceptional versatility. Available in rectangular, circular and strip-style configurations for countless applications, many of our highly engineered Microminiature connector products meet critical customer demands in multiple applications across the Aerospace & Defense industry.

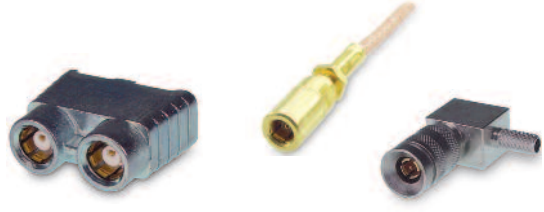
## Rack and Panel Connectors

Pioneered by Cannon during the 1930s, our Rack & Panel Connectors offer an unmatched variety of shell configurations and insert arrangements, as well as materials, plating and contact options. Today, we are recognized as an industry leader, offering an unparalleled range of off-the-shelf and custom Rack & Panel products to align with customer needs.



## RF Connectors

ITT Cannon has been providing interconnect products to the Microwave and RF industry since 1963 (formerly The Sealectro Corporation). The RF 50 & 75 Ohm product lines cover UHF band through Ku band requirements. These connectors and cable assemblies are available with a thread type, snap type, bayonet type or slide on coupling method. The frequencies range from DC to 18+ GHz.



ITT Cannon is a leading global manufacturer of connector products serving international customers in the aerospace and defense, medical, energy, transportation and industrial end markets. Whether delivering critical specs to aircraft pilots, streaming data through communications satellites or enabling ultrasound technology that gives an expectant mother the first glimpse of her unborn child, Cannon connects the world's most important information with the people who need it. **To learn more, visit www.ittcannon.com**

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Whether communicating with our soldiers, or with our first responders saving lives, ITT Cannon connects the world's most important information with those who need it.


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