

cannon

MKJ Warrior Series
Connectors Catalog



ITT

Overview & Specifications

MKJ Warrior Series

ITT Cannon's MKJ Warrior Series offers a reliable interconnect solutions that enable critical communication, navigation and USB data/power for modern soldier applications. The MKJ Warrior Series provides a robust breakaway coupling system, designed per the US Nett Warrior* specification and qualified to the European GOSSRA and NATO STANAG 4695 standards.

* Undergoing qualification - Nett Warrior

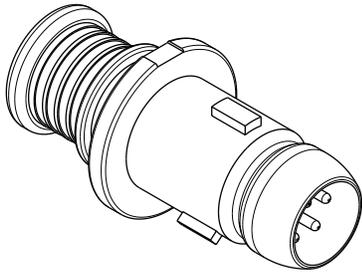


Key Product Features

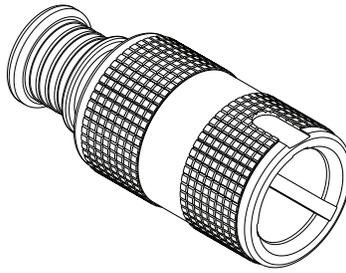
- GOSSRA and NATO STANAG 4695 Standard qualified. Nett Warrior qualification pending
- Robust coupling mechanism with Cannon Breakaway, a canted retention spring system
- "First-mate-last-break" pin ground for hot-swap USB requirement
- Plating: Black Zinc Nickel or Selective Plating
- Contact Types: Rear Crimp, Solder Cup, PCB Mount
- Standard Size 23 Contacts.
- Durability: 2,000 mating Cycles
- Consult factory for higher amperage contact system or contact/shell grounding options

Applications

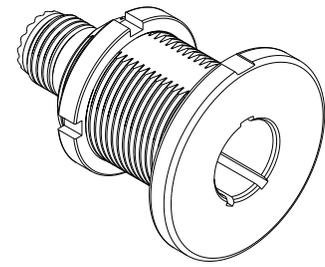




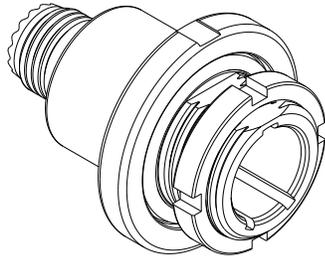
In-line Plug, Banded or Accessory Thread with Crimp Contacts*



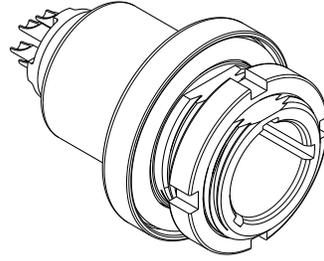
In-line Receptacle, Banded or Accessory Thread with Crimp Contacts*



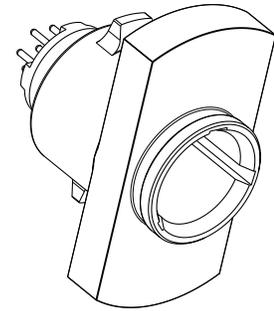
Jam Nut Receptacle, Banded or Accessory Thread



Jam Nut Receptacle Rear Mount, Accessory Thread



Jam Nut Receptacle Rear & Front Mount, PCB Solder Cup



Flange Mount Battery Receptacle - PC Tail

Specifications

Contact Engagement and Separation	Per SAE AS39029, Table 9 for applicable values
Contact Retention	Size 23 Contacts – 6 lbs; Minimum axial load force shall not displace contacts more than .012 inches
Breakaway Force	12 +/- 3 lbs of tension before breaking connection
Mechanical Shock	300g, Peak, 3ms, 1/2-sine shock pulse. No electrical discontinuity > 1μs Random Vibration No electrical discontinuity > 1μs, 37g Peak Sinusoidal Vibration No electrical discontinuity > 1μs, 30g Peak
Random Vibration	No electrical discontinuity > 1μs, 37g Peak
Sinusoidal Vibration	No electrical discontinuity > 1μs, 30g Peak
Reflectance	Exposed Portions of connectors shall not expose shiny, reflective surfaces
Color	Exposed portions of connector shall be black
Chemical Safety	Materials shall not create a toxic health hazard
Marking	Each connector shall include clearly readable part number manufacturer information
Durability	2000 Mating cycles
Wire Accommodation	#22 - #28 AWG
Materials	Shells - Aluminum Alloy with Black Zinc Nickel or Electroless Nickel Finish
	Insulators - Thermoplastic
	Seals - Fluorosilicone
	Contacts - Copper Alloy with gold over nickel plating

Electrical Specifications

Current Rating	5 Amps Max Standard Contact / 7.5 Amps Max High Power Contact (in development)
DWV, At Sea Level	500 VAC RMS
Insulation Resistance	> 5,000 MΩ with 500 VDC
Low Level Contact Resistance	Per SAE AS39029, Table 4 for applicable values
Contact Resistance	8 mΩ Maximum mV, maximum
Max Voltage Drop	Less than 85 mV with contacts in the mated position and an applied load of 3amps at 16VDC
Altitude	Sea level to 32,000 feet
EMI/EMC	The connector shall be sufficient to assure full functionality on the date and power connectors when exposed to conditions of 50 Volts/meter across a span of 2-10,000 MHz.
Shell to shell	<0.05 Ohms

Environmental Specifications

Temperature	Operating -55°C to +150°C / Non-Operating +200°C
Humidity	Operate w/100% humidity
Snow and Ice	Connector shall operation in snow and ice
Salt Atmosphere	Connector shall operate in and when stored in a salt fog atmosphere without protective covers - 48 hrs
Solar Radiation	Connector shall not be damaged by extended exposure to sunlight
Mud, Sand & Dirt	The connector shall function when exposed to mud, sand and dirt
Rain and Water	The connector shall remain functional during driving rain
Sand & Dust	The connector shall not suffer greater than cosmetic deterioration due to blowing sand and dust
Water Immersion	1 meter for 1 hour (mated) Water block sealed 1 x 10 ⁻⁴ cc/seconds @ 1 atm for all solder cup and PC tail version
Fluid immersion	"Unmated connectors immersed in various fuels and oils shall have no damage detrimental to the operation of the connector components"
Fungus	Connector materials shall be fungus inert
Altitude Immersion	40,000 ft, no evidence of moisture or damage that is detrimental to the operation of the connector components Shall meet DWV.

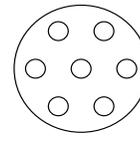
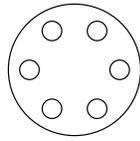
Additional Test Standards

- EIA-364-03 Altitude Immersion
- EIA-364-06 Contact Resistance
- EIA-364-09 Durability
- EIA-364-10 Fluid Immersion
- EIA-364-13 Mating & Un-mating Forces
- EIA-364-18 Visual and Mechanical Inspection
- EIA-364-20 Dielectric Withstanding Voltage, DWV, Sea Level
- EIA-364-21 Insulation Resistance
- EIA-364-23 Low Level Contact Resistance
- EIA-364-26, Cond. B Salt Spray
- EIA-364-27, Cond. D, Table I Mechanical Shock
- EIA-364-28, Cond. V Random Vibration
- EIA-364-29 Contact Retention
- EIA-364-31, Method IV Humidity
- EIA-364-32 Temperature Cycling (Thermal Shock)
- EIA-364-32, Cond. IV Thermal Shock
- EIA-364-35 Insert Retention
- EIA-364-37, Method A Contact Engagement and Separation
- EIA-364-70, Method 1 Current Capacity
- EIA-364-83 Shell to Shell Conductivity
- IEC 60529 Water Tightness
- MIL-STD-202 Method 204, Cond. G Sinusoidal Vibration
- MIL-STD-202-301 Dielectric Withstanding Voltage, DWV
- MIL-STD-810, Method 512.4 Sand and Dust
- MIL-STD-810, Method 518.5 Fungus
- MIL-STD-810H Method 509.7 Salt Fog
- MIL-STD-810H Method 514.8 Procedure I Vibration
- MIL-STD-810H Method 516.8 Procedure I Mechanical Shock



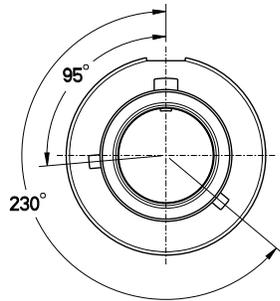
Dimensions shown in inches
Specifications and dimensions subject to change

MKJ Warrior Series Contact Layouts and Configurations

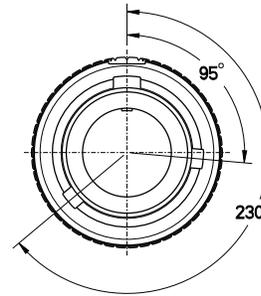


Shell Size	6	6
Layout	6-6	6-7
Contact Size	23	23
Number of Contacts	6	7

Clocking



Plug Key Clocking



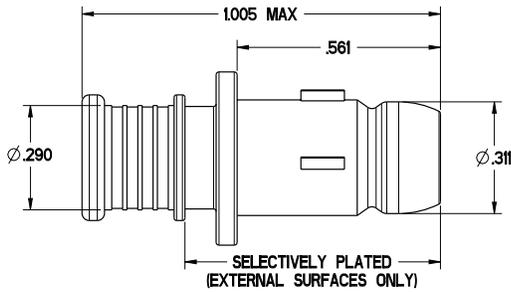
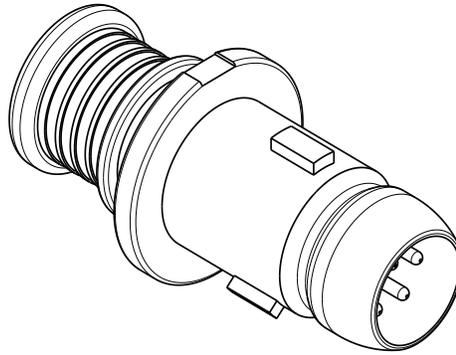
Receptacle Key Clocking

Contacts

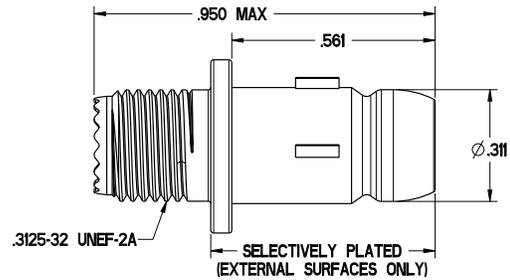
MKJ Contact Systems*					
Type	Gender	Size	Part Number	Contact Area Plating	Wire Size
Crimp	Pin	23	030-9649-000	50 Micro Inches Gold over Nickel	#22-28 AWG Wire
Crimp	Socket	23	031-9750-040	50 Micro Inches Gold over Nickel	#22-28 AWG Wire

*Non-removable solder cup and PC tail contacts are supplied with the connectors

MKJ Warrior Series In-Line Plug



In-line Plug Banded with Crimp Contacts*

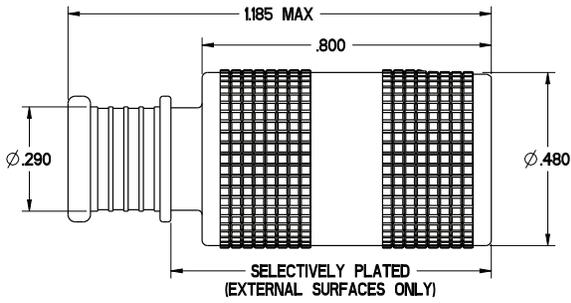
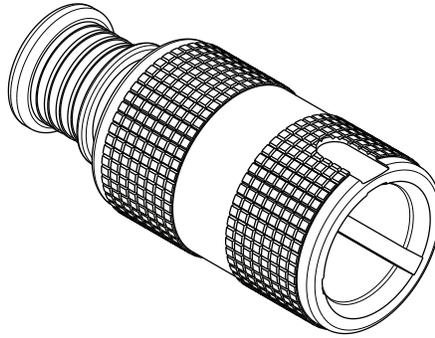


In-line Plug Accessory Thread with Crimp Contacts*

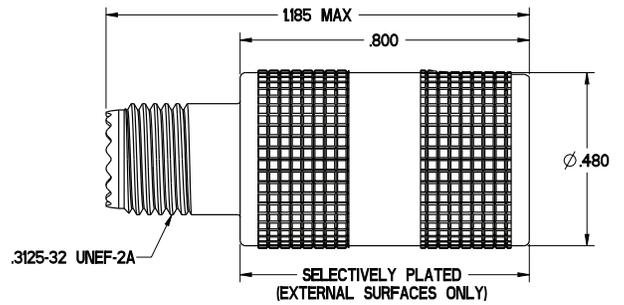
In-Line Plug Part Numbers				
Termination	Type	6-6 Part Number	6-7 Part Number	Plating
Crimp	Banded	MKJ4A6Z6-6PC-F261	MKJ4A6Z6-7PC-F261	Black Zinc Nickel
Solder	Banded	MKJ4A6Z6-6EC-F261	MKJ4A6Z6-7EC-F261	Black Zinc Nickel
Crimp	Banded	MKJ4A6Z6-6PC-K140	MKJ4A6Z6-7PC-K140	Selectively Plated
Solder	Banded	MKJ4A6Z6-6EC-K140	MKJ4A6Z6-7EC-K140	Selectively Plated
Crimp	Accessory Thread	MKJ4B6Z6-6PC-F261	MKJ4B6Z6-7PC-F261	Black Zinc Nickel
Solder	Accessory Thread	MKJ4B6Z6-6EC-F261	MKJ4B6Z6-7EC-F261	Black Zinc Nickel
Crimp	Accessory Thread	MKJ4B6Z6-6PC-K140	MKJ4B6Z6-7PC-K140	Selectively Plated
Solder	Accessory Thread	MKJ4B6Z6-6EC-K140	MKJ4B6Z6-7EC-K140	Selectively Plated

*Solder Cup drawings not shown. Contact extends .125 beyond shell, rear. Consult Factory for addition configurations
 **7-way connectors are not part of the GOSSRA and NATO STANAG 4695 Standard, therefore not currently listed on specification

MKJ Warrior Series In-Line Receptacle



In-line Receptacle, Banded with Crimp Contacts*



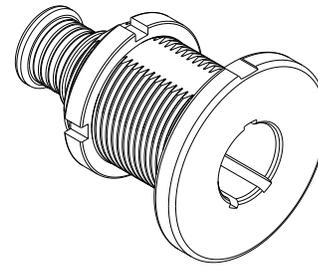
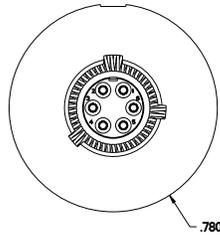
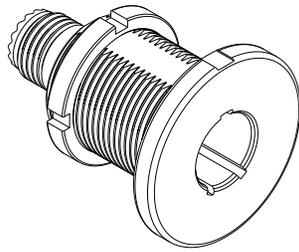
In-line Receptacle, Accessory Thread Crimp Contacts*

In-Line Receptacle Part Numbers

Termination	Type	6-6 Part Number	6-7 Part Number	Plating
Crimp	Banded	MKJ4A1Z6-6SC-F261	MKJ4A1Z6-7SC-F261	Black Zinc Nickel
Solder	Banded	MKJ4A1Z6-6FC-F261	MKJ4A1Z6-7FC-F261	Black Zinc Nickel
Crimp	Banded	MKJ4A1Z6-6SC-K140	MKJ4A1Z6-7SC-K140	Selectively Plated
Solder	Banded	MKJ4A1Z6-6FC-K140	MKJ4A1Z6-7FC-K140	Selectively Plated
Crimp	Accessory Thread	MKJ4B1Z6-6SC-F261	MKJ4B1Z6-7SC-F261	Black Zinc Nickel
Solder	Accessory Thread	MKJ4B1Z6-6SC-F261	MKJ4B1Z6-7SC-F261	Black Zinc Nickel
Crimp	Accessory Thread	MKJ4B1Z6-6SC-K140	MKJ4B1Z6-7SC-K140	Selectively Plated
Solder	Accessory Thread	MKJ4B1Z6-6FC-K140	MKJ4B1Z6-7FC-K140	Selectively Plated

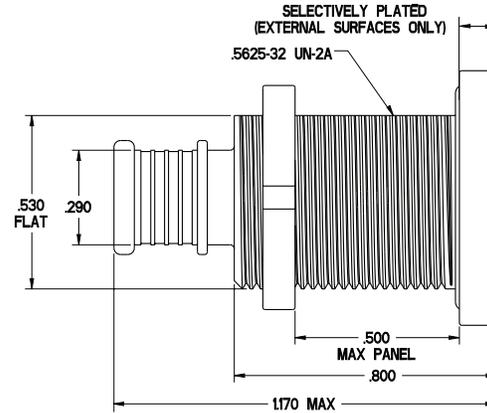
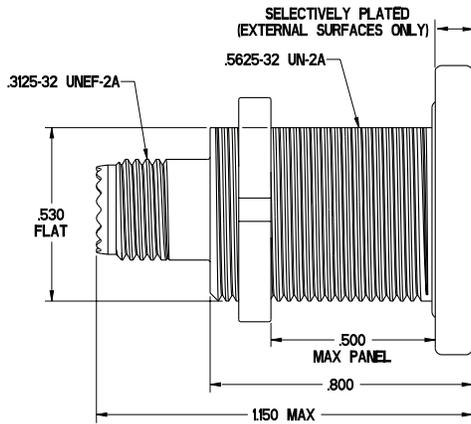
*Solder Cup drawings not shown. Contact extends .125 beyond shell, rear. Consult Factory for addition configurations
 **7-way connectors are not part of the GOSSRA and NATO STANAG 4695 Standard, therefore not currently listed on specification

MKJ Warrior Series Jam Nut Receptacle - Front Mount



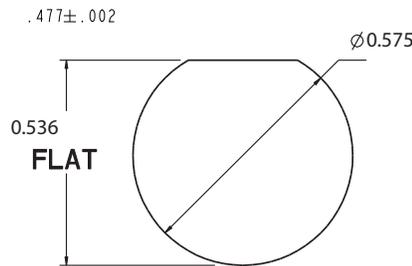
Jam Nut Receptacle, Accessory Thread

Jam Nut Receptacle, Banded



Jam Nut Receptacle, Accessory Thread Crimp Contacts*

Jam Nut Receptacle, Banded with Crimp Contacts*



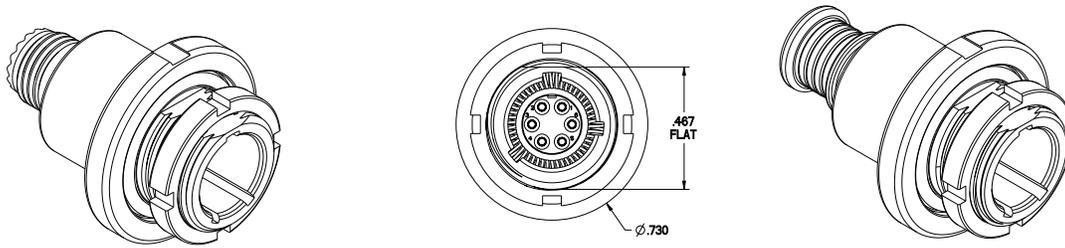
PANEL CUT-OUT

Front Mount, Jam Nut Receptacle Part Numbers				
Termination	Type	6-6 Part Number	6-7 Part Number	Plating
Crimp	Banded	MKJ4A8Z6-6SC-F261	MKJ4A8Z6-7SC-F261	Black Zinc Nickel
Solder	Banded	MKJ4A8Z6-6FC-F261	MKJ4A8Z6-7FC-F261	Black Zinc Nickel
Crimp	Banded	MKJ4A8Z6-6SC-K140	MKJ4A8Z6-7SC-K140	Selectively Plated
Solder	Banded	MKJ4A8Z6-6FC-K140	MKJ4A8Z6-7FC-K140	Selectively Plated
Crimp	Accessory Thread	MKJ4B8Z6-6SC-F261	MKJ4B8Z6-7SC-F261	Black Zinc Nickel
Solder	Accessory Thread	MKJ4B8Z6-6FC-F261	MKJ4B8Z6-7FC-F261	Black Zinc Nickel
Crimp	Accessory Thread	MKJ4B8Z6-6SC-K140	MKJ4B8Z6-7SC-K140	Selectively Plated
Solder	Accessory Thread	MKJ4B8Z6-6FC-K140	MKJ4B8Z6-7FC-K140	Selectively Plated

*Solder Cup drawings not shown. Contact extends .125 beyond shell, rear. Consult Factory for addition configurations

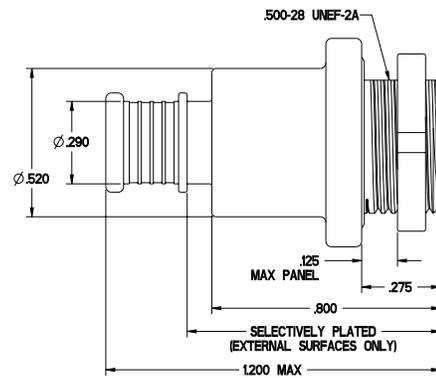
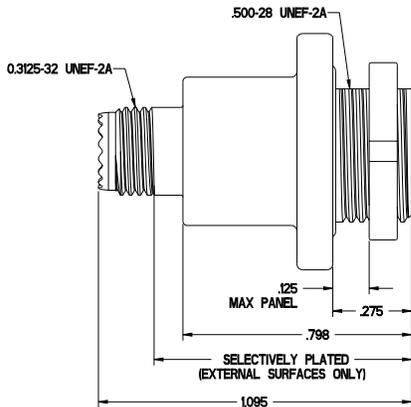
**7-way connectors are not part of the GOSSRA and NATO STANAG 4695 Standard, therefore not currently listed on specification

MKJ Warrior Series Jam Nut Receptacle - Rear Mount



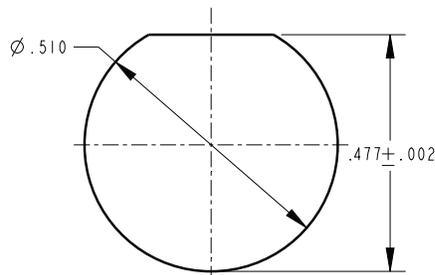
Jam Nut Receptacle Rear Mount, Accessory Thread

Jam Nut Receptacle Rear Mount, Banded



Jam Nut Receptacle Rear Mount, Accessory Thread*

Jam Nut Receptacle Rear Mount, Banded*



PANEL CUT-OUT

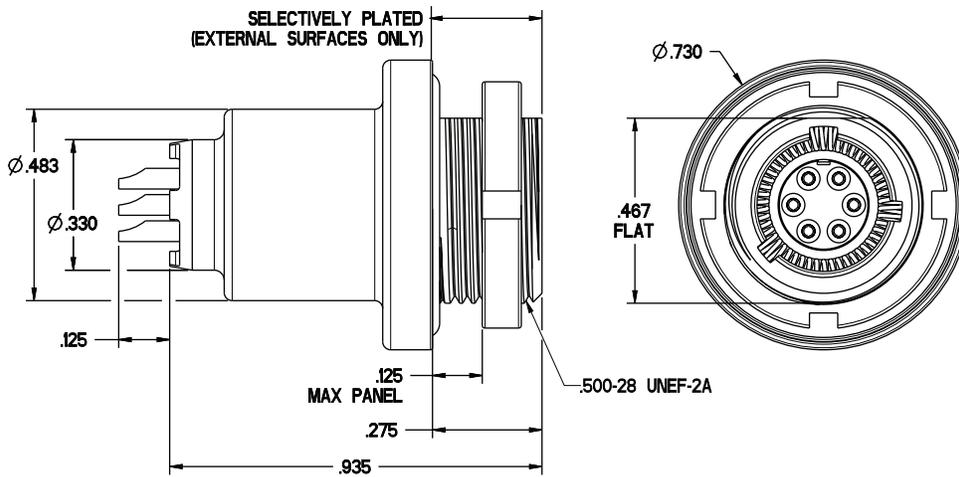
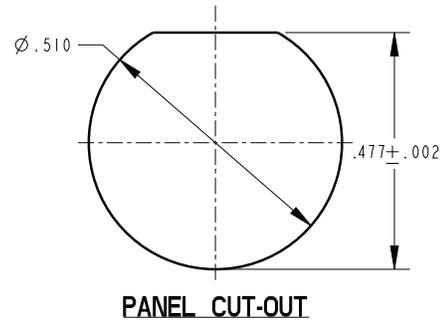
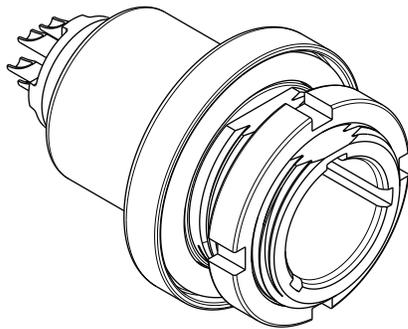
Rear Mount, Jam Nut Receptacle Part Numbers

Termination	Type	6-6 Part Number	6-7 Part Number	Plating
Crimp	Banded	MKJ4A7Z6-6FC-F261	MKJ4A7Z6-7FC-F261	Black Zinc Nickel
Solder	Banded	MKJ4A7Z6-6FC-F261	MKJ4A7Z6-7FC-F261	Black Zinc Nickel
Crimp	Banded	MKJ4A7Z6-6SC-K140	MKJ4A7Z6-7SC-K140	Selectively Plated
Solder	Banded	MKJ4A7Z6-6FC-K140	MKJ4A7Z6-7FC-K140	Selectively Plated
Crimp	Accessory Thread	MKJ4B7Z6-6SC-F261	MKJ4B7Z6-7SC-F261	Black Zinc Nickel
Solder	Accessory Thread	MKJ4B7Z6-6FC-F261	MKJ4B7Z6-7FC-F261	Black Zinc Nickel
Crimp	Accessory Thread	MKJ4B7Z6-6SC-K140	MKJ4B7Z6-7SC-K140	Selectively Plated
Solder	Accessory Thread	MKJ4B7Z6-6FC-K140	MKJ4B7Z6-7FC-K140	Selectively Plated

*Solder Cup drawings not shown. Contact extends .125 beyond shell, rear. Consult Factory for addition configurations

**7-way connectors are not part of the GOSSRA and NATO STANAG 4695 Standard, therefore not currently listed on specification

MKJ Warrior Series Jam Nut Receptacle - Rear Mount PCB, Solder Cup

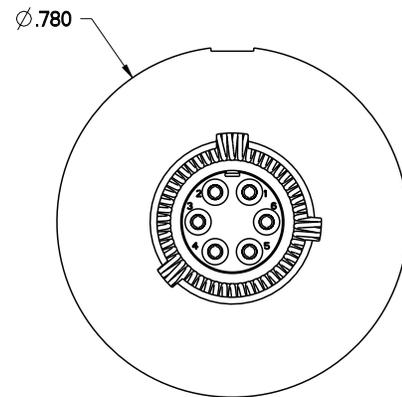
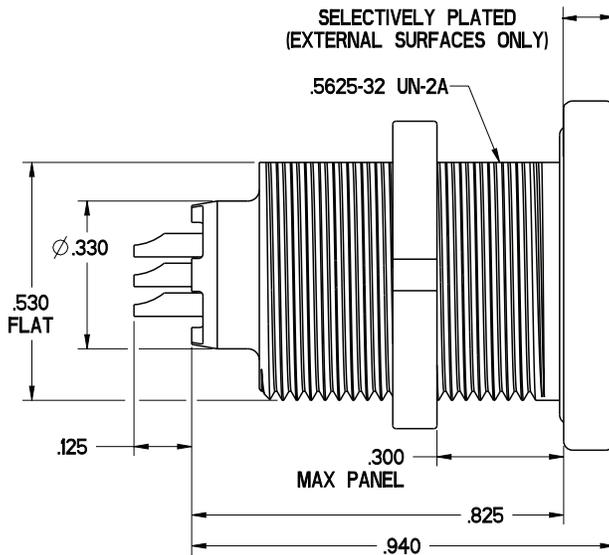
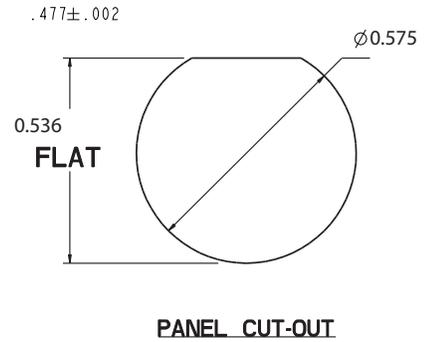
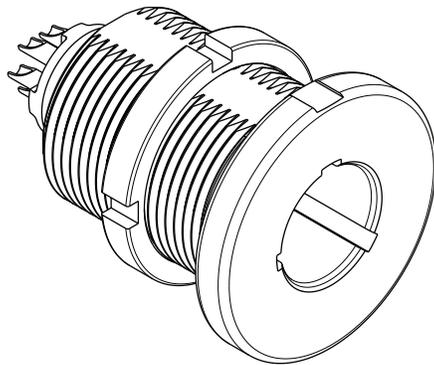


Solder Cup Jam Nut Receptacle Part Numbers

Termination	Mounting	6-6 Part Number	6-7 Part Number	Plating
Solder Cup	Rear Mount	MKJ4C7Z6-6FC-F261	MKJ4C7Z6-7FC-F261	Black Zinc Nickel
Solder Cup	Rear Mount	MKJ4C7Z6-6FC-K140	MKJ4C7Z6-7FC-K140	Selectively Plated
Solder Cup	Front Mount	MKJ4C8Z6-6FC-F261	MKJ4C8Z6-7FC-F261	Black Zinc Nickel
Solder Cup	Front Mount	MKJ4C8Z6-6FC-K140	MKJ4C8Z6-7FC-K140	Selectively Plated

*PC-Tail drawings not shown. Contact extends .125 beyond shell, rear. Consult Factory for addition configurations
 **7-way connectors are not part of the GOSSRA and NATO STANAG 4695 Standard, therefore not currently listed on specification

MKJ Warrior Series Jam Nut Receptacle - Front Mount PCB, Solder Cup

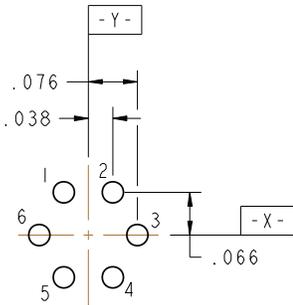
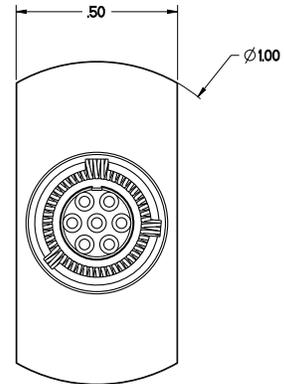
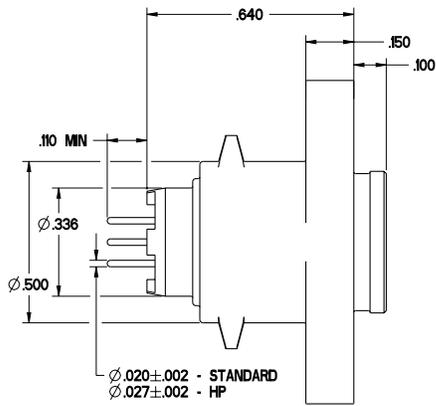
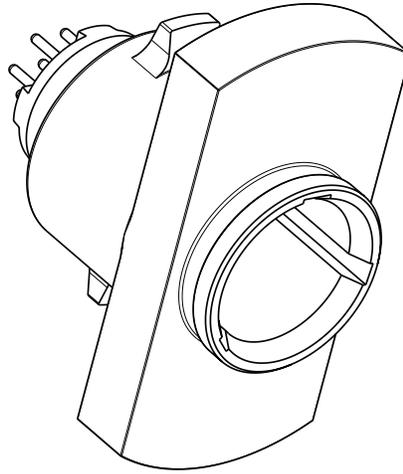


PCB Jam Nut Receptacle Part Numbers

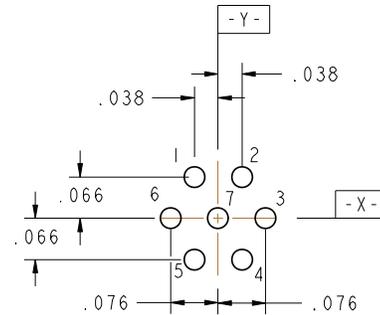
Termination	Mounting	6-6 Part Number	6-7 Part Number	Plating
PC-Tail	Rear Mount	MKJ4C7Z6-6HC-F261	MKJ4C7Z6-7HC-F261	Black Zinc Nickel
PC-Tail	Rear Mount	MKJ4C7Z6-6HC-K140	MKJ4C7Z6-7HC-K140	Selectively Plated
PC-Tail	Front Mount	MKJ4C8Z6-6HC-F261	MKJ4C8Z6-7HC-F261	Black Zinc Nickel
PC-Tail	Front Mount	MKJ4C8Z6-6HC-K140	MKJ4C8Z6-7HC-K140	Selectively Plated

**7-way connectors are not part of the GOSSRA and NATO STANAG 4695 Standard, therefore not currently listed on specification

MKJ Warrior Series Flange Mount Battery Receptacle



6(8)-6



6(8)-7

Flange Mount Battery Receptacle				
Termination	Type	6-6 Part Number	6-7 Part Number	Plating
PC Tail	Flange	MKJ4C2-155900-70	MKJ4C2-155900-14	Black Zinc Nickel

For custom flange, alternate plating and grounded pin options, please contact the factory

Crimp Tooling



**Contact Crimp Tool:
995-0002-293**



**Locator Standard: 995-0002-297
Locator for FMLB Pin: 995-0002-304**

Additional Tooling

Tooling	
Tooling Type	Part Number
Insertion/Extraction Tool	980-1020-000
Hand Banding Tool	995-0002-298
1/8" Bands	995-0002-299

Cables to Outfit Your MKJ Connector

Value-Added Cabling Solutions from ITT Cannon

Let ITT Cannon complete your solution with our custom cable products. A complement to the reduction in size of the connectors is the reduction in weight and thickness in cabling. Choose from several available options to help customize your application. Improving on our high reliability connectors, we offer over molds that are suitable for military requirements in harsh environments.



Braiding

- EMI shielded metal to light weight, textile braiding for abrasion protection

Overmolding

- Injection molding with poly ureaurethane, Santoprene, and polyimide
- Transfer molding with Cannon's Super Jacketing System (SJS Series), Viton, Neoprene, EPDM, and alternative molding compounds
- Low pressure and prototype molding including M24041, poly ureaurethane, Polyimide, and custom compounds

Shrink Boots

- Customized solution for all connector-to-cable transition type including straight, 90 and 45 degree.



Backshells

- Integration of commercial and MIL-Spec backshell and molding adapters

Cable Jacket

- Blown-on jacketing for multi leg cables using SJS jacket, Viton Neoprene, EPDM, and various other tubing jackets
- RONDENT proof extruded jackets using SJS jacket, poly ureaurethane, Santoprene and Neoprene.
- Textile braids and heat shrink jackets

Integrated Assembly

- Integrated connector and cabling into box system
- Ribbon cable assembly
- Cable/Wire harnesses in boxes or as an LRU
- Machined & integrated high volume Die Cast housing

MKJ Series Overview

Up to 71% weight and 52% size reduction in an industry-leading quick disconnect*

ITT Cannon continues its tradition of innovation with the MKJ line of miniature circular connectors. Bringing together a unique combination of design, functionality and flexibility, Cannon's MKJ Series offers proven, reliable and cost-effective interconnect solutions that enable critical communication, navigation and high speed data transmission—at half the size and weight of traditional ones. Choose from UNC thread, double start, triple start, bayonet, breakaway and clip lock latching coupling methods in a cost-efficient, lightweight and highly engineered design.



MKJ0 UNC Thread



MKJ1 Double Start



MKJ3 Bayonet



MKJ4 Breakaway



MKJ Warrior



MKJ5 Triple Start



MKJ Clip Lock

Key Features

- Versatile and proven for use in military, industrial and medical applications where safety and reliability are critical
- A number of connectors in the MKJ Series offer up to 2,000 mating cycles, making them the perfect solution for ruggedized computers and hand-held communications equipment
- Multiple coupling mechanisms enable connectivity for navigation and telemetry applications
- Plugs and receptacles are environmentally sealed for use in the harshest environments
- Teflon nickel, black zinc nickel and olive drab cadmium plating maintain robust reliability for 500 hours of salt spray
- RoHS Compliant plating and part numbers available
- Qualified to GOSSRA and design per Nett Warrior

Connect with your ITT Cannon
representative today or visit us at
www.ittcannon.com

Connect with the experts.

Whether communicating with our soldiers in the field or
powering critical equipment, ITT Cannon connects when it matters most.



CHINA—Shenzhen City
+86.755.2726.7888

GERMANY—Weinstadt
+49.7151.699.0

JAPAN—Kanagawa
+81.462.57.2010

SINGAPORE
+65 66974205

CHINA—Shanghai
+86.21.2231.2222.2

HONG KONG
+852.2732.2720

KOREA
+82.2.702.7111

UK—Basingstoke
+44.1256.311200

FRANCE
+33.1.60.04.93.93

ITALY—Linate
+39.02938721

MEXICO- Nogales
+52.631.311005

USA—Irvine, CA
+1.800.854.3028