cannon

MKJ Clip Lock Series Connectors Catalog

ITT

Amazing things happen

when great things connect

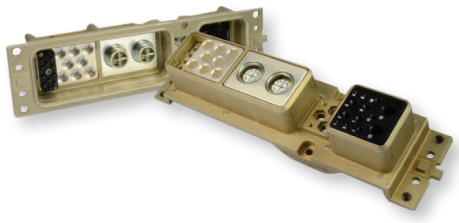
ITT Cannon is a leading global manufacturer of connector products serving international customers in the aerospace and defense, medical, energy, transportation and industrial end markets. Whether delivering critical specs to aircraft pilots, streaming data through communications satellites or enabling 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.

With over 100 years of interconnect excellence and seven decades of global presence from the Defense and Medical Industry, we are a committed partner among today's critical equipment manufacturers.

A Century of Connections

In 2015, Cannon marked its 100th Anniversary of Innovation. Cannon products were used in the first "talking" movies and helped transmit the first messages back to earth when we landed on the moon. Today we proudly continue our legacy of innovating to connect the world and inspire the successes of the next century – because amazing things happen when great things connect.

Visit ittcannon.com to learn more.



About ITT

ITT is a diversified leading manufacturer of highly engineered critical components and customized technology solutions for the transportation, industrial, and oil and gas markets. Building on its heritage of innovation, ITT partners with its customers to deliver enduring solutions to the key industries that underpin our modern way of life. ITT is headquartered in White Plains, N.Y., with employees in more than 35 countries and sales in approximately 125 countries. For more information, visit itt.com .

ITT

Dimensions shown in inches
Specifications and dimensions subject to change

Our connector portfolio remains one of the most extensive in the industry, providing customers with a reliable and cost-effective range of interconnect solutions.

Visit **ittcannon.com** to learn more.

Dimensions shown in inches
Specifications and dimensions subject to change

ITT

Table of Contents

Overview & Specifications

MKJ Clip Lock (CL)

Small, Lightweight & Competitively Priced, ITT Cannon's Push to Connect, MKJ Clip Lock Connector Series is an Ideal Solution for Industrial and Commercial Aerospace Applications.

Key Product Features

- Easy-to-use and install with quick connect clip lock feature
- Multiple keying options prevent mismating with 6 clocking positions
- Available with diverse contact options - high density size 23, size 20HD, size 16 or size 12
  machined contacts.
- Fully machined aluminum or stainless steel shells
- Field repairable
- Plating: Electroless Nickel, Olive Drab Cadmium Black Zinc Nickel and Teflon Nickel

Environmental Specifications

Temperature	Operating: -55 °C to +150 °C / Non-Operating: -55 °C to +200 °C	
Humidity (Sealed Version ONLY)	Insulation Resistance >100 MΩ / DWV at 60 Hz (per MIL-DTL-38999 4.5.26)	
Water Tightness (Sealed Version ONLY)	IP67 per IEC60529	
	1m of water for 1 hour	
Fluid Immersion (Sealed Version ONLY)	Unmated connectors immersed in various fuels and oils shall have no damage detrimental to the operation of the connector components	
Thermal Shock	-65 °C to +150 °C	
Salt Spray	Electroless Nickel (F) – 48H	Olive Drab Cadmium (W) – 500H
	Black Zinc Nickel (Z) – 500H	Electroless Nickel (N) – 500H
	Teflon Nickel (T) – 500H	
Sand and Dust (Sealed Version ONLY)	Mated connectors shall withstand the effects of blowing sand and dust	
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.	

Dimensions shown in inches
Specifications and dimensions subject to change

Mechanical Specifications

Contact Engagement and Separation	Per SAE AS39029, Table 9 for applicable values	
Contact Retention	Minimum axial load force shall not displace contacts more than .012 inches	
	Size 23 Contacts – 6 lbs	Size 16 Contacts – 25 lbs
	Size 20HD Contacts – 15 lbs	Size 12 Contacts – 25 lbs
Durability	500 cycles	
Mating and Unmating	Mated connectors shall withstand 25 lbs (min) of axial separation forces	
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	
Torque	6.8 in-lb (mounting screws and flanged mounted plug only)	

Electrical Specifications

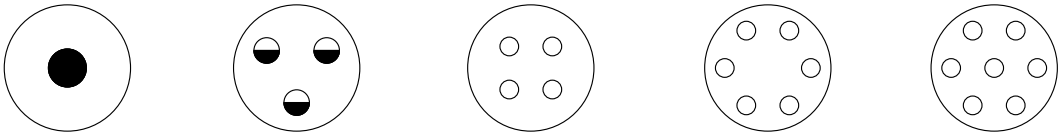
Contact Resistance	8 mΩ Maximum	
Current Rating	Size 23 Contacts – 5 Amps	Size 16 Contacts – 13 Amps
	Size 20HD Contacts – 7.5 Amps	Size 12 Contacts – 23 Amps
DWV, At Sea Level	Size 23 Contacts – 500 VAC RMS	Size 16 Contacts – 1800 VAC RMS
	Size 20HD Contacts – 750 VAC RMS	Size 12 Contacts – 1800 VAC RMS
Insulation Resistance	> 5,000 MΩ with 500 VDC	
Low Level Contact Resistance	Per SAE AS39029, Table 4 for applicable values	
Shell to Shell Resistance	40 mV, maximum	
EMI Shielding	Not rated for this product line.	

Test Standards

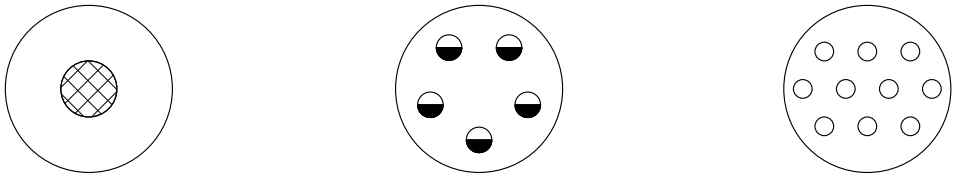
- EIA-364-03 Altitude Immersion
- EIA-364-06 Contact Resistance
- EIA-364-09 Durability
- EIA-364-10 Fluid Immersion
- EIA-364-13 Mating & Un-mating Forces
- EIA-364-18 Visual and Mechanical Inspection
- EIA-364-20 Dielectric Withstanding Voltage, DWV, Sea Level
- EIA-364-21 Insulation Resistance
- EIA-364-23 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

MKJ Clip Lock Contact Arrangements & Layouts

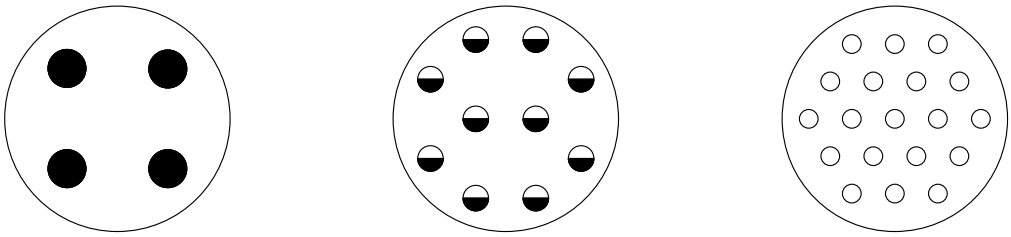
Contact Legend ○ SIZE #23 ◒ SIZE #20HD ● SIZE #16 ▨ SIZE #12



Shell Size	6	6	6	6	6
Layout	6-1	6-23	6-4	6-6	6-7
Contact Size	16	20HD	23	23	23
Number of Contacts	1	3	4	6	7



Shell Size	7	7	7
Layout	7-1	7-25	7-10
Contact Size	12	20HD	23
Number of Contacts	1	5	10

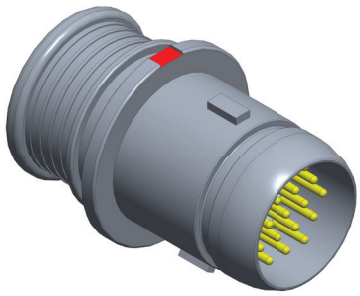


Shell Size	9	9	9
Layout	9-4	9-210*	9-19
Contact Size	16	20HD	23
Number of Contacts	4	10	19

* Contact the factory for availability, additional shell sizes and layouts.

Dimensions shown in inches
Specifications and dimensions subject to change

MKJ Clip Lock In-Line Plug



The MKJ Clip Lock In-Line Plug features a quick disconnect that snaps securely into the receptacle housings without any user mechanical intervention and release with a simple press on the receptacle clip. Multiple Keying allows for improved protection against cross-mating. Connector shells are machined aluminum or stainless steel and supplied with crimp contacts, packaged separately. Contacts can be terminated with standard tools found in the Accessories section of this catalog.

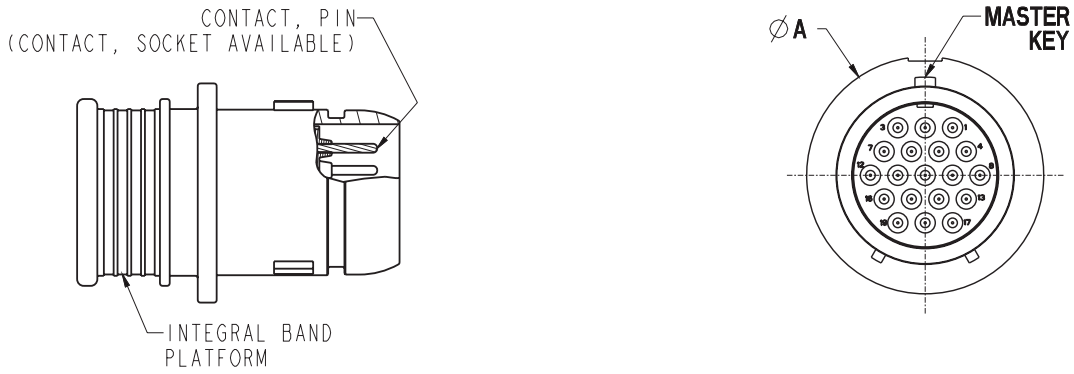
Metal clips inside the connector body lock contact into place. Contacts are removable. Fluorosilicone seals and rear grommet protect connector from water ingress. Terminate cable shield directly to band platform with SS bands or choose rear accessory thread to attach optional cable clamp or backshell.

MKJCL	1	A	6	F	7-25	P	A	- F0

Product	MKJCL	MKJ Clip Lock
Coupling	1	Positive Locking
Class:	A	Environmental with Banding/Overmolding Attachment
	B	Environmental with Threaded Accessory Attachment
	J	Non-Enivornmental with Banding / Overmolding Attachment
	K	Non-Enivornmental with Threaded Accessory Attachment
Shell Style:	6	Straight, In-Line Plug
Material/Plating:	F	Aluminum/Electroless Nickel
	T	Aluminum/Teflon Nickel
	W	Aluminum/Olive Drab Cadmium
	Z	Aluminum/Zinc Nickel, Black
	N	Stainless Steel/Electroless Nickel
Shell Size/Contact Arrangement:		See Available Layouts
Contact Style:	P	Pin, Crimp, Removable
	S	Socket, Crimp, Removable
	E	Pin, Solder Cup, Potted, Non-removable
	F	Socket, Solder Cup, Potted, Non-removable
Shell Clocking:	Omit	Single Keyway
	A	Normal
	B, C, D, E, F	Alternatives- see clocking table
Mod Codes:	- F0	Less Contacts ("F0" not stamped on the connector, but must be included on the P.O.)
	- 518	Potted connectors sealed are tested to maintain a helium leak rate of less than 1 x 10-4 cc/second at one atmosphere pressure differential (E & F contact style only)

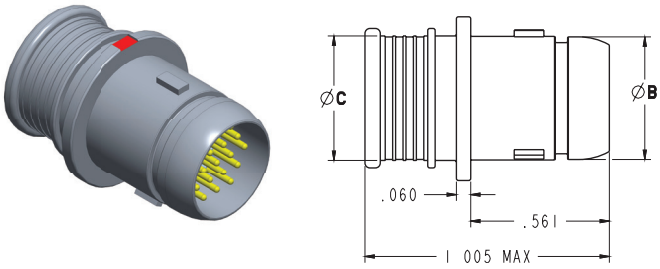
Consult factory for additional configurations

MKJ Clip Lock In-Line Plug Banded & Accessory Thread

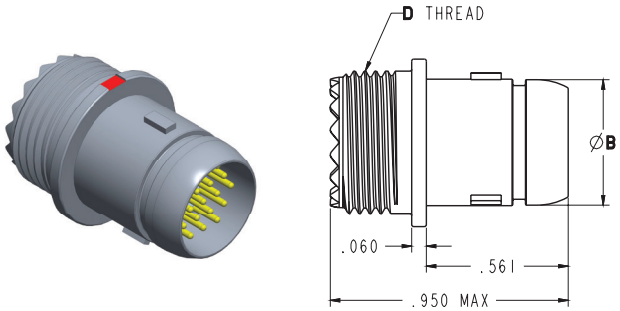


MKJCL Plug with Pin Insert (Banding Version)

Cable Plug Dimensions				
Shell Size	ØA	ØB	ØC	D Thread UNEF-2A
6	0.485	0.323	0.290	0.3125-32
7	0.565	0.393	0.390	0.4375-28
9	0.660	0.493	0.500	0.5625-24

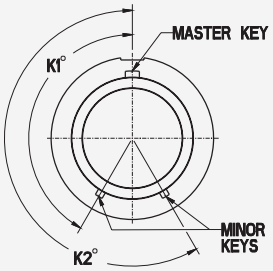


MKJ Clip Lock Banding/Overmolding Attachment



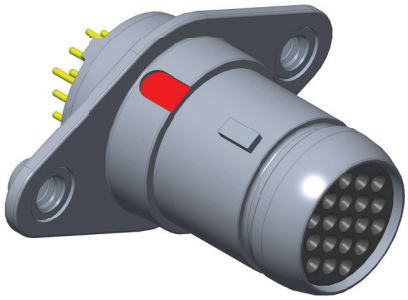
MKJ Clip Lock Plug with Threaded Accessory Attachment

For all shell sizes and clockings, the master keyway remains stationary at top center, with minor keys rotating to achieve alternate clocking positions.

Cable Plug Shell Clocking Dimensions			
 (A-CLOCKING SHOWN)	Position	K1°	K2°
	A (Normal)	150°	210°
	B	95°	210°
	C	135°	270°
	D	110°	245°
	E	150°	285°
	F	105°	255°
	Leave Blank	Master Key Only No Minor Keys	

Dimensions shown in inches
Specifications and dimensions subject to change

MKJ Clip Lock Flange Mount Plug



Environmental, PCB Plug connectors feature low profile shells for minimum protrusion inside enclosures and integral board standoffs. The contacts are fixed with epoxy and are non-removable.

Water Tight PCB Plug (-518 mod) connectors are identical to the environmental plug, but are specially sealed and 100% tested to maintain a helium leak rate of less than 1 x 10-4 cc/second at one atmosphere pressure differential. Connectors meet MIL-STD-810 Method 512G immersion requirements in unmated/open face condition.

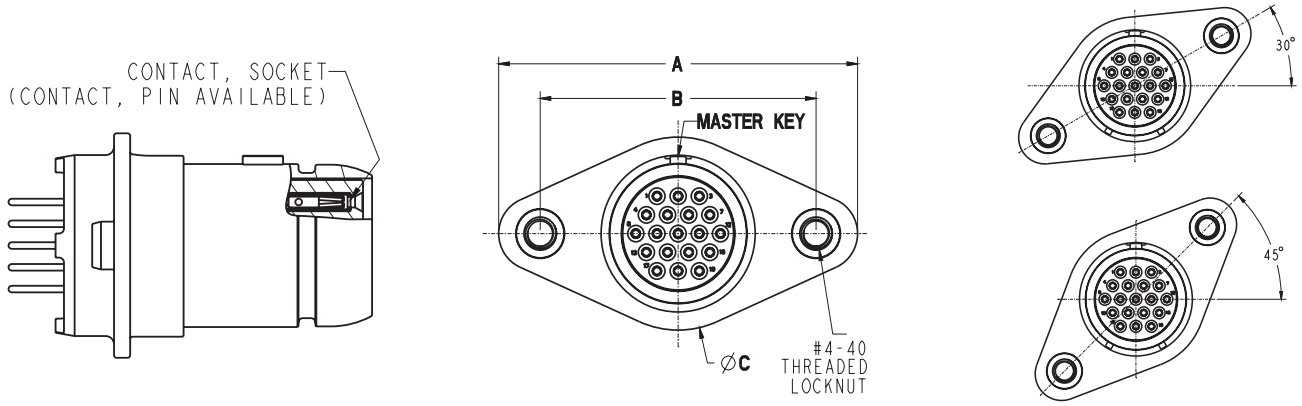
MKJCL	1	A	6	F	7-25	P	A	- F0

Product	MKJCL	MKJ Clip Lock
Coupling	1	Positive Locking
Class:	A	Environmental with Banding/Overmolding Attachment*
	B	Environmental with Threaded Accessory Attachment*
	C	Back-Potted Plug/Receptacle-PC/Flex/Solder
	J	Non-Enivornmental with Banding / Overmolding Attachment*
	K	Non-Enivornmental with Threaded Accessory Attachment*
Shell Style:	4	Flange Mount Plug
	11	Flange Mount Plug, 30 degree rotation
	12	Flange Mount Plug, 45 degree rotation
Material/Plating:	F	Aluminum/Electroless Nickel
	T	Aluminum/Teflon Nickel
	W	Aluminum/Olive Drab Cadmium
	Z	Aluminum/Zinc Nickel, Black
	N	Stainless Steel/Electroless Nickel
Shell Size/Contact Arrangement:		See Available Layouts
Contact Style:	P	Pin, Crimp, Removable
	S	Socket, Crimp, Removable
	B	Pin, PC-Tail, Potted, Non-removable
	D	Socket, PC-Tail, Potted, Non-removable
	E	Pin, Solder Cup, Potted, Non-removable
	F	Socket, Solder Cup, Potted, Non-removable
Shell Clocking:	Omit	Single Keyway
	A	Normal
	B, C, D, E, F	Alternatives- see clocking table
Mod Codes:	- F0	Less Contacts ("F0" not stamped on the connector, but must be included on the P.O.)
	- 518	Potted connectors sealed are tested to maintain a helium leak rate of less than 1 x 10-4 cc/second at one atmosphere pressure differential (E & F contact style only)

*Consult factory

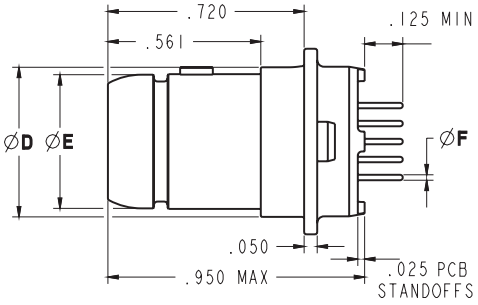
Dimensions shown in inches
Specifications and dimensions subject to change

Flange Mount Rear Panel Potted, PCB & Solder Cup

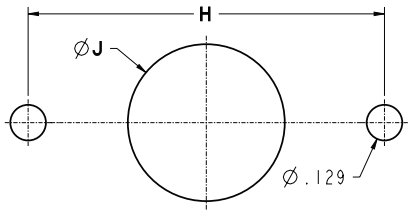


MKJ Clip Lock Flange Mount Plug with Pin Insert (PCB Version)

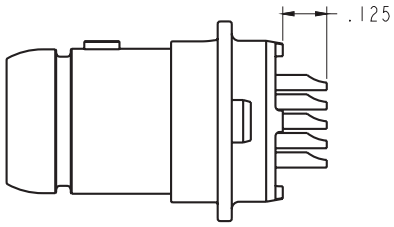
Plug Flange Mount Rear Panel Dimensions								
Shell Size	A	B	ØC	ØD	ØE	ØF : Tail Dia.	H	ØJ
6	1.120	0.820	0.462	0.385	3.23	#23: .018/.022 #20HD: .024/.028 #16: .060/.064 #12: .092/.096	0.820	0.398
7	1.185	0.885	0.564	0.450	0.393		0.885	0.463
9	1.290	0.990	0.683	0.555	0.493		0.990	0.568



MKJ Clip Lock PC-Tail Version

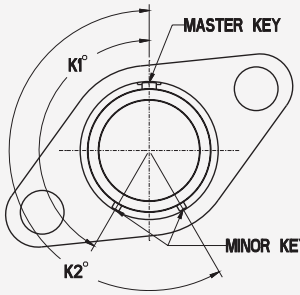


Panel Cutout



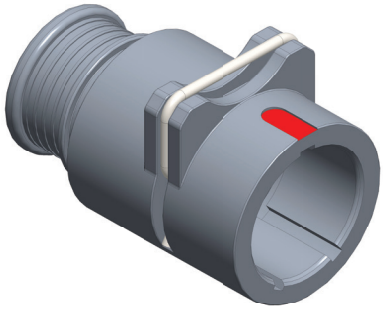
MKJ Clip Lock Solder Cup Version

For all shell sizes and clockings, the master keyway remains stationary at top center, with minor keys rotating to achieve alternate clocking positions.

Plug Flange Mount Shell Clocking Dimensions			
	Position	K1°	K2°
	150°	210°	210°
	95°	210°	210°
	135°	270°	230°
	110°	245°	275°
	150°	285°	275°
	105°	255°	210°
	Leave Blank	Master Key Only No Minor Keys	

Dimensions shown in inches
Specifications and dimensions subject to change

MKJ Clip Lock In-Line Receptacle



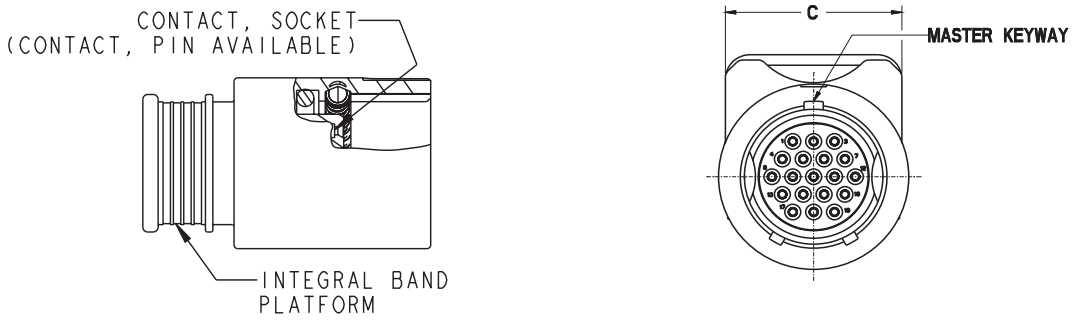
MKJ Clip Lock In-Line Receptacle features the ITT retention clip that releases the connection by simply depressing the clip. The outer shell contains an integral band platform for direct attachment of cable shield. Install a boot, or overmold directly onto the band platform. Or, choose an accessory thread for attaching strain reliefs and backshells. The o-ring located behind the clip provides a dynamic, water tight seal when mated. Contacts are crimp removable to allow for field repair.

MKJCL	1	A	1	F	7-25	P	A	- F0

Product	MKJCL	MKJ Clip Lock
Coupling	1	Positive Locking
Class:	A	Environmental with Banding/Overmolding Attachment
	B	Environmental with Threaded Accessory Attachment
	J	Non-Enivornmental with Banding / Overmolding Attachment
	K	Non-Enivornmental with Threaded Accessory Attachment
Shell Style:	1	In-Line Receptacle
Material/Plating:	F	Aluminum/Electroless Nickel
	T	Aluminum/Teflon Nickel
	W	Aluminum/Olive Drab Cadmium
	Z	Aluminum/Zinc Nickel, Black
	N	Stainless Steel/Electroless Nickel
Shell Size/Contact Arrangement:		See Available Layouts
Contact Style:	P	Pin, Crimp, Removable
	S	Socket, Crimp, Removable
	E	Pin, Solder Cup, Potted, Non-removable
	F	Socket, Solder Cup, Potted, Non-removable
Shell Clocking:	Omit	Single Keyway
	A	Normal
	B, C, D, E, F	Alternatives- see clocking table
Mod Codes:	- F0	Less Contacts ("F0" not stamped on the connector, but must be included on the P.O.)
	- 518	Potted connectors sealed are tested to maintain a helium leak rate of less than 1 x 10-4 cc/second at one atmosphere pressure differential (E & F contact style only)

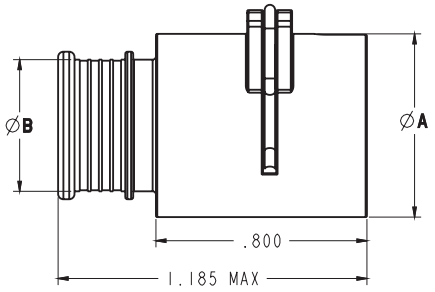
Consult factory for additional configurations

MKJ Clip Lock In-Line Receptacle, Banded & Accessory Thread

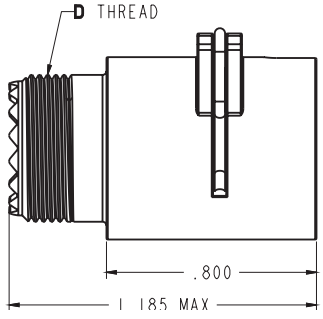


MKJ Clip Lock In-Line Receptacle (Shown with Banding/Overmolding Attachment)

In-Line Receptacle Panel Dimensions				
Shell Size	ØA	ØB	C	D Thread UNEF-2A
6	0.500	0.290	0.432	0.3125-32
7	0.580	0.390	0.502	0.4375-28
9	0.695	0.500	0.645	0.5625-24

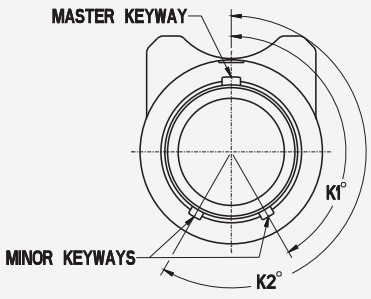


MKJ Clip Lock Banded Version



MKJ Clip Accessory Thread Version

For all shell sizes and clockings, the master keyway remains stationary at top center, with minor keys rotating to achieve alternate clocking positions.

Cable Receptacle Shell Clocking Dimensions			
	Position	K1°	K2°
	A (Normal)	150°	210°
	B	95°	210°
	C	135°	270°
	D	110°	245°
	E	150°	285°
	F	105°	255°
	Leave Blank	Master Key Only No Minor Keys	

Dimensions shown in inches
Specifications and dimensions subject to change

MKJ Clip Lock Accessories

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	031-9750-000	50 Micro Inches Gold over Nickel	#22-28 AWG Wire
Crimp	Pin	20HD	030-9661-000	50 Micro Inches Gold over Nickel	#20-24 AWG Wire
Crimp	Socket	20HD	031-9766-000	50 Micro Inches Gold over Nickel	#20-24 AWG Wire
Crimp	Pin	16	980-0008-880	50 Micro Inches Gold over Nickel	#20-16 AWG Wire
Crimp	Socket	16	980-0008-876	50 Micro Inches Gold over Nickel	#20-16 AWG Wire
Crimp	Pin	12	980-0008-881	50 Micro Inches Gold over Nickel	#14-12 AWG Wire
Crimp	Socket	12	980-0008-877	50 Micro Inches Gold over Nickel	#14-12 AWG Wire

Crimp Tooling

	Crimp Tools		Locators	
Contact Size	ITT Part Number	Military Part number	ITT Part Number	Military Part number
23	995-0002-293	-	995-0002-297	-
20HD	995-0002-293	-	995-0002-303	-
16	995-0001-585	M22520/1-01	-	M22520/1-04
12	995-0001-585	M22520/1-01	-	M22520/1-04

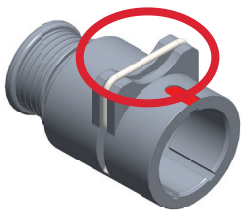
Additional Tooling

Tooling	
Tooling Type	Part Number
Insertion Tool	995-0002-295
Extraction Tool	995-0002-294
Hand Banding Tool	995-0002-298
1/8" Bands (100 pk)	995-0002-299

Spring Latching Clip

Replacement Spring Latching Clip*	
Clip for Shell Size	Part Number
6	029-9519-020
7	029-9519-021
9	029-9519-022

*Replacement Clip Only. All standard MKJCL parts come with spring latching clip.



Dimensions shown in inches
Specifications and dimensions subject to change

Markets & Applications

Cannon MKJ Miniature Circular Connectors are designed for soldier-worn systems, military equipment, industrial and medical applications…and so much more.




Key Applications

- Sensors
- Instrumentation
- Missile systems and ordnance
- Avionic systems
- Soldier worn devices
- Unmanned air or ground systems
- Navigation & telemetry
- Medical test & diagnostic equipment
- Ruggedized computers
- Industrial equipment and lighting
- Camera or surveillance infrastructure
- Entertainment equipment

Highlights

- 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

Dimensions shown in inches
Specifications and dimensions subject to change

MKJ Series Overview

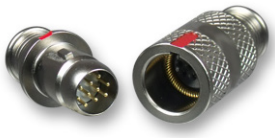
Up to 71% weight and 52% size reduction in an industry-leading quick disconnect*

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 and breakaway coupling methods in a cost-efficient, lightweight and highly engineered design.

MKJ0 UNC Thread

MKJ1 Double Start

MKJ3 Bayonet



MKJ4 Breakaway

MKJ5 Triple Start

MKJ Clip Lock

Key Features

- 71% weight and 52% size reduction without the loss of reliability*
- Available in rear-release crimp, PC tail or solder cup contacts
- Shells and jam nuts available in aluminum alloy or corrosion resistant stainless steel
- Up to 2,000 mating cycles
- Environmentally sealed using fluorosilicone material for the front interfacial seal and rear wire sealing grommet
- RoHS compliant configuration

*When compared to the 38999 layouts with size 22 contacts

Dimensions shown in inches
Specifications and dimensions subject to change

A Wide Range of Coupling Styles

Coupling	MKJ0 UNC Thread	MKJ 1 Double Start	MKJ 3 Bayonet	MKJ 4 Breakaway	MKJ 5 Triple Start	MKJ Clip Lock
Markets & Segments	Defense, Aerospace, Medical, Industrial, Commercial					
Hardware	Aluminum / Stainless Steel					
EMI Shielding Effectiveness	40dB Attenuation, 100MHz to 1000MHz					
Mating Cycles	2000	2000	250 Aluminum 2000 Stainless Steel	2000	500	500
RoHS Compliant	Available					
Materials	Shells - Aluminum Alloy or Stainless Steel I Insulators - Thermoplastic Seals - Fluorosilicone I Contacts - Copper Alloy with gold over nickel plating					

MKJ Series Performance				
Contact Size	#23	#20HD	#16	#12
Spacing	.076"	.106"	.170"	.230"
Contact Type	Rear Crimp, Solder Cup, PCB Mount			
Current Rating	5 Amps	7.5 Amps	13 Amps	23 Amps
Wire Size	#22 - #28 AWG	#20 - #24 AWG	#16 - #20 AWG	#12 - #14 AWG
DWV Voltage (VAC)	750 VAC*	1000 VAC*	1800 VAC	1800 VAC
Insulation Resistance	5000 Megaohms RMS Sea			
Operating Temperature	-65°C to +175°C			
Contact Resistance	8 Millihoms Maximum			
Shock / Vibration	300g / 37g			
Clocking Position	Master Key and 2 Secondary Keys. 6 Clocking Positions			
Housing Materials	Aluminum and Stainless Steel			
Receptacle Mounting	Jam Nut, Square Flange, In-Line			

* MKJ Clip Lock ratings are 500 VAC and 750 VAC

Dimensions shown in inches
Specifications and dimensions subject to change

Cables to Outfit Your MKJ Connector

Value-Added MKJ Series Cabling Solutions from ITT Cannon

Let ITT Cannon complete your MKJ 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 overmolds that are suitable for military requirements in harsh environments.

Notes:

Dimensions shown in inches
Specifications and dimensions subject to change

About ITT Cannon

ITT Inc. is a diversified leading manufacturer of highly engineered critical components and customized technology solutions for industrial end-markets in energy infrastructure, electronics, aerospace and transportation. Building on its heritage of innovation, ITT partners with its customers to deliver enduring solutions to the key industries that underpin our modern way of life. Founded in 1920, ITT is headquartered in White Plains, N.Y., with employees in more than 35 countries and sales from 125 countries.

Our connector portfolio remains one of 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:

- Commercial Aviation
- Defense
- Oil & Gas
- Transportation & Industrial
- Medical
- Space Exploration

When you specify a Cannon 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, allowing ITT Cannon to offer global capabilities to our customers. Our facilities use the latest manufacturing technologies including automated and robotic maching 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 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. When custom connectors are required, we collaborate with clients and partners with a goal to design the most reliable, cost-effective solution possible. 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 product portfolio to meet the requirements of the European Union Directive 2002/95/EC better known as the Reduction of Hazardous Substances 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.

RoHS COMPLIANT PART NUMBERS

Product Safety

1. Material Content and Physical Form

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

a) Printed circuit types and low cost audio types, which employ all plastic insulators and casings.

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

⚠ CAUTION

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

4. Disposal

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

5. Application

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

Important General Information

(i) Air and creepage paths/Operating voltage. The admissible operating voltages depend on the individual applications and the valid national and other applicable safety regulations. For this reason the air and creepage path data are only reference values. Observe reduction of air and creepage paths due to PC board and/or harnessing.

(ii) Temperature
All information given are temperature limits. The operation temperature depends on the individual application.

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

ITT Cannon, is a division of ITT Inc. who manufactures the highest quality products available in the marketplace; however these products are intended to be used in accordance with the specifications in this publication. Any use or application that deviates from the stated operating specifications is not recommended and may be unsafe. No information and data contained in this publication shall be construed to create any liability on the part of ITT Cannon. Any new issue of this publication shall automatically invalidate and supersede any and all previous issues.

Product Warranty

Please refer to www.ittcannon. com (General Terms of Sale) for the complete text of ITT Cannon's applicable Terms and Conditions, including Warranty.

This publication is not to be construed as an offer. It is intended merely as an invitation to make an offer. By this publication, ITT Cannon does not assume responsibility or any liability for any patent infringements or other rights of third parties which may result from its use.

This document does not contain technical data whose export is restricted by the Arms Export Control Act (Title 22, U.S.C., App 2401 et. Seq.)

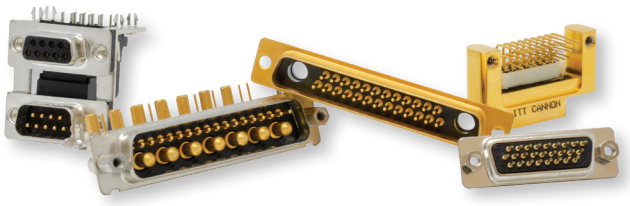
Dimensions shown in inches
Specifications and dimensions subject to change

ITT

Meet Some of Our Most Innovative Connectors

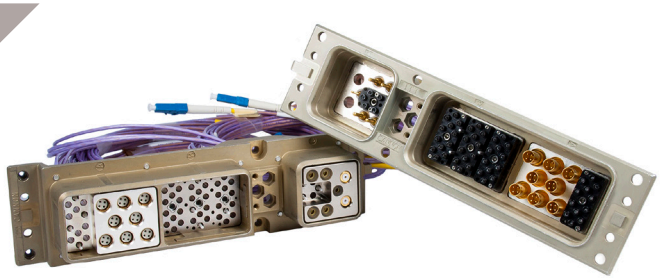
D-Subminiature Connectors

Originally designed for aircraft radio systems, Cannon's D-Subminiature Connector became the first multi-purpose interconnect solution of its kind, ideal for multiple markets and applications. From rocket launches and satellite systems, to rugged military transports and commercial avionics, the D-Subminiature's versatility has made this Cannon invention the most widely used connector in the world.



Rack & 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. Many of our standard and custom designs meet the stringent requirements of ARINC 600, ARINC 404 (MIL-C-81659) and MIL-DTL-83733 standards.



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 configurations for countless applications, many of our Microminiature Interconnects meet or exceed applicable requirements of the MIL-DTL-83513 specification (MIL-C-81659) and MIL-DTL-83733 standards.

Dimensions shown in inches
Specifications and dimensions subject to change

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 maters most.

cannon

CHINA—Shenzhen City
+86.755.2726.7888

CHINA—Shanghai
+86.21.2231.2222.2

FRANCE
+33.1.60.04.93.93

GERMANY—Weinstadt
+49.7151.699.0

HONG KONG
+852.2732.2720

ITALY—Lainate
+39.02938721

JAPAN—Kanagawa
+81.462.57.2010

KOREA
+82.2.702.7111

MEXICO- Nogales
+52.631.311005

SINGAPORE
+65 66974205

UK—Basingstoke
+44.1256.311200

USA—Irvine, CA
+1.800.854.3028

MKJ CL Catalog | 02021