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HDx™ Series
High-Density, Small Form Factor Connector Catalog

ITT

Overview & Specifications

HDx™ Series - High-Density, Small Form Factor

Key Product Features

- Lightweight, compact design
- Ultra-high density layouts
- Support signal & power
- Support high speed data
  - USB® 3.2 Gen 1 up to 5Gbit/s
  - Ethernet up to 10Gbit/s
  - HDMI® up to 8.16 Gbit/s
- Watertight to 20 meter depth
- High-durability - +5000 mating cycles
- Anti-glare, non-reflective plating
- Breakaway or threaded Locking Options

ITT Cannon's HDx™ Series provides exceptional versatility in a lightweight, water resistant, small form factor (SFF) design. With standard and high density contact layouts for USB 3.2 Gen 1, high-speed Ethernet and HDMI data transmission, this ruggedized interconnect solution offers watertight sealing up to 20 meters submersion, 360° shielding, over 5,000 mating cycles and selective, anti-glare plating. This, combined with custom cabling capabilities provide our customers with a full end-to-end partnership ensuring secure, high-speed data transmission in a miniaturized, high-density interconnect.

Soldier-Worn Systems

First Responders

Medical Devices

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Dimensions shown in mm
Specifications and dimensions subject to change

HDx™ Series Specifications & Test Standards

Specifications

Mechanical Shock	No electrical discontinuity > 1µs from 50g Amplitude, 1/2 sine shock pulse of 6ms MIL-STD-810G Method 516.5 Procedure I, Figure 516.7-12 / EIA-364-27C	
Sinusoidal Vibration	10-2,000Hz, 15g, No electrical discontinuity > 1µs Sine Profile: EIA-364-28F Condition IV (15g) / MIL-STD-202, Method 204, Condition G	
Reflectance	Exposed Portions of connectors shall not expose shiny, reflective surfaces	
Color	Exposed portions of connector shall be dark gray	
Chemical Safety	Materials shall not create a toxic health hazard	
Durability @ Ambient Temperature	5000 Mating Cycles	
Wire Accommodation	#22 - #28 AWG, Layout dependent: Ø0.3mm Solder Contacts: 28 AWG and Ø0.7mm Solder Contacts: 22 AWG	
Intermateability	Tested to Intermate with competitor Plugs and Receptacles	
Material	Shells and Coupling Nut, - Brass, w/Ruthenium over Electroless Nickel Plating	Jam Nut - Aluminum Alloy, with Hard Black Anodizing
	Backshell (Locking Plug) - Brass, w/Ruthenium Plating	Backshell (Breakaway Plug) - Brass, w/Electroless Nickel Plating
	Insulators - Thermoplastic	O-Ring - Flourosilicone
	Contacts - Copper Alloy, with Gold over Nickel Plating	Ground Pins- Copper Alloy, with Gold over Nickel Plating
	Crimp Sleeves - Copper Alloy, with Elecroless Nickel Plating	Potting Material - Thermoset Epoxy

Electrical Specifications

Current Rating (MIL-STD-810G)	Ø0.3mm Contacts: 1 Amp Max (Single Contact)	Ø0.7mm Contacts: 5 Amps (Single Contact)
Operational Voltage	250VDC	
DWV, At Sea Level	Leakage less than 2mA @ 1000 VDC. No Flashover	
Insulation Resistance @ Ambient Temp	> 100 MΩ, tested at 500 VDC +/- 10% @ 1 Amp	
Low Level Contact Resistance (Mated, unwired contacts only)	Ø0.3mm <5 mOhm	Ø0.7mm <4 mOhm
Shell to Shell Conductivity	<5 mOhms	

Environmental Specifications

Operating Temperature	-51°C to +125°C
Storage Temperature	-51°C to +125°C
Temperature Cycling / Thermal Shock	-65°C to +125°C, 5 Cycles (EIA-364-32 / IEC 60068-2-14)
Humidity	85% up to 95 % relative humidity, 28 °C up to 71 °C (MIL-STD-810G Method 507.5)
Icing	Operational in Snow and Ice Conditions (MIL-STD-810G 521.4)
Salt Spray, Static / Corrosion Resistance	Connector shall operate in and when stored in a salt fog atmosphere without protective covers - 96 Hours Unmated. (EIA-364-26, Condition A / MIL-STD-810G Method 509.5)
Solar Radiation+	No damage from extended exposure to sunlight (IEC 60068-2-5)
Sand & Dust	No damage detrimental to the operation of the connector from blowing sand & dust (MIL-STD-810G 510.6)
Water Immersion-Mated	20 meters / 28.5 psi for 120 minutes (MIL-STD-810G Method 512.5 Procedure 1 / 20 meter profile, IPX8)
Water Tightness	IPX9K, Resistant to high-pressure, high-temperature water jets. (IEC 60529)
Chemical/Fluid Endurance+	No damage detrimental to the operation of the connectors caused by unmated connectors immersed in various fuels and oils
Mold Growth+	Connector materials shall be fungus inert (IEC 60068-2-10 (European fungus)
High Altitude, Operational	30,000 ft., 60 minutes exposure after stabilization, 10 m/s (32.8 ft/s) max rate of altitude change. 3°C/min (5°F/min) max rate of temperature change (MIL-STD-810G Method 500.6)
High Altitude, Storage	40,000 ft., 60 minutes exposure after stabilization, 10 m/s (32.8 ft/s) max rate of altitude change. 3°C/min (5°F/min) max rate of temp change (MIL-STD-810G Method 500.6)
Low Pressure, Rapid Decompression	59.1 to 18.8 kPa (443 to 141 torr) < 15 sec (MIL-STD-810G Method 500.6)
Low Pressure, Operational	57.2 kPa, –55 ° C (MIL-STD-810G Method 500.5)

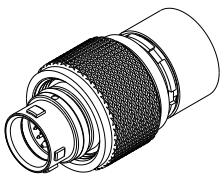
Dimensions shown in mm
Specifications and dimensions subject to change

Ordering Guide - HDx™ Series

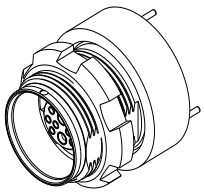
1- Product	2- Series	3- Type	4- Shell Style	5- Material	6- Arrangement	7- Contact Style	8- Contact Diameter	9- Polarization	10- Earth Tag	11- Mod Codes
HDX -	W	A	1	M	0-09	X	M	A		

1 - Product	
HDx™	High Density Small Form Factor
2 - Series	
W -	High Density
3- Type	
G -	Receptacle, Panel Mount
K -	Receptacle, In-Line
A -	Plug, Break-Away
C -	Plug, with Locknut
4 - Shell Style	
1 -	In-Line
K -	Rear Panel Mount, Low Profile Inside Device
5 - Material and Finish	
M -	Brass Alloy / Ruthenium over Electroless Ni (Series W)

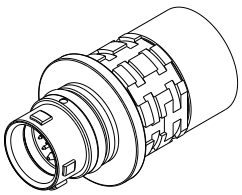
6- Arrangement	
0-09	
0-12	
0-16	
7 - Contact Style	
W -	Socket, Solder Cup (Receptacle Only)
X -	Pin, Solder Cup (Plug Only)
U -	Socket, PC-Tail (Receptacle Only)
8 - Contact Diameter	
B -	0.3mm
F -	0.7mm
M -	Combo / Mixed
9- Shell Polarization	
A -	Brown Color Code
B -	Red Color Code
C -	Blue Color Code
D -	Green Color Code
10- Receptacle Earth Tag	
L -	Applicable to GC, GK and G8 ONLY
OMIT -	All other styles and types
11- MOD Codes	
Leave Blank if None	



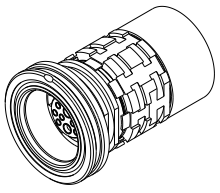
In-Line Breakaway Plug with Locknut- C1



Rear Panel Mount Receptacle - GK

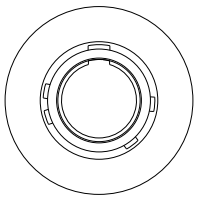


In-Line Breakaway Plug - A1

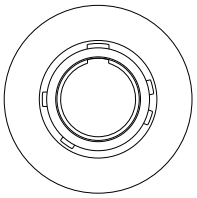


In-Line Breakaway Receptacle - K1

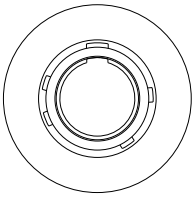
Clocking- Plug Key Polarization



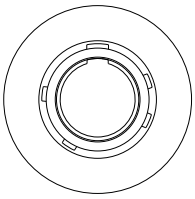
A- Brown



B- Red



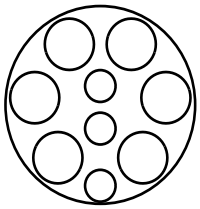
C- Blue

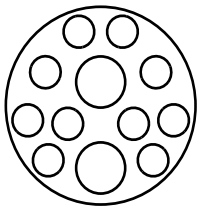


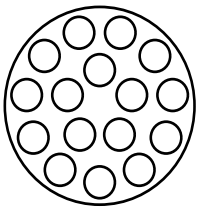
D-Green

Configurations - High Density

Contact Layouts





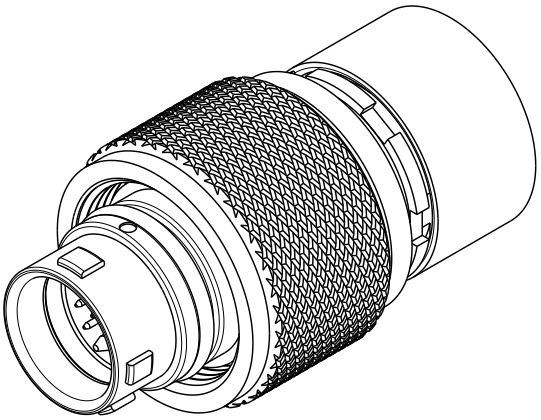


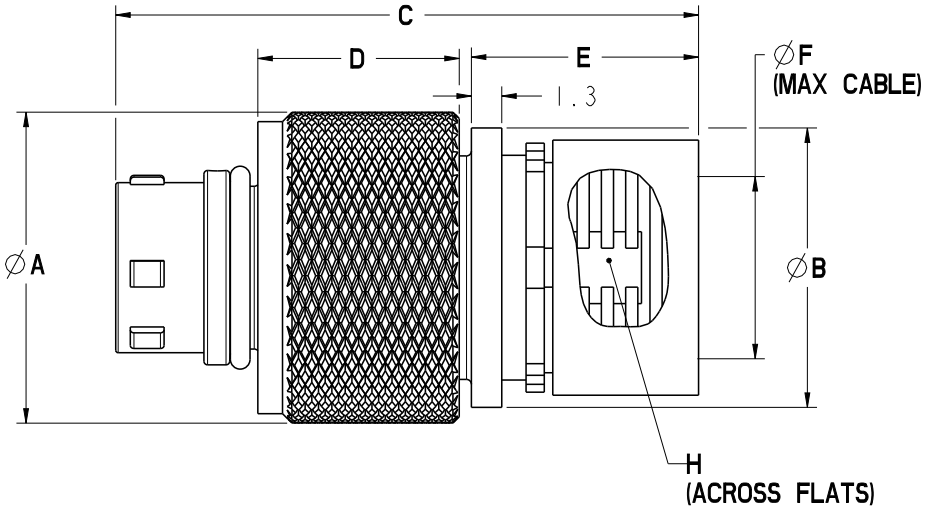
Configuration	0-09	0-12	0-16
Shell Size	0	0	0
Suitable For	USB	USB	Standard
Number of Contacts	9	12	16

Contact Specification						
Configuration	Contact Count	Contact Diameter (mm)	Wire Size (AWG)	Max Current	Voltage VDC	Application
0-09	3	0.3	28 AWG	1A	250	USB 2.0 + Power
	6	0.7	22 AWG	5A		
0-12	10	0.3	28 AWG	1A	250	USB 3.2 Gen 1 + Power
	2	0.7	22 AWG	5A		
0-16	16	0.3	28 AWG	1A	250	Signal

Dimensions shown in mm
Specifications and dimensions subject to change

HDx™ Series High Density In-Line Breakaway Plug with Locknut- C1

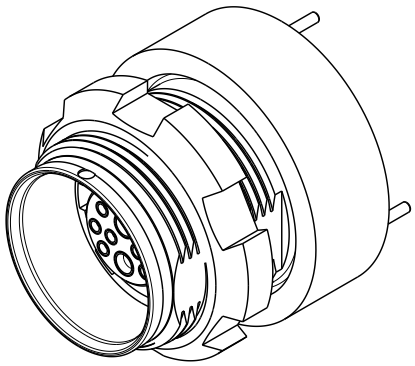


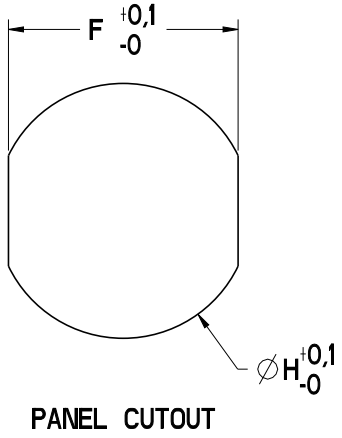


Size	ØA	ØB	C	D	E	ØF, MAX	H	THD
0	12,8	11,5	24	8,3	9,4	6,5	9,5	M10 X 0,5

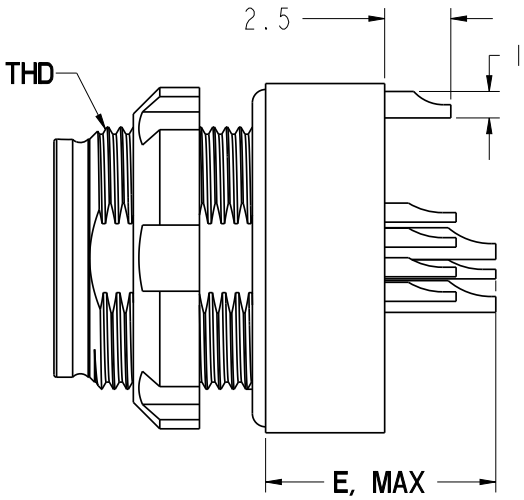
Dimensions shown in mm
Specifications and dimensions subject to change

HDx™ Series High Density- Rear Panel Mount Receptacle with Jam Nut - GK

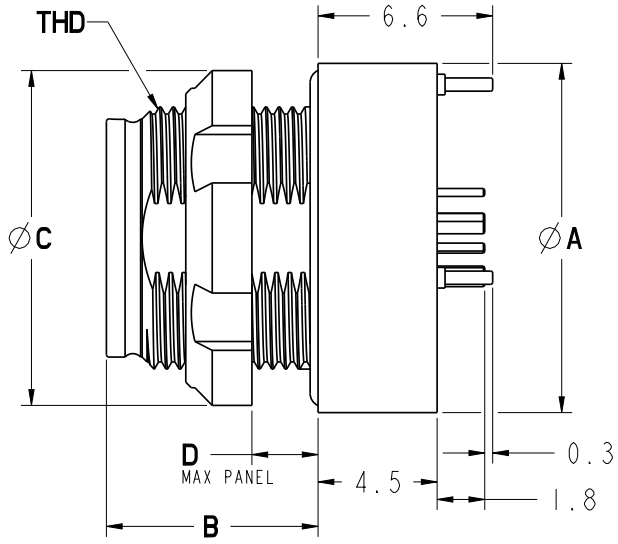




PANEL CUTOUT



Solder



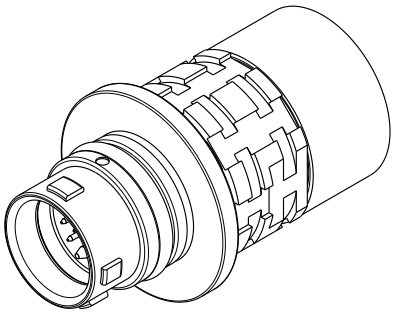
PCB

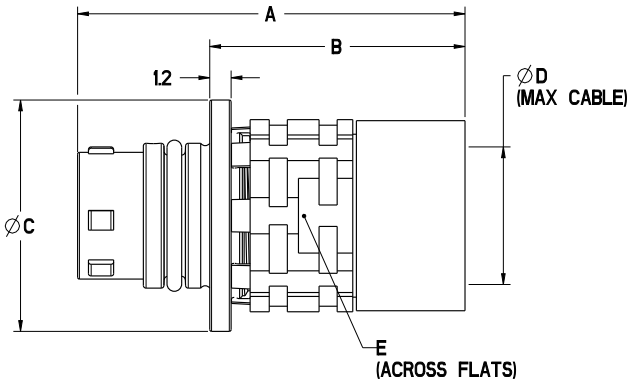
Size	ØA	B	ØC	D	E	F	ØH	THD
0	13,2	8	13	4*	8,7	9,1	10,1	M10x 0,5

* Panel thickness applied when mated to A1 plugs, 1,65 MAX when mated to C1 Plug

Dimensions shown in mm
Specifications and dimensions subject to change

HDx™ Series - High Density In-Line Breakaway Plug - A1

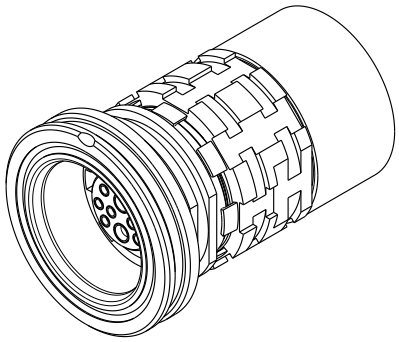


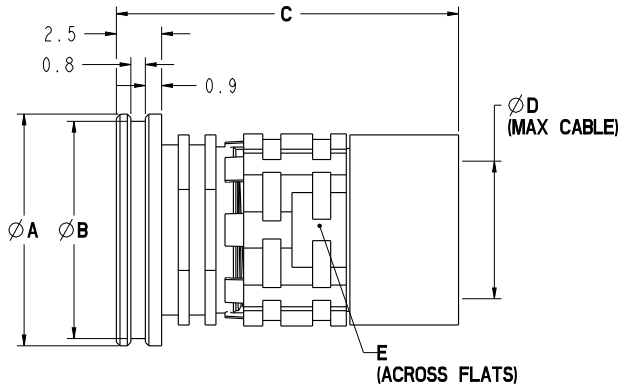


Breakaway Plug

Size	A	B	ØC	ØD MAX	E
0	21,5	14,2	12,8	7	10

HDx™ Series - High Density In-Line Breakaway Receptacle - K1



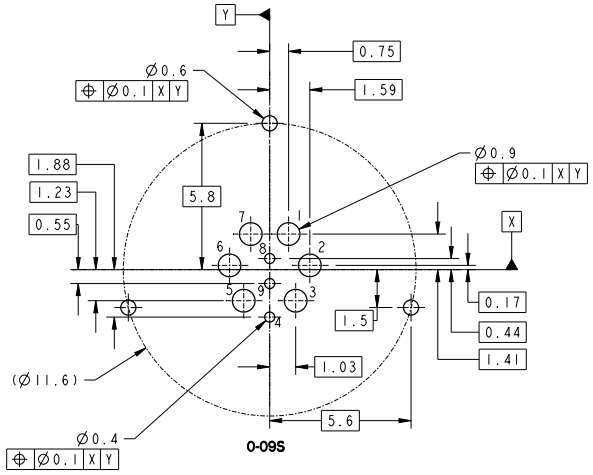


In-Line Receptacle

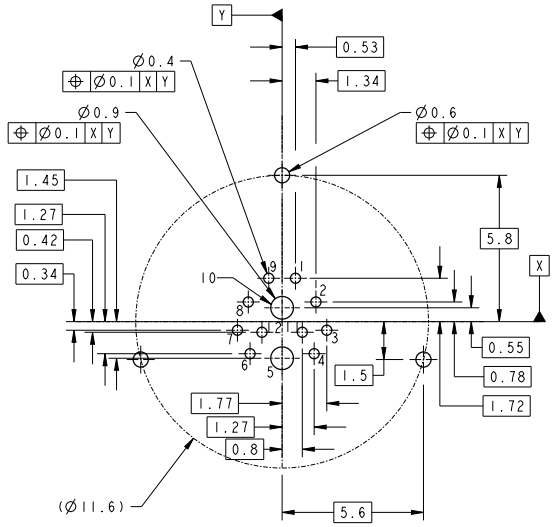
Size	ØA	ØB	C	ØD MAX	E
0	12,8	12	19,5	7	10

PCB Layout

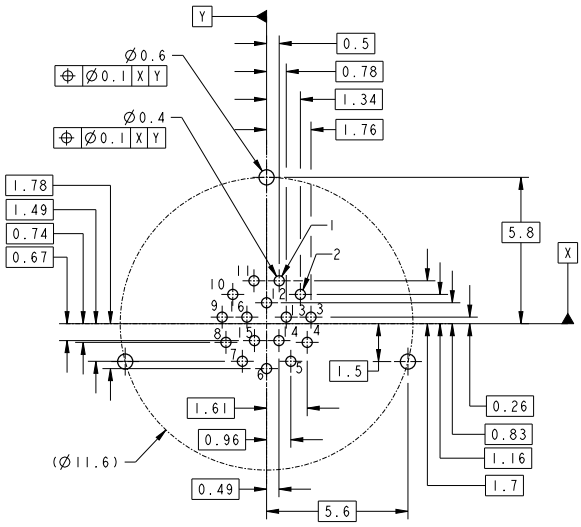
HDx™ Series High Density PCB Layouts



0-09S



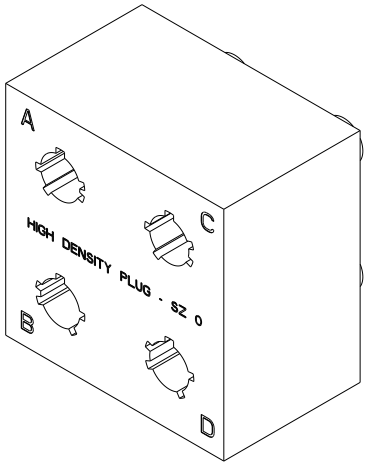
0-12S



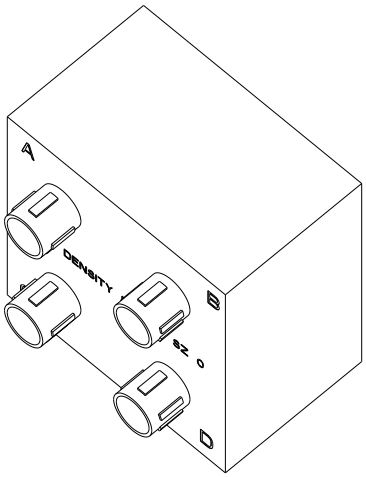
0-16S

Dimensions shown in mm
Specifications and dimensions subject to change

Tooling

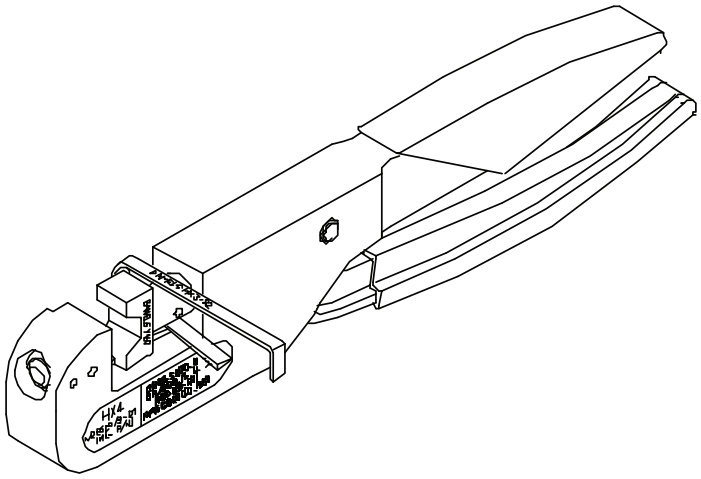


Plug Side View

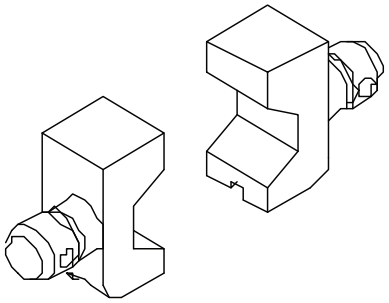


Receptacle Side View

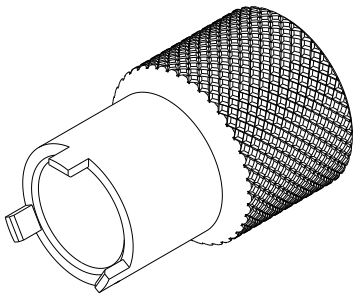
Part Number: 980-9500-387
Backshell Assembly Block for Plug and Receptacle



Hand Crimp Tool -
995-0001-761



Die Crimp Rail Insert for Hand Crimp Tool
995-0001-790



Spanner Nut Socket
317-2187-050

Cables to Outfit Your 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

Dimensions shown in mm
Specifications and dimensions subject to change

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

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