

ITT Cannon Trident Multiway Rack & Panel Connectors



RECTANGULAR CONNECTORS RATED TO IP40

ITT Cannon Trident Multiway connectors are a family of cost-effective rectangular connectors tested to MIL-STD-202 and IEC 512. Trident Multiway Rack & Panel connectors have earned an International Ingress Protection (IP) rating of IP40, meaning they are completely sealed against dust and other solid objects and temporarily submersible up to 1m. The Multiway range has six contact cavity arrangements available and offers an extremely reliable connector system, in which any Trident signal or coaxial contacts can be used. All Multiway Rack & Panel connectors are RoHS-compliant and recognized under the component program of CSA. For full details on the ITT Cannon Trident Multiway Rack & Panel Connector series, please see the product specifications below.

APPLICATIONS

- Inflight entertainment systems (IFE)
- Railway applications
- Test and measurement equipment

FEATURES

- Fully tested to MIL-STD-202 and now IEC 512
- 14- to 75-contact layouts with wide range of accessories and mounting hardware
- Polarizing between connectors available, by contact position, use of shrouds, or additional guide pin and socket sets
- Reliable and robust series of rack and panel connectors.
- RoHS-compliant and recognized under the component program of CSA

TECH SPECS

MATERIALS & FINISHES

Shell:	Anodized aluminum, zinc alloy, thermoplastic
Shell plating:	Zinc alloy gray painted
Insulator:	Glass filled phenolic
Contact:	Copper-alloy
Contact plating:	Tin, gold, silver
Contact style / termination:	Crimp, solder

ELECTRICAL DATA

Operating voltage:	250 V ac
Current rating:	16 A
Number of signal contacts (min/max)	14 to 75
Gauge wire size:	Signal: AWG 26-14 (0.08 - 2.5 mm ²)

MECHANICAL DATA

Industry / MIL-SPEC #:	IEC 512. MIL-STD-202
Application / Market:	Industrial, Transportation
Shape:	Rectangular
Shell style:	Plug and Receptacle
Durability:	500 Mating Cycles
Contact style / Termination:	Crimp, Solder

TEST DATA

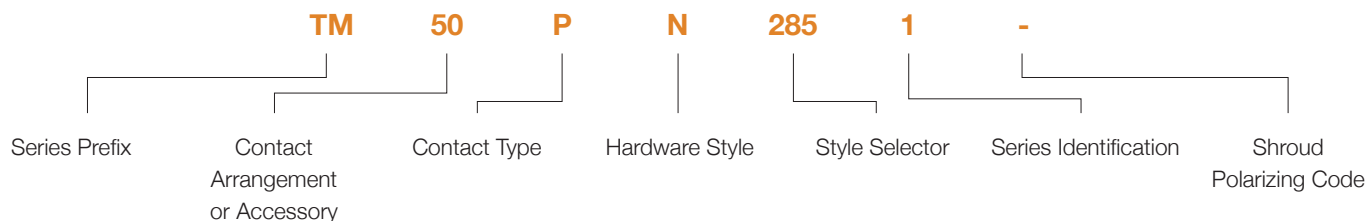
TEST DESCRIPTION	IEC TEST	MILITARY STANDARD	TEST METHOD
Test Voltage	512-2 Test 4A	MIL-STD-202	301
Insulation Resistance	512-2 Test 3a	MIL-STD-202	302
Vibration	512-4 Test 6d	MIL-STD-202	204, Condition A
Shock	512-4 Test 6c	MIL-STD-202	213
Humidity	512-6 Test 11c	MIL-STD-202	103, Condition C
Corrosion (Salt Spray)	512-6 Test 11f	MIL-STD-202	101, Condition B
Dry Heat	512-6 Test 11i	MIL-STD-202	108A, Condition D

PERFORMANCE SPECIFICATIONS

Temperature Range	-55°C to +125°C (-67°F to +257°F) Plastic Hood assemblies limited to 105°C to (221°F)
Test Voltage	200 V ac rms for 60 seconds
Insulation Resistance	5000MΩ min. at 500 V DC
Durability*	Up to 500 Mating Cycles
Flammability	UL 94 V-0 (Insulators), UL 94 V-1 (Plastic Hoods)
Rated Current	Dependent on choice of contact and application (usually limited by cable bundle factor)

*Up to 500 cycles for machined contacts; up to 200 cycles for stamped contacts

HOW TO ORDER



EXPLANATION

SERIES PREFIX

TM - Trident Multiway

CONTACT ARRANGEMENT

See below

CONTACT TYPE

P - Plug

R - Receptacle

HARDWARE STYLE

N - Normal Hardware¹

R - Reversed Hardware²

STYLE SELECTOR

Plain, No Accessories

Plastic Hood

Die-Cast Hood

Straight Cable Clamp

90° Cable Clamp

⇒ See page 64

SERIES IDENTIFICATION

1 - For all items in this publication

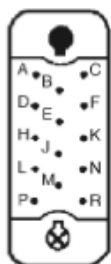
SHROUD POLARIZING CODE

Leave blank if not required. Contact us for other options.

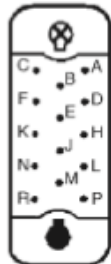
CONTACT CAVITY ARRANGEMENTS — MATING FACE VIEW

14-WAY

PLUG

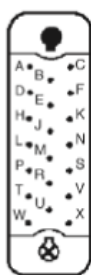


RECEPTACLE

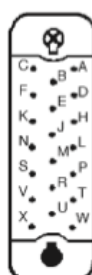


20-WAY

PLUG

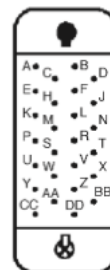


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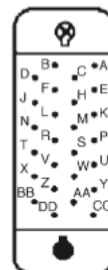


26-WAY

PLUG

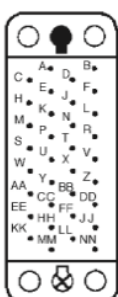


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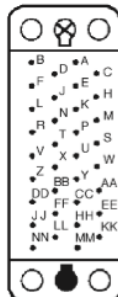


34-WAY

PLUG

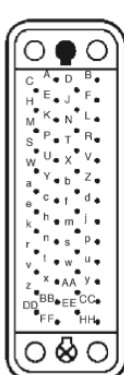


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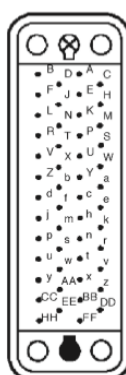


50-WAY

PLUG

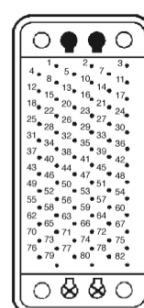


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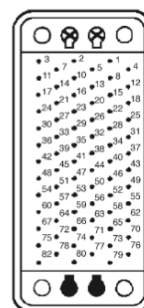


75-WAY

PLUG



RECEPTACLE



Note: 1. Normal Hardware: Plugs have rotating jackscrews, receptacles have fixed jackposts
2. Reversed Hardware: Receptacles have rotating jackscrews, plugs have fixed jackposts.

STYLE SELECTOR

PLAIN, NO ACCESSORIES



	ROTATING JACKSCREWS OR FIXED JACKPOSTS	GUIDE PINS & SOCKETS
No Shrouds	007	001
Shrouds	207	201

PLASTIC HOOD



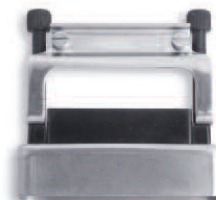
	ROTATING JACKSCREWS OR FIXED JACKPOSTS	GUIDE PINS & SOCKETS
No Shrouds	155 (34-way only)	159 (14, 20, 26 & 34-way only)
Shrouds	255 (34-way only)	285 (14, 20, 26 & 34-way only)

DIE-CAST HOOD



	ROTATING JACKSCREWS OR FIXED JACKPOSTS	GUIDE PINS & SOCKETS
No Shrouds	157 (50 & 75-way only)	185
Shrouds	257 (50 & 75-way only)	285

STRAIGHT CABLE CLAMP



	ROTATING JACKSCREWS OR FIXED JACKPOSTS	GUIDE PINS & SOCKETS
No Shrouds	118	180
Shrouds	218	280

90° CABLE CLAMP



	STANDARD CABLE EXIT TO LEFT	
	ROTATING JACKSCREWS OR FIXED JACKPOSTS	GUIDE PINS & SOCKETS
No Shrouds	138	136
Shrouds	238	236

	STANDARD CABLE EXIT TO RIGHT	
	ROTATING JACKSCREWS OR FIXED JACKPOSTS	GUIDE PINS & SOCKETS
No Shrouds	118	180
Shrouds	218	280

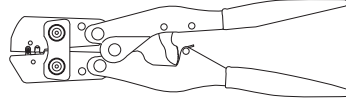
Note: Connectors with Jackscrews will not mate with connectors with Guide Pins or Sockets.
Jackscrews available on 34-way only.

CRIMP TOOL OPERATION

There are five different crimp tools used with Trident contacts. Find the appropriate tool on the Contact Selection Chart → on page 69 and follow the instructions for that tool below.

HAND CRIMP TOOL FOR STAMPED CONTACTS

(192990-3140 for 16-28 AWG contacts and 192900-0175 for 14 AWG contacts)



STEP 1: Strip wires to length (See strip length in Column 8 of contact chart → on page 69).

STEP 2: Open the tool and select the proper crimp cavity for the wire gauge.

STEP 3: Hold tool with the die cavity identification facing away from you.

STEP 4: Pick up the contact by the mating end. Slip the contact into the appropriate die cavity so that the notch just behind the "gold" portion of the contact fits over the sliding plate on the lower half of the die.

STEP 5: Squeeze the handle just enough to hold the contact in the die cavity.

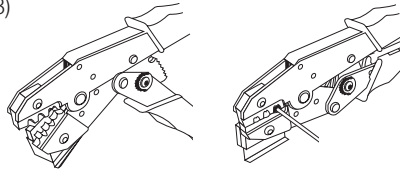
STEP 6: Turn the tool over and insert the stripped wire into the contact until it bottoms.

STEP 7: Cycle the tool. The tool will not open until the contact has been completely crimped.

STEP 8: Inspect the crimp. A contact crimp verification tool is available. Please contact us. See "Stamped Contacts" in Crimp Inspection section → on page 67.

CONTACT CRIMP TOOL

(121586-5236) (121586-5237) (121586-5238)



STEP 1: Strip wires to length (see strip length in Column 8 of contact chart → on page 69).

STEP 2: Open the tool and select the proper crimp cavity for the wire gauge.

STEP 3: Now hold the tool so that the cavity identification is away from you (the back side).

STEP 4: Surrounding the lower die is a holding frame; push up on the tab to fully raise the frame.

STEP 5: While holding the frame open, insert the power contact wire side first, until the lip of the contact hits against the ledge of the lower die. The U-shaped wire crimps should be upright in the die.

STEP 6: Release the tab. The frame should now be holding the contact in the proper cavity, ready to crimp.

STEP 7: Close the tool just enough to grip the contact.

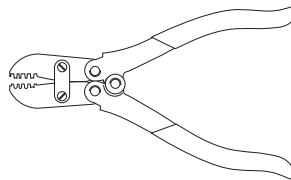
STEP 8: Insert the stripped wire into the contact from the wire side.

STEP 9: Cycle the tool. The tool will not open until the contact has been completely crimped. An escape lever is located on the ratchet mechanism to release the tool if necessary.

STEP 10: Inspect the crimp. See "Stamped Contacts" in Crimp Inspection section → on page 67.

ECONOMY TOOL FOR STAMPED CONTACTS

(192922-1440)



STEP 1: Strip wires to length (See strip length in Column 8 of contact chart → on page 69).

STEP 2: Select the proper crimp cavity for the wire gauge.

STEP 3: The contact itself has two U-shaped crimp areas, each requiring a separate crimp operation. The larger, rear U-shaped area crimps over the wire insulation and provides strain relief. The smaller, longer, U-shaped area crimps over the bare wire and provides the electrical connection.

STEP 4: Insert the contact into the tool so that the smaller wire crimp U is upright and centered in the proper die (the open portion of the U facing the cavity identification on the tool).

STEP 5: Close the tool just enough to grip the contact.

STEP 6: Insert the stripped wire into the contact until it bottoms.

STEP 7: Cycle the tool.

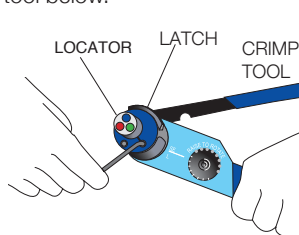
STEP 8: Remove the crimped contact. Now you must crimp the insulation grip.

STEP 9: Place the insulation U upright in the die cavity marked INS. Crimp the Insulation U over the wire insulation in the same manner as the wire crimp.

STEP 10: Inspect the two crimps. See "Stamped Contacts" in Crimp Inspection section → on page 67. A contact crimp verification tool is available. Please contact us.

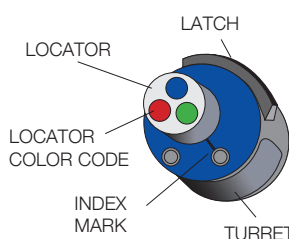
CRIMP TOOL FOR MACHINED CONTACTS

There are five different crimp tools used with Trident contacts. Find the appropriate tool on the Contact Selection Chart → on page 69 and follow the instructions for that tool below.



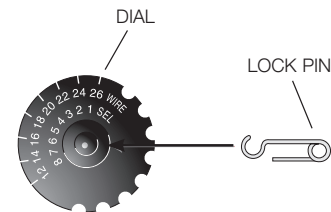
STEP 1: Strip the wires to length (see column 8 of contact chart → on page 69).

STEP 2: Open the crimp tool by squeezing the handles. Push the latch on turret to pop up the locator. Attach the turret to the crimp tool using the two captive hex bolts in the turret.

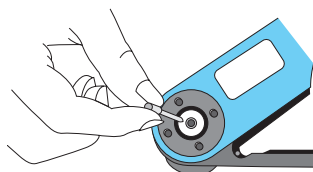


STEP 3: Select the proper locator position for your contact by rotating the locator until the proper color is aligned with the index mark. Push locator back down until it snaps into position.

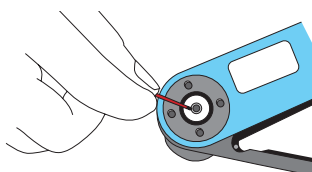
CONTACT TYPE	LOCATOR COLOR
PINS	BLUE
SOCKETS	GREEN
FIRST-MATE	RED



STEP 4: Adjust dial for proper wire gauge. To change the dial setting, remove the lock pin and lift center of dial. Turn to the desired wire gauge. Replace lock pin on dial.



STEP 5: Cycle the tool before inserting the contact to be sure the tool is in the open position. Drop the contact, mating end first, into the crimp cavity of the tool. Squeeze the tool handle just enough to grip the contact without actually crimping it.



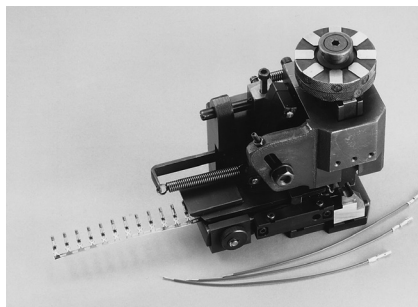
STEP 6: Insert the stripped wire into the contact with a slight twisting motion. Be sure all wire strands are inside the contact. Squeeze the handle to cycle the tool. The handle will not release until the contact is completely crimped.

STEP 7: Remove the crimped contact. Pull on the wire slightly to be sure it is properly crimped. Be sure the contact is not bent or damaged in any way.

STEP 8: Visually inspect the crimp. See Machined Contacts drawing in Visual Check section on next page.

NEW TRIDENT AUTOMATIC CRIMP TOOLS FOR REELED STAMPED CONTACTS

Mini Applicator modules are used in industry-standard crimp presses. This allows for fast change-over for crimping different contacts. Using the same crimp press saves valuable factory floor space over multiple presses.



CONTACT	TYPE	MINI APPLICATOR PART NUMBER	
		METCAL	SCHAFFER
20-26	Signal	121586-5239	121586-5142
16-18	Signal	121586-5217	121586-5141
14-16	Signal	121586-5240	Contact us for details

Adjustment fixture for signal applicators 317-8675-133

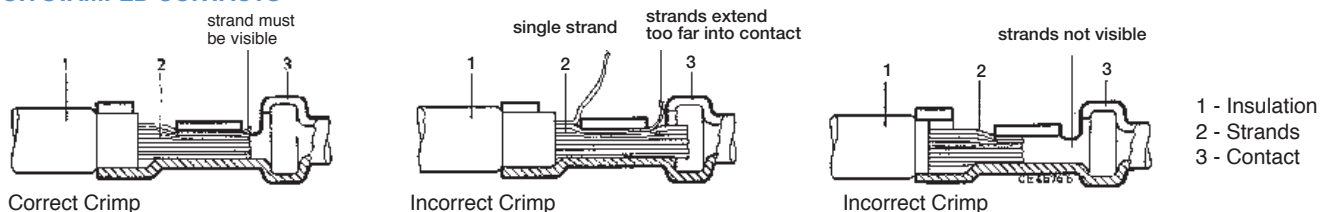
CONTACT	TYPE	MINI APPLICATOR PART NUMBER
16-18	Power	193800-0031
14-16	Power	193800-0024
12-14	Power	193800-0023

Contact us for detailed crimp specifications.

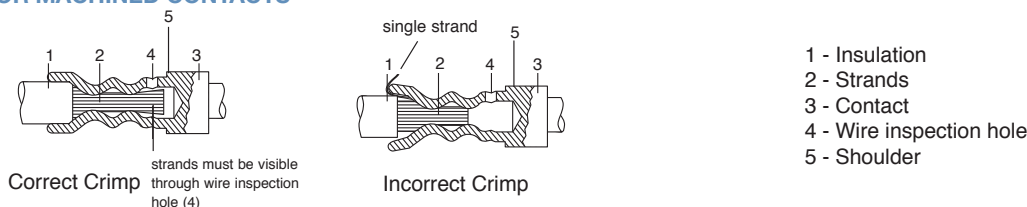
CRIMP INSPECTION (MICRO SECTIONS)

Enlargement of micro section allows for final judgment of crimp quality. This test is recommended whenever new tools or new types of wire are used.

FOR STAMPED CONTACTS



FOR MACHINED CONTACTS



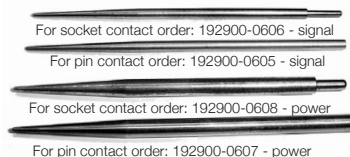
INSERTION OF CONTACTS

No insertion tool is required.

STEP 1: Strip wires to length (See strip length in Column 8 of contact chart → on page 69.)

STEP 2: When using Neptune connectors with the rear wire sealing grommet, put the grommet in place on the connector and push the contact directly through the grommet into the cavity. Start at the center of the layout and work concentrically to the outside edge to eliminate the possibility of the grommet shifting or bunching during loading.

Wire needles may be used as an assembly aid for use with high density layouts, maximum size wire insulation, or when adding to already terminated connectors.



To use, push the point of the needle through the selected hole and check that it has passed through to the correct contact cavity by looking at the mating face of the connector. Once verified, attach the contact to the non-pointed end of the needle. Holding the point of the contact, push the contact into the connector body until the contact locks into place. Note: The wiring needle is used as a guide and will not pull the contact into the connector body. Be sure to inspect the mating face (see 3 below) as the grommet mutes the "feel" of the contact locking into place.

STEP 3: Inspect by looking at the mating side of the connector. Be sure that all of the contacts are on the same plane (fully inserted). If not, use the extraction tool to remove the contact and re-insert.

EXTRACTION OF CONTACTS

Contacts can be removed from the housings using the appropriate extraction tool. The tool is placed over the mating end of the contact and the sleeve is rotated slightly as it is pushed into the connector.

IMPORTANT: Make sure the depth indicating line on the tool is even with the mating face of the connector before depressing the plunger to avoid damage to connector and contact. Light pressure on the plunger will eject the contact from the rear of the connector.

STEP 1:

Contact in connector





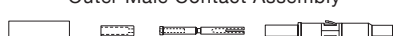
STEP 2:

Extraction tool compresses tines

STEP 3:

Plunger pushes contact out rear of connector



CONTACTS (1)															
COLUMN 1	COLUMN 2	COLUMN 3	COLUMN 4	COLUMN 5	COLUMN 6	COLUMN 7									
TRIDENT CONTACTS	A.W.G. WIRE SIZE	PLATING	LOOSE PINS	3K REEL PIN	LOOSE SOCKETS	3K REEL SOCKETS									
STAMPED CRIMP															
<div>13 Amp-200 insertions</div> <div></div>	24-26	Tin Gold flash Gold	192990-0020 192990-0080 192900-0448	192990-2510 192990-2650 192900-0406	192990-0030 192990-0090 192900-0452	192990-2550 192990-2690 192900-0410									
	20-22	Tin Gold flash Gold	192990-0040 192922-1460 192900-0447	192990-2500 192990-2640 192900-0405	192990-0050 192922-1470 192900-0451	192990-2540 192990-2680 192900-0409									
	Contact us for high-conductivity contacts (16A)	16-18	Tin Gold flash Gold	192990-0060 192990-0100 192900-0446	192990-2490 192990-2630 192900-0404	192990-0070 192990-0110 192900-0450	192990-2530 192990-2670 192900-0408								
Non-insulation support	14	Tin Gold flash Gold	192990-1240 192990-1220 192900-0445	192990-2480 192990-2620 192900-0403	192990-1250 192990-1230 192900-0449	192990-2520 192990-2660 192900-0407									
MACHINED CRIMP															
<div>13 Amp-500 insertions</div> <div></div>	24-28	Gold flash Gold Heavy Gold	192991-0099 192991-0100 192991-0101	- - -	192991-0036 192991-0042 192991-0054	- - -									
	24	Gold flash Gold Heavy Gold	192991-0091 192991-0092 192991-0093	- - -	192991-0037 192991-0043 192991-0055	- - -									
	22	Gold flash Gold Heavy Gold	192991-0095 192991-0096 192991-0097	- - -	192991-0038 192991-0044 192990-0056	- - -									
	20	Gold flash Gold Heavy Gold	192991-0127 192991-0128 192991-0129	- - -	192991-0039 192991-0045 192991-0057	- - -									
	20 Thick Wire	Gold flash Gold Heavy Gold	192991-0087 192991-0088 192991-0089	- - -	192991-0040 192991-0046 192991-0058	- - -									
		16-18	Gold flash Gold Heavy Gold	192991-0083 192991-0084 192991-0085	- - -	192991-0041 192991-0047 192991-0059	- - -								
<div>MACHINED SOLDER FOR PROTOTYPING 28-14 AWG WIRE</div> <table><tr><td></td><td>Pin</td><td>Socket</td></tr><tr><td>Tin</td><td>192900-0632</td><td>192900-0634</td></tr><tr><td>Gold</td><td>192900-0633</td><td>192900-0635</td></tr></table>								Pin	Socket	Tin	192900-0632	192900-0634	Gold	192900-0633	192900-0635
	Pin	Socket													
Tin	192900-0632	192900-0634													
Gold	192900-0633	192900-0635													
FIRST MATE/LAST BREAK MACHINED CRIMP															
<div>13 Amp-500 insertions</div> <div></div>	20	Tin Gold flash Gold	192991-0166 192991-0163 192991-0164	- - -	192991-0211 192991-0078 192991-0207	- - -									
	16	Tin Gold flash Gold	192991-0162 192991-0159 192991-0160	- - -	192991-0212 192991-0079 192991-0208	- - -									
PRINTED CIRCUIT BOARD CONTACTS															
<div>13 Amp-500 insertions</div> <div></div>	PC post dia. .043 (1.10) .043 (1.10) .03 (.76) .03 (.76)	Tin Gold Tin Gold	192991-0198 192991-0195 192991-0122 192991-0119	- - - -	192991-0204 192991-0067 192991-0203 192991-0066	- - - -									
COAX/TWISTED PAIR Used only in signal contact cavities															
Outer Female Contact Assembly	Twisted Pair (B) Coaxial (A)	Gold	192945-4530 192945-4390	- -	192945-4930 192945-4380	- -									
Outer Male Contact Assembly															
															

All dimensions in inches (millimeters in parentheses) unless otherwise stated.

(1) Loose or 3K Reel - Stamped contacts are available loose piece or on continuous reels of 3,000 for use with semi-automated crimping systems. Contact us for information.

WIRE RANGE		
COLUMN 8	COLUMN 9	COLUMN 10
WIRE STRIP LENGTHS INCHES (MM) +.02 +.01	WIRE INSULATION DIAMETER	KEYING PINS(2)
.16 (4.0)	.035 - .0627 (.89 - 1.58)	192990-0000 192990-0000 192990-0000
.16 (4.0)	.046 - .081 (1.17 - 2.08)	192990-0000 192990-0000 192990-0000
.16 (4.0)	.078 - .118 (2.00 - 3.00)	192990-0000 192990-0000 192990-0000
.22 (5.6)	N/A No insulation grip	192991-0018 192991-0018 192991-0018
.20 (5.0)	.035 - .055 (.90 - 1.40)	192990-0000 192990-0000 192990-0000
.20 (5.0)	.041 - .062 (1.05 - 1.60)	192990-0000 192990-0000 192990-0000
.20 (5.0)	.062 - .084 (1.60 - 2.15)	192990-0000 192990-0000 192990-0000
.20 (5.0)	.051 - .070 (1.30 - 1.80)	192990-0000 192990-0000 192990-0000
.20 (5.0)	.062 - .082 (1.60 - 2.10)	192990-0000 192990-0000 192990-0000
.28 (7.1)	N/A No insulation grip	192990-0000 192990-0000 192990-0000
.20 (5.0)	.062 - .082 (1.60 - 2.10)	192990-0000 192990-0000 192990-0000
.28 (7.1)	N/A No insulation grip	192990-0000 192990-0000 192990-0000
N/A	N/A	192990-0010 pin 192990-7650 skt
HAND CRIMP		
Contact us for data sheet containing wire preparation information, tooling, and cable types.		Inner Conductor
		Outer Conductor

[illegible]

(2) Keying Pins

A plastic pin which can be snapped into an unused signal or power contact hole. This will only allow another connector to mate if there is an empty hole opposite the keying pin. Used to polarize similar connectors to avoid mis-mating.

(3) Hand Crimp Tool & Locator

Hand crimp tools produce consistent, high quality crimps by using a ratchet mechanism which will only release the contact when the crimp is completed. Stamped contacts use a tool with integrated dies. Machined contacts use a military style tool (ML-C-22520/1) which also requires the appropriate locator to form a complete crimping system.

(4) Economy Crimp Tool (stamp contacts only)

This is a pliers-style tool for prototype or service use. It has no ratchet and the completed crimp requires two separate operations, one to crimp the conductor and a second crimp to secure the insulation support. The economy tool covers wire gauges 16, 20 and 24 AWG and is for use with stamped contacts only.

(5) Extraction Tool

Contacts can be easily removed by placing the extraction tool over the contact in the front of the connector and pushing. The contact is ejected from the rear of the connector. No insertion tool is needed for any Trident contacts.