

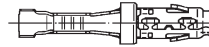


APK Power Contacts

- 30 A current rating.
- For use with Neptune connectors.



Socket

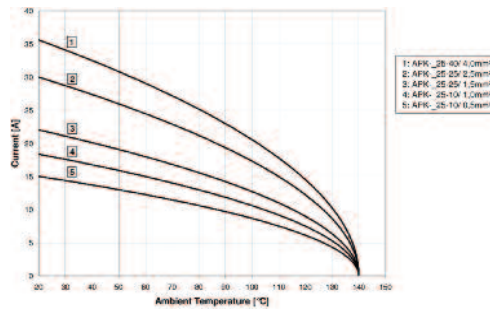


Pin



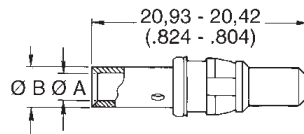
Wire Range mm ²	Wire Size	Contact	Description*	Part Number		Insulation Diameter	Strip Length
				Loose (100) Tin Plated	Reeled (3000) Tin Plated		
0,50 - 1,00	20-18 AWG	Pin	APK-PB25A10	031-8717-020	121668-0000	1,40 (.055) - 2,00 (.078)	5,00 (.196)±0,25 (.009)
0,50 - 1,00	20-18 AWG	Socket	APK-SB25A10	031-8717-120	121668-0100	1,40 (.055) - 2,00 (.078)	5,00 (.196)±0,25 (.009)
1,50 - 2,50	16-14 AWG	Pin	APK-PB25A25	031-8717-021	121668-0001	2,00 (.078) - 2,90 (.114)	5,00 (.196)±0,25 (.009)
1,50 - 2,50	16-14 AWG	Socket	APK-SB25A25	031-8717-121	121668-0101	2,00 (.078) - 2,90 (.114)	5,00 (.196)±0,25 (.009)
2,50 - 4,00	14-12 AWG	Pin	APK-PB25A40	031-8717-022	121668-0002	2,90 (.114) - 3,60 (.141)	5,00 (.196)±0,25 (.009)
2,50 - 4,00	14-12 AWG	Socket	APK-SB25A40	031-8717-122	121668-0102	2,90 (.114) - 3,60 (.141)	5,00 (.196)±0,25 (.009)

* Referring to reeled contacts

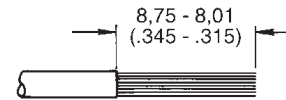


D Subminiature Loose Contacts, Size 8- High Power-Crimp

Plug

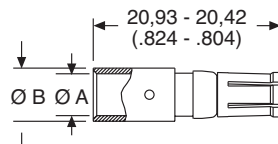


Recommended Wire Trim Length

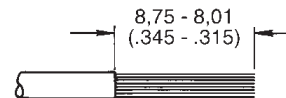


Part Number (30 μin) 0,76μm Gold over Copper	Dimensions		Current Rating A	Wire Size AWG
	A	B		
DM130338	4,60 (.181)	5,84 (.230)	40 A	8 AWG
DM130339	2,54 (.100)	5,54 (.218)	20 A	12 AWG

Receptacle



Recommended Wire Trim Length



Part Number (30 μin) 0,76μm Gold over Copper	Dimensions		Current Rating A	Wire Size AWG
	A	B		
DM130341	4,60 (.181)	5,84 (.230)	40 A	8 AWG
DM130342	2,54 (.100)	5,54 (.218)	20 A	12 AWG

Dimensions shown in mm (inch)

Specifications and dimensions subject to change

Note: For crimp tooling please consult the factory.





Coaxial Contacts

- Up to 200 mating cycles.
- Fits all Trident contact cavities.
- Full range of tooling available.
- For twisted pair and coaxial cable use.
- All contact assemblies sold in packs of 100.
- Ideal for high frequency applications up to 2 GHz.



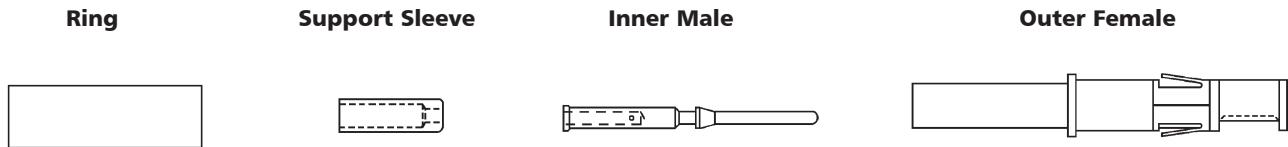
Performance Specifications

Temperature Range	-55°C to 125°C
Operating Voltage	230 V dc

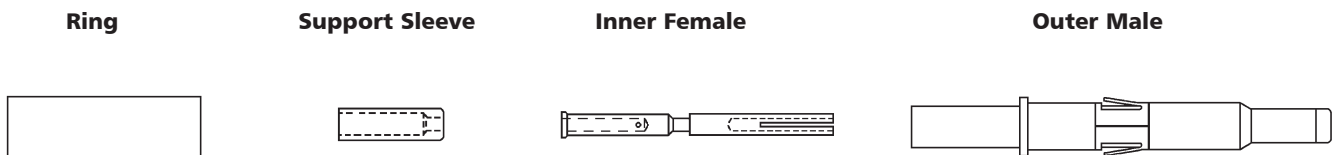
Materials and Finishes

Description	Material	Finish
Inner Contact	Brass	0,75 μm (30 $\mu\text{ in.}$) Gold
Outer Contact	Brass	0,40 μm (16 $\mu\text{ in.}$) Gold

Outer Female Contact Assembly



Outer Male Contact Assembly



Description	Part Number (Pack of 100)	Nomenclature	Cable Type*
Outer Female Contact Assembly	192945-4380	TC1FCLY	A**
Outer Male Contact Assembly	192945-4390	TC1MCLY	A**
Outer Female Contact Assembly	192945-4930	TC2FCLY	B and Twisted Pair
Outer Male Contact Assembly	192945-4530	TC2MCLY	B and Twisted Pair

Note: Sold as complete sets. Please contact Cannon for other packaging options.
 * For Cable Type, see page 73
 ** Support sleeve not used

Coaxial Contacts — Cable Type and Cable Strip Length

Cable Type — A

T3203	T3306	RG174
T3204	T3385	RG179
T3264	T3388	RG187
T3289	T3390	RG188
		7528A/31

Cable Type — B

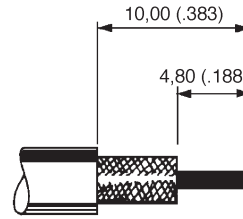
T3201	T3293	RG178
T3202	T3294	RG196
T3261	T3386	7530A/1114
T3263	UR94	5088A/1317
		LN00029
		7530D/1114
		C06C030
		LGRZ/4016

Cable Type — Twisted Pair

Insulation Diameter	Dimension	
	X	Y
0,56 (.022) - 1,12 (.044)	4,80 (.189)	6,30 (.248)
Less than 0,56 (.022)	5,10 (.200)	13,00 (.512)

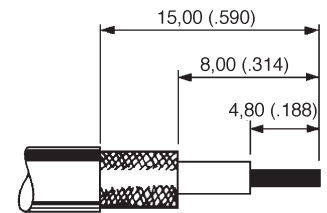


Outer Male Contact Assembly



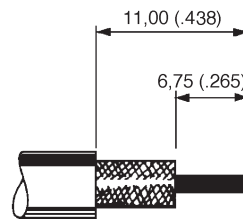
Part Number: 192943-4580

Outer Male Contact Assembly



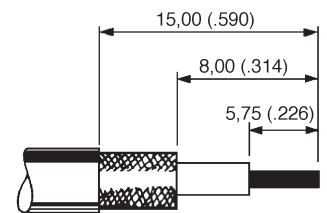
Part Number: 192945-4390

Outer Male Contact Assembly

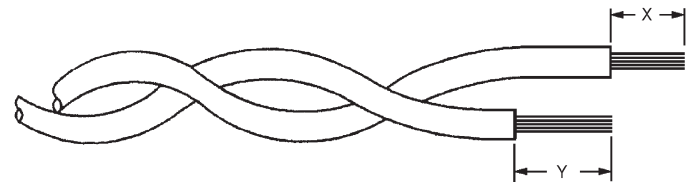


Part Number: 192945-4930

Outer Male Contact Assembly



Part Number: 192945-4530



Part Number: 192945-4930 & 192945-4530

Accessories



Discriminating (Keying) Pins and Caps

Discriminating (Keying) Pins are used to prevent cross-mating of similar connectors. These pins are used in place of a pin contact. The corresponding socket cavity must be left open. If a socket contact is present, the discriminating pin will prevent mating. There are two types of discriminating pins. Board Mount PCB connectors have caps and pegs. All other connectors have signal or power pins.

Description	Part Number	Pack Size
Discriminating (Keying) Pin, Signal Contacts	192990-0000	Bulk Pack (25)
Discriminating (Keying) Pin, Power Contacts	192900-0189	Bulk Pack (25)
Discriminating (Keying) Cap, Pin Contacts	192990-0010	Bulk Pack (100)
Discriminating (Keying) Peg, Socket Contacts	192990-7650	Bulk Pack (100)



Hand Tools for Formed (Stamped) contacts



Ratcheted Hand Tool

A range of single action, factory calibrated tools are available to support the stamped contacts and 30 A power contacts.

Signal Contact	Power Contact	Part Number
14-16 AWG	N/A	121586-5238
16-18 AWG	N/A	121586-5237
20-22, 24-26 AWG	N/A	121586-5236
N/A	12-14, 14-16, 18-20 AWG	121586-5241

Hand Tools for Machined and Coaxial Contacts



This is a ratcheted, four indent crimptool that is fully adjustable. They crimp all sizes of machined and coaxial contacts.

Description	Hand Tool Part Number	Locator
Machined Crimp*	995-0001-585	192990-7600 (Calibrated) ¹
Coaxial Outer	274-7613-000	326-7512-000
Coaxial Inner	995-0001-584	326-7511-000

¹Nomenclature: TH-Trident

* M22520-1-01

Extraction Tools



Contacts can readily be removed from the housings using an extraction tool. The tool is placed over the contact and the sleeve rotated slightly as it is pushed home to release the spring. Light pressure on the knob then ejects the contact from the rear of the housing.

	Part Number
For Signal Contact	192922-1450
For Power Contact	192900-0176



	Part Number
For Power Contact	121086-3278



Mini Applicators (for Stamped Contacts)

Mini Applicators are interchangeable modules that will fit into many standard crimping machines. They are available for all sizes of stamped signal and power contacts.

AWG Size	Contact Description	Mecal Part Number
14-16	Trident Signal	121586-5240
16-18	Trident Signal	121586-5217
20-26	Trident Signal	121586-5239
12-14	Trident 30 A Power	*
14-16	Trident 30 A Power	*
18-20	Trident 30 A Power	*

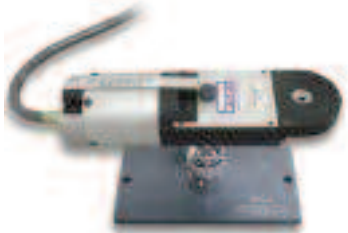
* For details please consult the factory



Testing Gauge (for Stamped Contacts)

The testing gauge will be helpful to check whether a crimp is ok or not. The contact should be inserted into the test fixture without scratching the test hole (diameter 3.3 mm).

Description	Part Number
Testing Gauge	317-8675-133



Pneumatic Table Crimp Tool (for Machined Contacts)

This Hand Crimp Tool fully meets the requirements of specification MIL-C-22520. The tool produces eight-indent crimp terminations of excellent quality. Together with the bench mount BM-2 and the foot pedal WA-10 it becomes an installed tool facilitating the work: The Hands of the operator are free to insert the contact and the wire and to remove the terminated contact.

Nomenclature	Description	Part Number	AWG
WA27F-CE	Pneumatic Crimp Tool	121586-5067	12-20
WA22F-CE	Pneumatic Crimp Tool	121586-5070	20-32
BM-2	Bench Mount	121586-5068	
WA10	Foot Pedal	121586-5069	



Semi-Automated Crimp Machine HACS-5 (for Machined Contacts)

With the semi-automated crimp machine HACS-5 machined contacts are terminated fast and reliably. 20 to 25 crimp terminations per minute can be achieved. The user has the choice between automatic and manual operation.

Nomenclature	Description	Part Number
HACS-5	Semi-Automated Crimp Machine	120090-0118

Electrical Data

Protection Class: IP51
Electrical Power: 240 V ac, 50 Hz



Crimping Instructions — Formed (Stamped) Crimp Contacts

Assembly Instructions:

- Strip wires to length. For wire strip lengths, see page 67.
- Open the hand tool and place the contact in the chosen die, ensuring that the locating plate is positioned between the collar and crimp saddle. Then squeeze tool gently to hold the contact in place.
- Insert the wire.
- Cycle the tool.
- Remove the wire and inspect the crimp. The strands should be visible at both ends of the crimp. There should be no loose strands (see Figures 1-3). The contact should be co-linear with the wire (see Figure 4). Bent contacts are unacceptable (see Figure 5).

Figure 1 - Correct

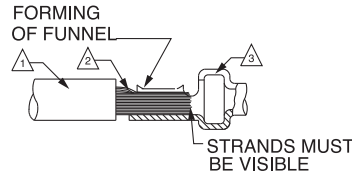


Figure 2 - Unacceptable

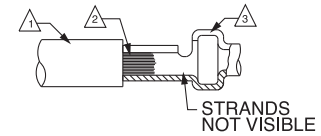


Figure 3 - Unacceptable

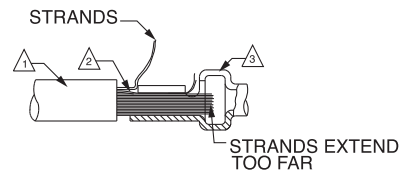
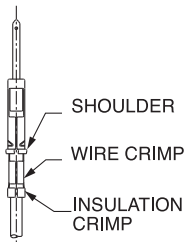


Figure 4 - Correct

Side View



Front View

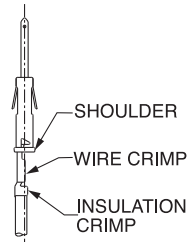
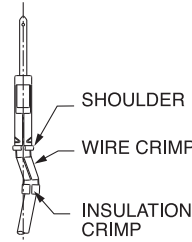
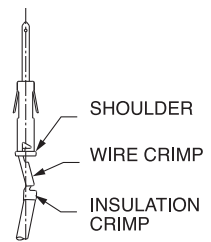


Figure 5 - Unacceptable

Side View



Front View



Crimping Instructions — Machined Crimp Contacts

Assembly Instructions:

- Strip wires to length. For wire strip lengths, see page 69.
- Attach the correct locator (turret) to the hand tool.

Contact Type	Locator Color
Pin	Blue
Socket	Green
Earthing	Black

- Adjust the dial for the wire gauge.
- Place the contact into the locator and insert the wire into the contact as indicated on the locator (turret) label.

Figure 6 - Correct

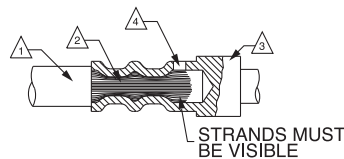
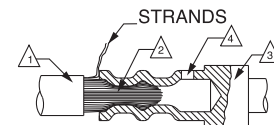


Figure 7 - Unacceptable



Notes:

- Wire Insulation.
- Wire Strands.
- Contact.
- Inspection Window. Strands must be visible.

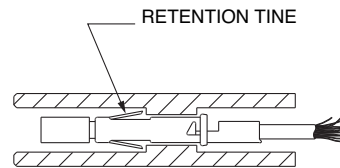
- Cycle the tool.
- Remove and inspect the contact. Strands should be visible through the inspection window (see Figure 6). There should be no loose strands (see Figure 7).



Contact Insertion

No insertion tool is required. Trident contacts are inserted from the rear of the connector and held in place by retention tines (cantilever springs). These tines compress during insertion. They expand once contact is in place and prevent the contact from backing out.

Proper Insertion of Trident Contact



Contact Retention Forces

- Minimum retention force of the contact to the insulator.

Contact	Newton(s)
Signal Contacts (Formed Crimp, Machined Crimp, Solder Cup, Flow Solder)	67
Coaxial Contacts	67
30 A Power Contacts	100

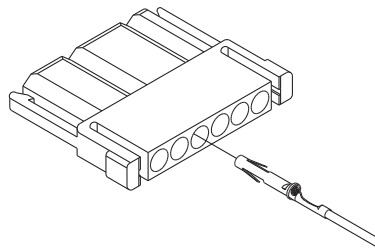
Note: Newton is a metric unit of force. One pound = 4.45 Newtons

Trident Assembly Instructions (For Neptune and TNM Assembly, see page 78)

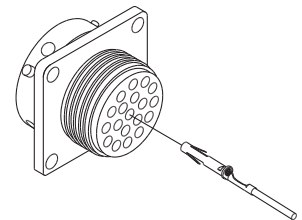
Assembly instructions:

1. Grasp the crimped or soldered contact just behind where the wire enters the contact.
2. Push the contact into the connector cavity until it locks into place.
3. Pull on the wire slightly to verify that the contact is secure.
4. Inspect the mating face of the connector. The contacts should extend the same distance into the connector.

Contact Insertion - Slimline



Contact Insertion - Ringlock





Neptune and TNM Assembly Instructions

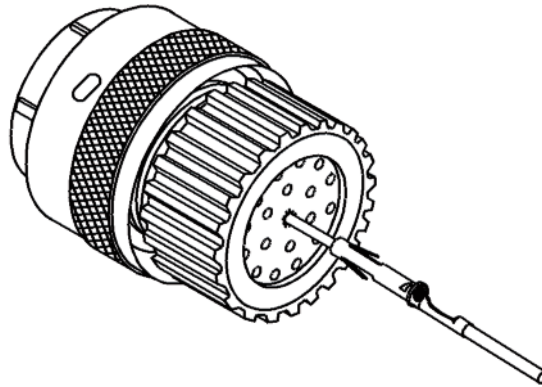
Contact Insertion For Neptune and TNM Connectors

(For Trident Assembly, see page 77)

Neptune and TNM connectors feature membrane seals. These seals have a thin membrane that seals unused contact cavities. No sealing plugs are required for unused cavities. Neptune connectors do not require insertion tools. Cannon offers stitching tools as an optional assembly aid for high volume usage. Many customers find that stitching tools reduce the assembly time.

Assembly Instructions:

1. On Neptune and TNM connectors do not remove the Securing Nut holding the Wire Seal in place, unless an accessory such as Metal Endbell, Conduit Adapter, HC or SR Clamp assembly is to be used in its place. Then remove the Securing Nut (to be replaced by the accessory), make sure the tab on the Seal is positioned in the receiving slot in the connector, fit the accessory over the cables/wires and proceed as follows.
2. Grasp the crimped or soldered contact just behind where the wire enters the contact. If using a stitching tool, insert the contact into the rear of the tool.
3. Push the contact through the membrane seal into the insulator. Continue to push until the contact locks into place. If using a stitching tool, first insert the tool into the required contact position in the seal and examine the mating face to confirm that the correct contact cavity has been entered, if not, this can be corrected by partially removing the tool and engaging the correct position. Then fit the contact to the stitching tool and push the CONTACT through until it locks into place; remove the stitching tool.
4. Pull on the wire slightly to verify that the contact is secure.
5. Inspect the mating face of the connector. The contacts should extend the same distance into the connector.
6. Secure the nut, or other accessory, to hold the membrane seal in place.



IMPORTANT NOTE: The stitching tool is not designed to pull the contact through; it is intended to ease the insertion process with high density connectors.

On the high density connectors, such as 0-48, it is beneficial to start loading contacts on a center row first and filling adjacent rows fully each side, so progressively filling the connector from the center in a controlled manner.



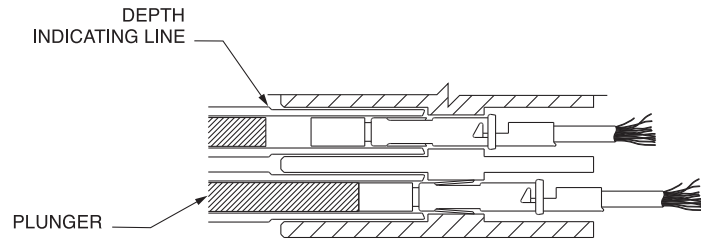
Contact Extraction

Contacts may be removed with an extraction tool. The tool has an outer tube and an internal spring loaded plunger. The outer tube depresses the retention tines on the contact. The plunger then pushes the contact back out of the connector.

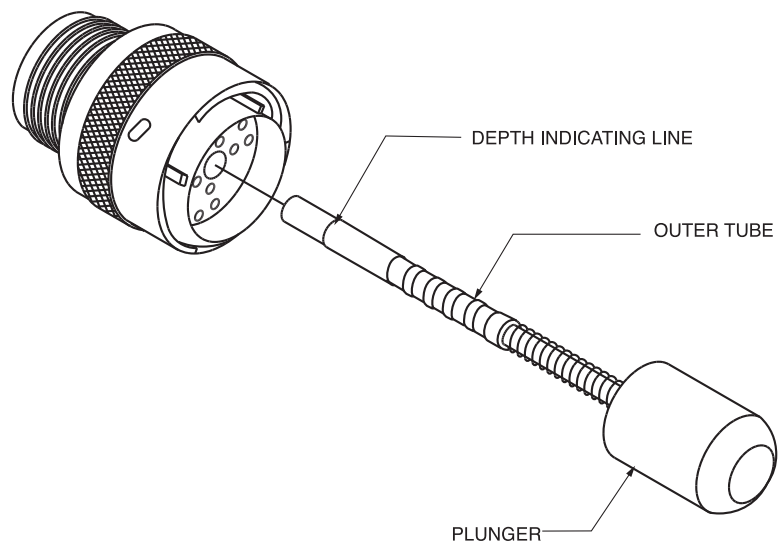
Extraction Instructions:

1. Grasp the extraction tool on the knurled portion of the outer tube. Do not push on the plunger knob yet.
2. Insert the tube into the contact cavity from the mating surface. Push the tube fully into the cavity.
- IMPORTANT:** Verify that the depth indicating line on the tool is even with the mating face of the connector before depressing the plunger.
3. Depress the plunger. This should only require light pressure to eject the contact. The contact can now be removed from the back of the connector.
4. Inspect the contact. Verify the tines are not damaged.

Contact Extraction



Extraction Tool

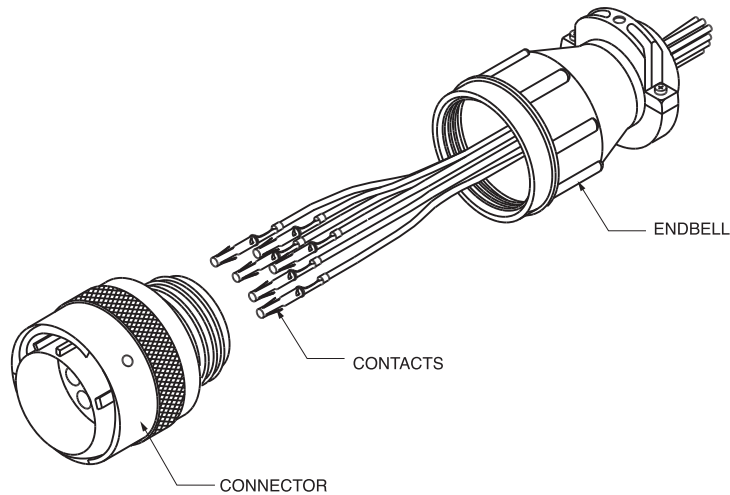




Endbell — Unsealed

Assembly Instructions:

1. Separate the body of the clamp, the two screws, and the clamping bar.
2. Slide the body over the wires or cable and screw onto the threads on the back of the connector. The backshell should be hand-tight. For Neptune and TNM connectors, the cable clamp will fit over the membrane seal and will hold it in place.
3. There are three clamp bars supplied. Select the appropriate one for the wire bundle and attach to the clamp body with the screws.



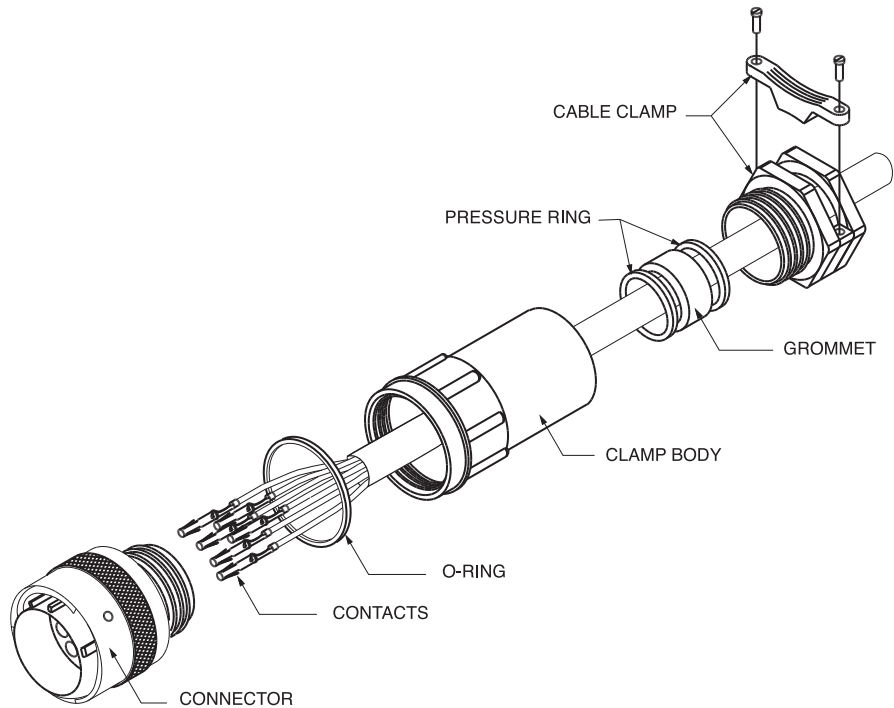
Endbell — Sealed

Assembly Instructions:

1. Separate the body of the clamp body, the two pressure rings, the sealing grommet, the clamp, and O-ring.
2. Slide the backshell components over the cable prior to crimping the contacts and assembling the connector. The farthest part from the connector is the clamp, followed by a pressure ring, then the grommet, then the other pressure ring, then the clamp body and then the O-ring.

Assembly Note: The grommet is a layered design. For large cables one or more of the interior sections can be removed. If the grommet resists sliding over the cable, lubricate with isopropyl alcohol.

3. Crimp and insert the contacts.
4. Slide the O-ring up and over the back of the connector.
5. Screw the clamp body onto the back of the connector. It should be hand-tight. For Neptune and TNM connectors, the cable clamp will fit over the membrane seal and will hold it in place.
6. Slide the pressure rings and grommet forward into the body.
7. Screw the cable clamp into the clamp body. The cable clamp will apply pressure to the grommet causing it to seal the backshell to the cable.
8. Screw down the clamp bar to secure the cable. Note that the bar is reversible, depending on the size of the cable.





Universal Endbell

The Universal Endbell is suitable to accept shielded and unshielded cable. This cable is sealed with a highly flexible seal and an additional sealing ring with a flexible plastic cable clamp serving as a strain relief. The Universal Endbell can be screwed onto plug and receptacle connectors. The O-ring and the cable sealing meet IP67.

Assembly Instructions:

1. Slide O-ring over the back of the connector body.
2. Slide the endbell components onto the cable in the following order:

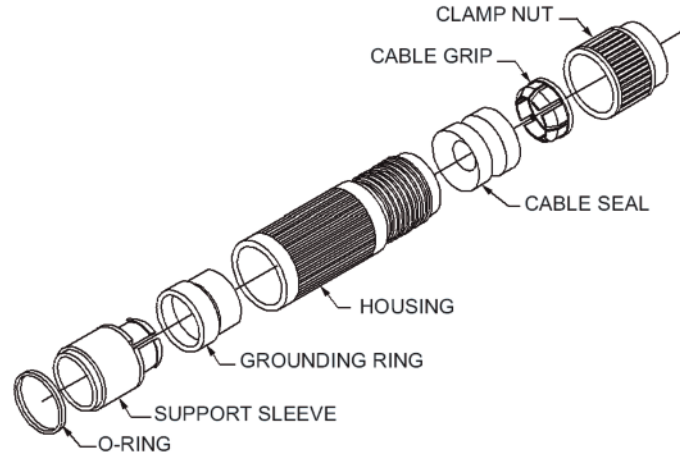
- Clamp Nut
- Cable Grip1
- Cable Seal2
- Housing
- Grounding Ring
- Support Sleeve
- O-Ring

Note: 1. The compression fingers of the Cable Grip face toward the connector.

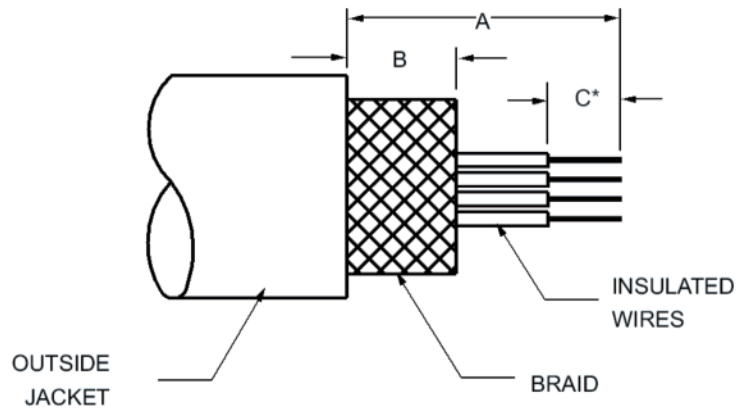
Note: 2. Isopropyl alcohol will lubricate the Cable Seal making it easier to slide over the cable.

3. Cut back the Outside Jacket to expose 25,40 (1.000) of Braid followed by 12,70 (.500) of Insulated Wires.
4. Terminate the wires and insert contacts per assembly instructions, see page 77.
5. Slide the Support Sleeve down until it reaches the back of the connector.
6. Pull the Braid over the Grounding Ring.
7. Slide the Grounding Ring down until it snaps onto the Support Sleeve. The Braid should be secured between the Support Sleeve and the Grounding Ring. Fold any excess shielding over the Grounding Ring.
8. Slide the Housing over the Grounding Ring and the Support Sleeve and screw it into the connector body. The recommended torque is 10 ± 1 Nm (88.50 in lbs).
9. Slide the Cable Seal and Cable Grip onto the Housing.
10. Tighten the Clamp Nut into the Housing. The recommended torque is 10 ± 1 Nm (88.50 in lbs).

Universal Endbell Assembly



Wire Strip Length



Shell Size	Wire Strip Length		
	A	B	C
10	38,00 (1.500)	22,00 (.870)	*
12	38,00 (1.500)	22,00 (.870)	*
14	40,00 (1.600)	24,00 (.950)	*
16	40,00 (1.600)	24,00 (.950)	*

* Strip length will vary based on the contact selected, see page 64-65.



Shielded Endbell for Larger Cable Sizes

This Endbell is an alternative to the Universal Endbell for use with larger diameter cables. The outer body is sealed to the connector with an O-ring and the rear cable clamp also incorporates sealing rings for a complete sealed termination. The cable braid is terminated between metal cones. A rear cable clamp provides mechanical strain relief in addition to the clamping and holding of the rear cable seal.

Assembly Instructions:

1. Assemble all parts onto the cable as shown (Figure 1). Strip sheath of cable to dimensions shown in table below.

Shell Size	Dimension A min.
10	22,30 (.877)
12	22,30 (.877)
14	26,20 (1.031)
16	28,10 (1.106)

2. Fold braid back over cable. Strip and terminate wires with selected contacts (Figure 2).

3. Assemble O-ring in groove of the shell after positioning coupling nut (Figure 3).

Figure 1

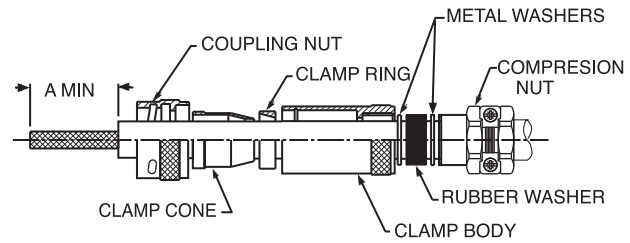
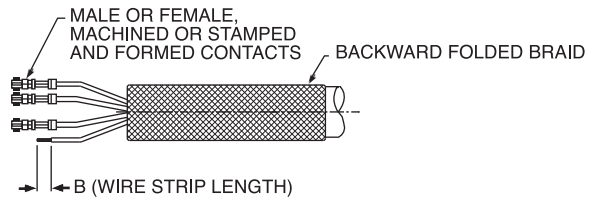


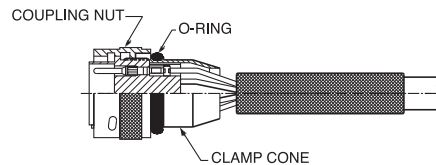
Figure 2



Wire Stripping Lengths

Contact Type	Wire Size	Wire Range mm2	Dimension B
Formed contact	24-16 AWG	0,08 - 1,50	3,95 ± 0,25 (.155 ± .009)
Machined contact	14 AWG	1,50 - 2,50	5,60 ± 0,25 (.220 ± .009)
Machined contact	26-20 AWG	0,08 - 0,64	5,08 ± 0,25 (.200 ± .009)
Machined contact	16 AWG	0,60 - 1,51	7,11 ± 0,25 (.279 ± .009)

Figure 3



Cable Sizes

Shell Size	Endbell Part Number	Cable Outer Sheath Diameter	
		Maximum	Minimum
10	192993-0091	10,00 (.393)	5,00 (.196)
12	192993-0092	12,00 (.472)	6,00 (.236)
14	192993-0093	14,00 (.551)	7,00 (.279)
16	192993-0094	16,00 (.629)	8,00 (.314)



Shielded Endbell for Larger Cable Sizes (continued from page 82)

4. Fold braid forward as shown and trim to length (Figure 4).

5. Slide on clamp ring in position shown (Figure 5).

6. Screw clamp body onto the connector using a strap wrench (Figure 6). Tighten to the recommended torque values in table below.

Shell Size	Clamp body Torque max.
10	4 Nm
12	6 Nm
14	10 Nm
16	10 Nm

7. Push metal washers and rubber washer into rear of clamp body. Then screw compression nut to compress rubber washer. Avoid overtightening as this may twist the cable. Finally tighten screws to provide the mechanical strain relief (Figure 7).

8. Assembled connector (Figure 8).

Figure 4

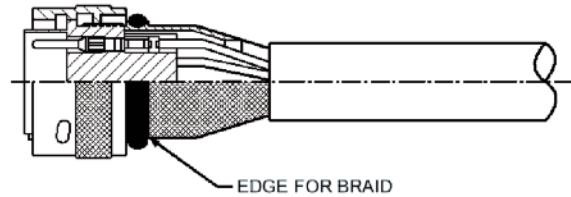


Figure 5

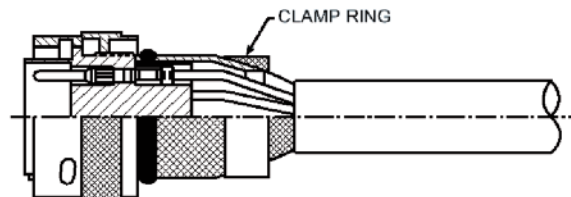


Figure 6

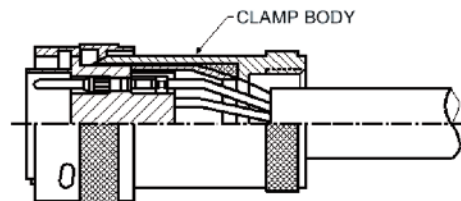


Figure 7

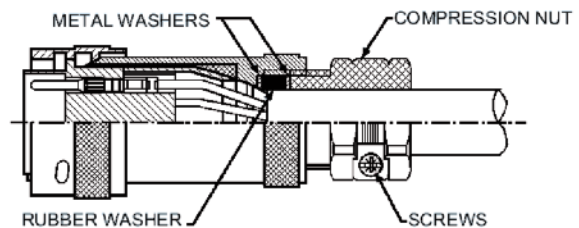


Figure 8

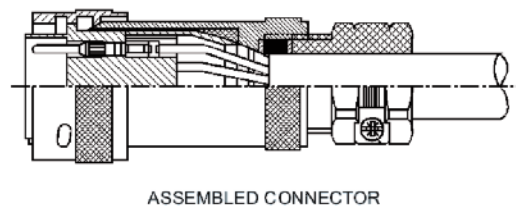




Chart 1 International Protection (IP) ratings for IEC 529

First digit of IP Number – Ingress of foreign objects		Second digit of IP Number – Ingress of water									
		IP 0	IP 1	IP 2	IP 3	IP 4	IP 5	IP 6	IP 7	IP 8	
	Meaning for the protection of equipment against ingress of solid foreign objects	Meaning for the protection of persons against access to hazardous parts with	non-protected	Protected against vertically falling water drops	Protected against vertically falling water drops when device is tilted up to 15°	Water sprayed an angle up to 60° on either side of the vertical shall have no harmful effects	Water splashed from any direction shall have no harmful effects	Water projected in jets from any direction shall have no harmful effects	Water projected in powerful jets from any direction shall have no harmful effects	Protected against temporary immersion	Protected against continuous immersion
IP 0	non-protected	non-protected	IP 00								
IP 1	Protected against solid foreign objects larger in diameter than 50 mm (1.97 in.)	Protected against access to hazardous parts with the back of the hand	IP 10	IP 11	IP 12						
IP 2	Protected against solid foreign objects larger in diameter than 12.5 mm (.49 in.)	Protected against access to hazardous parts with a finger	IP 20	IP 21	IP 22	IP 23					
IP 3	Protected against solid foreign objects larger in diameter than 2.5 mm (.10 in.)	Protected against access to hazardous parts with a tool larger in diameter than 2.5 mm (.10 in.)	IP 30	IP 31	IP 32	IP 33	IP 34				
IP 4	Protected against solid foreign objects larger in diameter than 1.0 mm (.04 in.)	Protected against access to hazardous parts with a wire larger in diameter than 1.0 mm (.04 in.)	IP 40	IP 41	IP 42	IP 43	IP 44				
IP 5	Ingress of dust is not totally prevented, but dust shall not penetrate in a quantity to interfere with satisfactory operation of the apparatus or to impair safety	Protected against access to hazardous parts with a wire larger in diameter than 1.0 mm (.04 in.)					IP 54	IP 55			
IP 6	No ingress of dust	Protected against access to hazardous parts with a wire larger in diameter than 1.0 mm (.04 in.)							IP 66	IP 67	IP 68



Chart 2 NEMA / IP Cross Reference

IEC 529 Protection Ratings	NEMA Ratings									
	1	2	3	3R	4	4X	5	6	12	13
IP 00										
IP 10	↓									
IP 11		↓								
IP 20										
IP 21										
IP 22										
IP 23										
IP 30										
IP 31										
IP 32				↓						
IP 33										
IP 40										
IP 41										
IP 42										
IP 43										
IP 50										
IP 51							↓			
IP 52										
IP 53										
IP 54									↓	↓
IP 55										
IP 56										
IP 60										
IP 61										
IP 62										
IP 63			↓							
IP 64										
IP 65										
IP 66										
IP 67					↓	↓				
IP 68								↓		

The chart above provides a cross-reference from NEMA to International Protection (IP) Ratings. This cross-reference is an approximation based on the most current information available. It is not sanctioned by NEMA, IEC, or any other regulatory body. This chart should be used only as a guideline.



GLOSSARY OF TERMS

In every job speciality there are certain words and phrases used by “insiders” which after a time become almost a language unique to that speciality. Trident technology is a typical example of that condition.

This page provides some explanations, in an attempt to clarify some of the terms that are commonly used by engineers and sales staff at Cannon.

The list is not comprehensive, but highlights many of the expressions commonly used. Should you have any comments or additions please contact us. Feedback will be appreciated.

ADAPTER – A device used to modify the accessory threading on the rear of the connector. Typical adapters are used to attach conduit, heat shrink, overmolds, or tubing to the connectors. They are generally used in place of a cable clamp.

AWG – American Wire Gauge. A method of specifying wire diameter. The higher the number, the smaller the diameter (a size 16 AWG wire has a larger diameter than a size 22 AWG).

BAYONET COUPLING – A quick coupling mechanism for mechanically mating and unmating connector halves. The plug half has a coupling nut with internal ramps and the receptacle has three “bayonet” pins. The two halves are mated and unmated by rotating the coupling nut. The two halves are mated and unmated by rotating the coupling nut.

BACKSHELL – See ENDBELL.

BODY - The main portion of the connector made of the shell, insulator, and contacts.

CABLE CLAMP – A rear connector clamping accessory which tightens over a cable or wire bundle to provide strain relief to the cable. The cable clamp may be part of a more elaborate endbell or it may be used alone. Some cable clamps also provide cable jacket sealing using a resilient gland, others provide only strain relief.

CABLE SEAL – An endbell or cable clamp that is used to seal a round jacketed cable as it enters the rear of the connector.

CONTACT – The conductive element in a connector which makes the actual connection between the wire and the mating connector for the purpose of transferring electrical energy. Ideally the contact should add nothing to the circuit. In the real world, however, contacts typically have a small CONTACT RESISTANCE and associated potential drop. Contacts come in many styles such as solder, crimp, printed circuit (PC), to name just those found in this catalog. Also see SOLDER CONTACT, CRIMP CONTACT, STAMPED AND FORMED CONTACT, PIN CONTACT, and SOCKET CONTACT.

CONTACT ALIGNMENT – The overall play that a contact has in the insulator cavity to allow the mating contacts to self align. Also called contact float.

CONTACT ARRANGEMENT – See LAYOUT.

CONTACT CAVITY – A defined hole in the connector insulator into which the contacts fit. The cavities are generally marked with a unique designation or number for ease of identification.

CONTACT RESISTANCE – The maximum amount of resistance which a contact introduces into the connection when carrying a specified current (usually stated in milliohms). When not stated, values are typically given for “Initial” or new contacts. Most specifications also limit the maximum resistance during or after each of a series of extreme tests, such as “Contact Resistance After Corrosion Test”. These figures are typically slightly higher than “Initial”.

CONTACT RETENTION – The maximum allowable axial load which can be applied to a contact from either direction without it being dislodged from the insulator. Usually stated in Newtons or pounds of force (4.45 = 1 lbf).

CONTACT SEPARATION FORCE – The force required to separate a pair of mated contacts. Usually stated in grams or ounces.

CONTACT SIZE – The size of the engaging pin and socket contacts in AWG size or metric diameter of the pin.

CONTACT SPACING – The distance between two centers of adjacent contacts.

COUPLING NUT (Also known as LOCKING RING) - The rotating ring on plug style connectors which mechanically locks

the two connector halves together.

CRIMP CONTACT – A contact which is terminated to a wire by means of mechanical deformation of the receiving area by means of an appropriate tool.

CSA – Abbreviation for Canadian Standards Association.

CURRENT RATING – The maximum current that a particular wire, contact, or connector can accommodate. NOTE: When several wires are used in a single connector or elevated temperature or altitude is involved, derating curves must be applied to these ratings.

DERATING CURVE – A graph of the change in power handling capability of a connector as a function of ambient temperature or altitude. Typically the graphed function is curved, hence the name.

DISCRIMINATION – A method of ensuring that two similar size connectors cannot be mated. This may be achieved by inclusion of discriminating pins, which enter an empty contact cavity, or by other mechanical means.

DISCRIMINATING PINS – See KEYING.
ENDBELL (also known as BACKSHELL) – The outer rear end of the connector, which is attached by means of internal threads or screws. It adapts the connector to its wire connections in a variety of ways. Typical endbells might have cable clamps to secure a wire bundle, ridges for heat shrink tubing, pipe threads, or shield termination mechanisms.

EXTRACTION TOOL – A device used to remove a contact from a connector insulator. The extraction tool is inserted into the mating face of the insulator and the contact comes out the rear, or wire side, of the connector.

FIRST-MAKE LAST-BREAK CONTACT – A contact which is longer than a standard contact or which sits in the insulator in such a way that it mates with the opposing connector half before any of the other contacts. Used to ensure that a ground connection between the connector halves mates before any of the other contacts.

FLANGED RECEPTACLE – The shell of this connector has a square flange with mounting holes at each corner. Mounting holes are usually clearance holes, but may be threaded. Receptacle



flanges may be mounted in front or at the rear of the panel.

FLASH PLATING. – As commonly used in connector terminology, flash refers to extremely thin platings of metal. A flash plating is the minimum thickness required to ensure complete surface coverage. It is typically used on contacts that will have only occasional mating and unmating.

IEC – Abbreviation for the International Electrotechnical Commission. An international organization, which develops standards exclusively for electrical engineering. CENELEC is the equivalent organization at the European level.

INSULATOR – The insulating element into which the contacts are mounted in a connector.

IP67 - One classification from a rating system used in Europe covering the environmental sealing capability of an enclosure. The system uses two digits, the first digit relates to the degrees of protection the connector has from dirt and dust under the conditions defined in the specification. The second digit relates to the degrees of protection it has against moisture. The degree of protection against dirt ranges from 1 (no protection), to 6 (dust tight). Moisture sealing in the specification ranges from 1 (no protection), to 8 (protected against continuous submersion). The classification IP67 states that the connector is “dust-tight” (6), allowing no ingress of dust what-so-ever, and “protected against the effects of immersion” (7), the ingress of water in harmful quantity shall not be possible when the connector is immersed in water under defined conditions of pressure and time.

JAM NUT RECEPTACLE – A receptacle connector that is mounted from the rear

side of the panel and is held in place by a large hex nut (jam nut).

KEYING – A method of differentiating a connector if more than one connector with the same sex and layout is to be used in a system. The key is a pin which can be located in a contact cavity or slot. The key will prevent a connector without a matching orifice from mating.

LAYOUT – The number, size, and geometric arrangement of the contacts in a connector. When a connector is said to have a certain “layout” it refers to a specific contact configuration. For example, the Snap Together Connector series has a page of drawings showing the arrangement of the contacts in the insulator. Each of these arrangements can be referred to as a layout.

LOCKING RING – See COUPLING NUT.

PIN CONTACT – The contact that has a long shaft at the engagement end which enters the socket contact.

PLUG – The male portion of the connector pair usually employing a coupling nut to secure it to the receptacle half. A Plug may have either pin or socket contacts.

POLARIZATION – Polarization ensures that connector halves engage in such a way that the identified contact cavities always engage each other, A to A etc. The connector is polarized.

POLARIZING PIN – See KEYING.

REAR MOUNTING – A receptacle that mounts through the panel from the rear, with its mounting flange inside the equipment. Typically, rear mount receptacles are slightly longer than front mount types to allow for the thickness of the panel. Flange mount receptacles usually come in front and rear mount

versions. All Jam nut receptacles are rear mount.

RECEPTACLE – The connector which mates with the plug. The receptacle has threads, pins or ramps that engage the coupling nut on the plug, locking the two halves together. A receptacle may have either pin or socket contacts.

SHELL – The outside case of a connector into which the insulator and contacts are situated.

SHELL SIZE – A standard system developed for military circular connectors for indicating the diameter of the shell. The system is based upon 1/16” increments, that is, a size 16 shell is one inch in diameter.

SOCKET CONTACT – The contact that has an opening at the engagement end to accept the pin contact.

SOLDER CONTACT – A contact that is terminated to the wire or printed circuit with solder. The alternative is crimp contacts to which a wire is attached by crimping.

SOLDER CUP – The end of a SOLDER CONTACT designed to accept a wire, which will then be soldered to the contact.

STAMPED AND FORMED CONTACT – Contacts made by stamping and forming a sheet of metal rather than by machining metal stock.

UL – Abbreviation for Underwriter’s Laboratories, a corporation supported by a group of underwriters for the purpose of establishing safety standards covering certain types of equipment and components in the United States. Product Safety Information