

TNM (Trident Neptune Metal) is specifically designed to meet the needs of systems that require shielding, sealing, and the extra durability of a metal shell. The combination of Trident contacts, membrane seals, and the Universal Shielded Endbell* make TNM both cost effective and easy to assemble.

TNM features nickel plated zinc alloy shells and UL 94 V-0 rated thermoplastic insulators. All TNM receptacles are supplied with an interfacial seal to provide sealing between connectors to IP67. In addition, a membrane seal is available for those applications requiring the sealing of discrete wires at the rear of the connector.

In order to seal multicore jacketed cables to connectors an endbell is available. This has 'O' ring sealing to the connector and second seal to the cable jacket. All TNM Circular Connectors are RoHS Compliant.

*Patent pending



Product Features

- Accepts Trident signal, printed circuit, and coaxial contacts.
- Mixed signal and 30 A power contact version.
- Can be sealed to IP67.
- 360° shielding.
- Easy to assemble.
- Recognized under the component program of UL Inc. and CSA.

Applications

- Antennas.
- Industrial electronics.
- Heavy duty equipment.
- Servo Motors.
- Robotics/ Control Panel.
- Industrial Instrumentation.

Performance Specifications

Operating Voltage ¹	Up to 250 V ac rms
Contact Current Rating ²	Up to 13 A; Up to 16 A with High Conductivity Contacts; Up to 30 A with Power Contacts; Up to 40 A with D Sub Contacts
Operating Temperature	-55°C to +105°C (-67°F to +221°F)
Insulation Resistance	5000MΩ min. at 500 V dc
Durability ³	Up to 200 Mating Cycles
Environmental Sealing	Up to IP67
Flammability	UL 94 V-0

Materials and Finishes

Shell	Nickel Plated Zinc Alloy
Insulator	Black Nylon
Coupling Ring	Nickel Plated Brass
Seal	Rubber

¹ Depends on contacts used, layout, and degree of pollution

² Depends on type and number of contacts used

³ Depends on plating and type of contacts used

Test Specifications

The table below summarizes the results of key tests performed. Data is applicable to standard connectors with standard contacts. Variations may affect this data, so please consult factory for further information on your requirements.

Test	Method	Criteria of Acceptance
Dielectric Withstanding Voltage	2000 V ac rms	No breakdown
Thermal Shock	-55°C to +125°C (-67°F to +257°F), 5 cycles	No physical damage
Physical Shock	40 g's peak, 3 axes, 6 millisecond duration half-sine pulse	No physical damage No loss of continuity > 10 μsec
Vibration	10 g's peak, 10-500 Hz, 9 hours	No physical damage No loss of continuity > 10 μsec
Durability	200 cycles of mating and unmating 200 mating cycles max.	Capable of mating and unmating and meeting contact resistance requirements
Salt Spray	48 hours	Capable of mating and unmating and meeting contact resistance requirements
High Temperature Endurance	100 hours at 85°C (+185°F), 16 hours at 105°C (+221°F)	Insulation Resistance > 100 MΩ
Humidity Steady State	RH 90-95%, 40°C (+104°F) , 504 hours	Insulation Resistance > 100 MΩ

Dimensions shown in mm (inch)

Specifications and dimensions subject to change

How to Order-Connectors

Typical Nomenclature: **TNM** **6** **U** **14** - **0012** **S** **1** **L** *****



Series

TNM = Trident Neptune Metal

Shell Style

- 0 = Flange Receptacle (4 holes)
- 6 = Plug
- 7 = Jam Nut Receptacle (Shell Size 14 only)

Sealing Class

- S = Grommet and nut
- U = Unsealed

Modification
* = Standard

Packaging
B = Bulk (100 pcs)
L = Single Pack

Connector Finish Materials
1 = Standard (Nickel Plated Metal Parts)

Contact Type
P = Pin
S = Socket

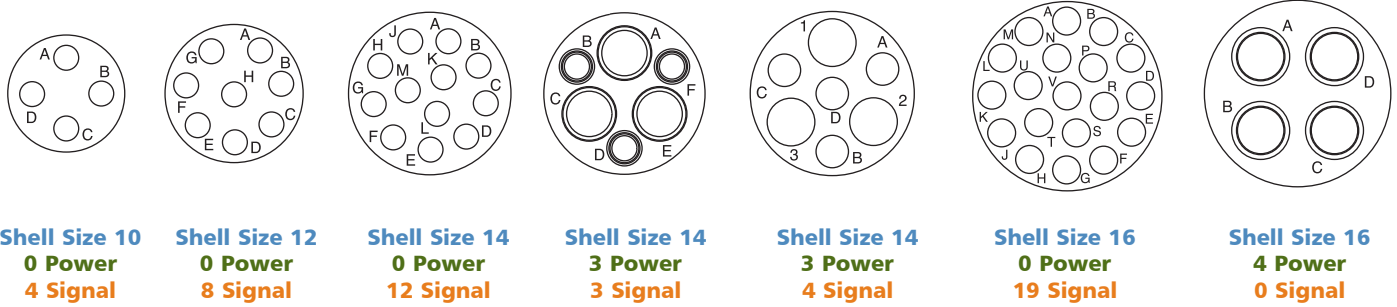
Shell Size and Contact Arrangement			
Shell Size		Number of Power Contacts	Number of Signal Contacts
10	-	00	04
12	-	00	08
14	-	00	12
14	-	03	03
14	-	03	04
16	-	00	19
16	-	04	00

Contact Cavity Arrangements

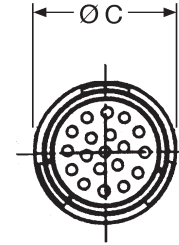
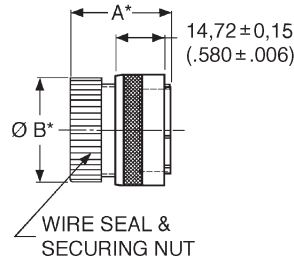
Mating Face View
Shell Size

Number of Power Contacts

Number of Signal Contacts¹



¹ Wire sealing range 1,70 to 2,70 (.066 to .106)



Standard Plugs for Pin Contacts

With Wire Seal and Securing Nut

Single Piece Connector

Shell Size	Contact Layout	Part Number	Nomenclature	A	ØB	ØC
10	00 04	192993-0011	TNM6S10-0004P1L	42,50 (1.673)	17,50 (.689)	21,60 (.850)
12	00 08	192993-0012	TNM6S12-0008P1L	42,50 (1.673)	20,60 (.811)	24,80 (.976)
14	03 04	192993-0695	TNM6S14-0304P1L	42,50 (1.673)	24,30 (.957)	28,00 (1.102)
14	00 12	192993-0013	TNM6S14-0012P1L	42,50 (1.673)	24,30 (.957)	28,00 (1.102)
16	00 19	192993-0014	TNM6S16-0019P1L	42,50 (1.673)	27,00 (1.063)	31,20 (1.229)

Unsealed — Without Wire Seal and Securing Nut

Single Piece Connector

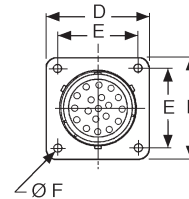
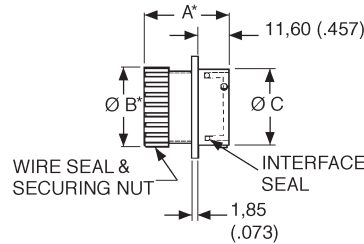
Shell Size	Contact Layout	Part Number	Nomenclature	A*	ØB*	ØC
10	00 04	192993-0001	TNM6U10-0004P1L	38,10 (1.500)	13,80 (.543)	21,60 (.850)
12	00 08	192993-0002	TNM6U12-0008P1L	38,10 (1.500)	16,90 (.665)	24,80 (.976)
14	00 12	192993-0003	TNM6U14-0012P1L	38,10 (1.500)	20,10 (.791)	28,00 (1.102)
16	00 19	192993-0004	TNM6U16-0019P1L	38,10 (1.500)	23,30 (.917)	31,20 (1.229)

* Dimensions A and B apply to connectors without wire seals and securing nuts.

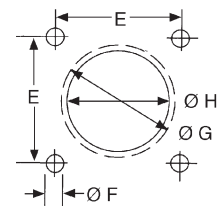
♦ Can be sealed to IP67 with a sealed endbell, see page 59.



Standard Receptacles for Socket Contacts Flange Mounting



Panel Cutout



ØH = Flange in Front of Panel
ØG = Flange at Rear of Panel

With Wire Seal and Securing Nut

Shell Contact

Single Piece Connector

Size	Layout	Part Number	Nomenclature	A	ØB	ØC	D	E	ØF	ØG	ØH
10	00 04	192993-0031	TNM0S10-0004S1L	34,70 (1.366)	17,50 (.689)	14,92 (.563)	23,79 (.937)	18,26 (.719)	3,20 (.126)	17,30 (.681)	15,10 (.594)
12	00 08	192993-0032	TNM0S12-0008S1L	34,70 (1.366)	20,60 (.811)	18,98 (.747)	26,15 (1.030)	20,62 (.812)	3,20 (.126)	21,80 (.858)	18,20 (.717)
14	03 04	192993-0698	TNM0S14-0304S1L	34,70 (1.366)	24,30 (.957)	22,16 (.872)	28,54 (1.124)	22,80 (.898)	3,50 (.138)	25,00 (.984)	21,40 (.843)
14	00 12	192993-0033	TNM0S14-0012S1L	34,70 (1.366)	24,30 (.957)	22,16 (.872)	28,54 (1.124)	22,80 (.898)	3,50 (.138)	25,00 (.984)	21,40 (.843)
16	00 19	192993-0034	TNM0S16-0019S1L	34,70 (1.366)	27,00 (1.063)	25,33 (.997)	30,89 (1.216)	24,40 (.961)	3,50 (.138)	28,10 (1.106)	24,60 (.969)

Unsealed - Without Wire Seal and Securing Nut

Shell Contact

Single Piece Connector

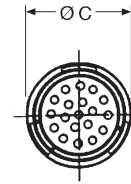
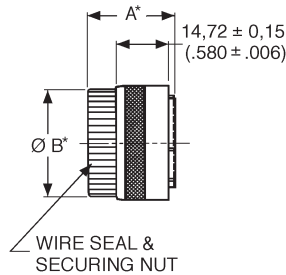
Size	Layout	Part Number	Nomenclature	A*	ØB*	ØC	D	E	ØF	ØG	ØH
10	00 04	192993-0021	TNM0U10-0004S1L	30,30 (1.193)	14,30 (.563)	14,92 (.563)	23,79 (.937)	18,26 (.719)	3,20 (.126)	17,30 (.681)	15,10 (.594)
12	00 08	192993-0022	TNM0U12-0008S1L	30,30 (1.193)	17,40 (.685)	18,98 (.747)	26,15 (1.030)	20,62 (.812)	3,20 (.126)	21,80 (.858)	18,20 (.717)
14	00 12	192993-0023	TNM0U14-0012S1L	30,30 (1.193)	20,60 (.811)	22,16 (.872)	28,54 (1.124)	22,80 (.898)	3,50 (.138)	25,00 (.984)	21,40 (.843)
16	00 19	192993-0024	TNM0U16-0019S1L	30,30 (1.193)	23,80 (.937)	25,33 (.997)	30,89 (1.216)	24,40 (.961)	3,50 (.138)	28,10 (1.106)	24,60 (.969)





Reversed Plugs for Socket Contacts

With Wire Seal and Securing Nut



Shell Size	Contact Layout	Part Number	Nomenclature	A	ØB	ØC
10	00 04	192993-0051	TNM6S10-0004S1L	34,20 (1.346)	17,50 (.689)	21,60 (.850)
12	00 08	192993-0052	TNM6S12-0008S1L	34,20 (1.346)	20,60 (.811)	24,80 (.976)
14	03 04	192993-0696	TNM6S14-0304S1L	34,20 (1.346)	24,30 (.957)	28,00 (1.102)
14	00 12	192993-0053	TNM6S14-0012S1L	34,20 (1.346)	24,30 (.957)	28,00 (1.102)
16	00 19	192993-0054	TNM6S16-0019S1L	34,20 (1.346)	27,00 (1.063)	31,20 (1.229)

Unsealed — Without Wire Seal and Securing Nut

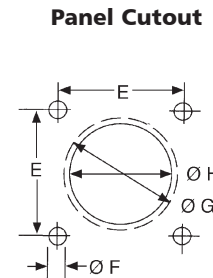
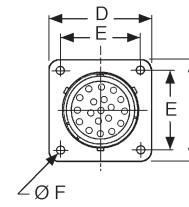
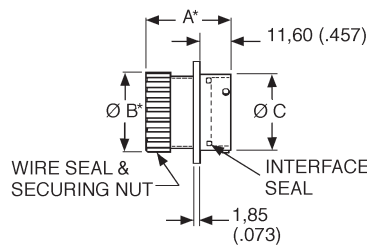
Shell Size	Contact Layout	Part Number	Nomenclature	A*	ØB*	ØC
10	00 04	192993-0041	TNM6U10-0004S1L	29,80 (1.173)	13,80 (.543)	21,60 (.850)
12	00 08	192993-0042	TNM6U12-0008S1L	29,80 (1.173)	16,90 (.665)	24,80 (.976)
14	00 12	192993-0043	TNM6U14-0012S1L	29,80 (1.173)	20,10 (.791)	28,00 (1.102)
16	00 19	192993-0044	TNM6U16-0019S1L	29,80 (1.173)	23,30 (.917)	31,20 (1.229)

* Dimensions A and B apply to connectors without wire seals and securing nuts.
 ♦ Can be sealed to IP67 with a sealed endbell, see page 59.



Reversed Receptacles for Pin Contacts Flange Mounting

With Wire Seal and Securing Nut



ØH = Flange in Front of Panel
 ØG = Flange at Rear of Panel

Shell Size	Contact Layouts	Part Number	Nomenclature	A	ØB	ØC	D	E	ØF	ØG	ØH
10	00 04	192993-0071	TNMOS10-0004P1L	43,00 (1.693)	17,50 (.689)	14,92 (.563)	23,79 (.937)	18,26 (.719)	3,20 (.126)	17,30 (.681)	15,10 (.594)
12	00 08	192993-0072	TNMOS12-0008P1L	43,00 (1.693)	20,60 (.811)	18,98 (.747)	26,15 (1.030)	20,62 (.812)	3,20 (.126)	21,80 (.858)	18,20 (.717)
14	03 04	192993-0697	TNMOS14-0304P1L	43,00 (1.693)	24,30 (.957)	22,16 (.872)	28,54 (1.124)	22,80 (.898)	3,50 (.138)	25,00 (.984)	21,40 (.843)
14	00 12	192993-0073	TNMOS14-0012P1L	43,00 (1.693)	24,30 (.957)	22,16 (.872)	28,54 (1.124)	22,80 (.898)	3,50 (.138)	25,00 (.984)	21,40 (.843)
16	00 19	192993-0074	TNMOS16-0019P1L	43,00 (1.693)	27,00 (1.063)	25,33 (.997)	30,89 (1.216)	24,40 (.961)	3,50 (.138)	28,10 (1.106)	24,60 (.969)

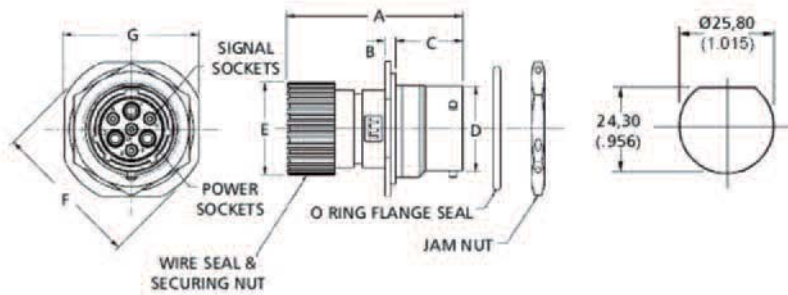
Unsealed - Without Wire Seal and Securing Nut

Shell Size	Contact Layouts	Part Number	Nomenclature	A*	ØB*	ØC	D	E	ØF	ØG	ØH
10	00 04	192993-0061	TNM0U10-0004P1L	38,60 (1.520)	14,30 (.563)	14,92 (.563)	23,79 (.937)	18,26 (.719)	3,20 (.126)	17,30 (.681)	15,10 (.594)
12	00 08	192993-0062	TNM0U12-0008P1L	38,60 (1.520)	17,40 (.685)	18,98 (.747)	26,15 (1.030)	20,62 (.812)	3,20 (.126)	21,80 (.858)	18,20 (.717)
14	00 12	192993-0063	TNM0U14-0012P1L	38,60 (1.520)	20,60 (.811)	22,16 (.872)	28,54 (1.124)	22,80 (.898)	3,50 (.138)	25,00 (.984)	21,40 (.843)
16	00 19	192993-0064	TNM0U16-0019P1L	38,60 (1.520)	23,80 (.937)	25,33 (.997)	30,89 (1.216)	24,40 (.961)	3,50 (.138)	28,10 (1.106)	24,60 (.969)

* Dimensions A and B apply to connectors without wire seals and securing nuts.
 ♦ Can be sealed to IP67 with a sealed endbell, see page 59.



Panel Cutout

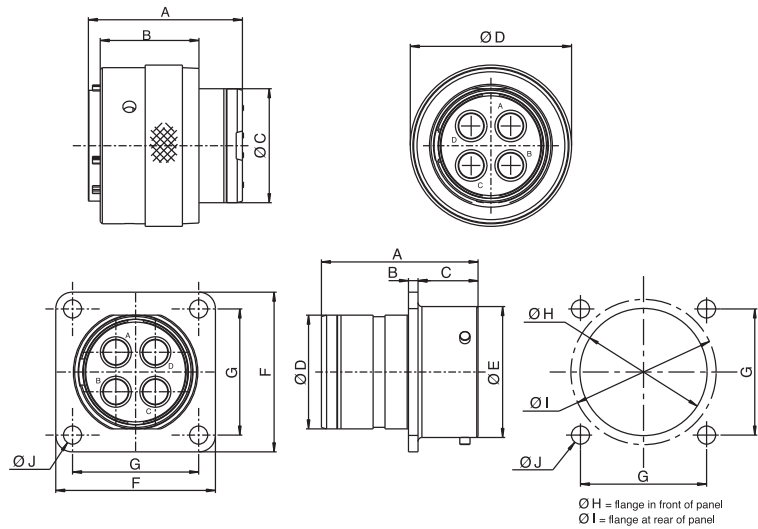


Standard/Reversed Receptacles for Pin/Socket Contacts Jam Nut Mounting

- Mates with Standard and Reversed Plugs, see pages 54-55.

With Wire Seal and Securing Nut

Shell Size	Contact Layout	Contact Type	Single Piece Connector		A	B	C	ØD	ØE	ØF	ØG
			Part Number	Nomenclature							
14	03 04	Standard	192993-0700	TNM7S14-0304S1L	50,00 (1.968)	2,80 (.110)	17,60 (.692)	22,20 (.874)	24,30 (.956)	38,09 (1.500)	34,90(1.374)
14	03 04	Reversed	192993-0699	TNM7S14-0304P1L	50,00 (1.968)	2,80 (.110)	17,60 (.692)	22,20 (.874)	24,30 (.956)	38,09 (1.500)	34,90(1.374)



4-way Reversed Plug/Receptacle for Power Contacts

This connector was developed for use on servomotors where high currents and high voltages are used.

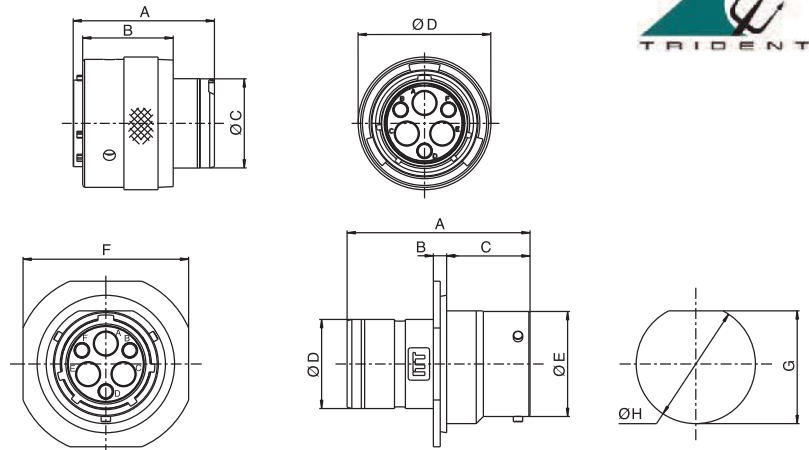
- Uses Cannon D Subminiature power contacts, see page 71.
- Voltage rating 500V.
- Current rating 40A.
- Short receptacle to save space.

Single Piece Connector

Shell Size	Type	Contact Layout	Part Number	Nomenclature	A	B	C	D	E	F	G	H	I	J	
															16
16	Reversed Plug	04 00	192993-0105	TNM192993-0105	29,8	19,1	23,2	31,2							
16	Earth Plug	04 00	192993-0109	TNM192993-0109	29,8	19,1	23,2	31,2							



Dimensions shown in mm (inch)
Specifications and dimensions subject to change



3-3 Connector

Designed for use as an antenna connector, this design incorporates D Subminiature power contacts and standard Trident signal contacts.

- Can terminate wire sizes up to 8 AWG (10 mm²)
- Large cables with outside diameters up to 16,00 (.630) diameter can be accommodated.
- Uses Cannon D Subminiature power contacts see page 71.

For more information, please contact your local Cannon sales office.

Shell Size	Contact Layouts	Type	Part Number	A	B	C	D	E	F	G	H
14	03 03	Reversed Receptacle Pin	192993-2013	38,6	2,8	17,6	18,8	22,16	34,9	24,2	25,8
14	03 03	Reversed Plug Socket	192993-0261	29,8	19,1	18,85	28				

How to Order-Accessories



Typical Nomenclature: TNA 10 CCSE - 01 L

Series

TNA- Trident Neptune Accessory

Shell Size

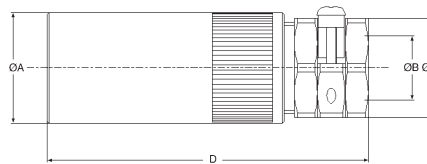
- 10
- 12
- 14
- 16

CCSE - 01 L

Packaging

L = Single Pack

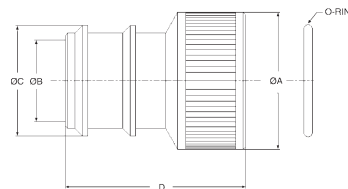
Accessory Style, Type and Size		
Cable Clamp		
CC	HC-00	Sealed
CC	SR-00	Unsealed
CC	SE-00	Universal Shielded Endbell
CC	SE-01	Shielded Endbell for larger Cable Sizes
Heat Shrink Adapter		
HS	AD-00	Heat Shrink Adapter



Shielded Endbell for Larger Cable Sizes

- Metal body with plastic cable clamp.
- For assembly instructions, see page 82.
- For use with jacketed cables.

Shell Size	Part Number	Nomenclature	Ø A max	Cable Accommodation Outer Sheath Diameter			
				Ø B min	Ø B max	Ø C	Ø D max
10	192993-0091	TNA10CCSE-01L	18,10 (.712)	5,00 (.196)	10,0 (.393)	19,00 (.748)	70,00 (2.755)
12	192993-0092	TNA12CCSE-01L	21,20 (.834)	6,00 (.236)	12,00 (.472)	21,00 (.826)	72,00 (2.834)
14	192993-0093	TNA14CCSE-01L	24,20 (.952)	7,00 (.275)	14,00 (.551)	23,00 (.905)	78,00 (3.070)
16	192993-0094	TNA16CCSE-01L	27,60 (1.086)	8,00 (.314)	16,00 (.629)	25,00 (.984)	82,50 (3.248)



Heat Shrink Adapter for use with TNM Circular Connectors

Shell Size	Part Number	Nomenclature	Ø Amax	Ø B min	Ø C	Ø Dmax
12	192993-0632	TNA12HSAD-00L	21,20 (.834)	12,20 (.480)	18,00 (.708)	36,00 (1.417)
14	192993-0633	TNA14HSAD-00L	24,20 (.952)	14,20 (5.59)	20,00 (.787)	36,00 (1.417)
16	192993-0634	TNA16HSAD-00L	27,60 (1.086)	16,30 (.641)	22,00 (.866)	36,50 (1.437)



Dimensions shown in mm (inch)
Specifications and dimensions subject to change

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Universal Shielded Endbell*

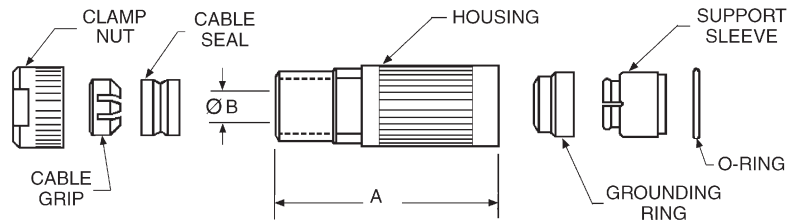
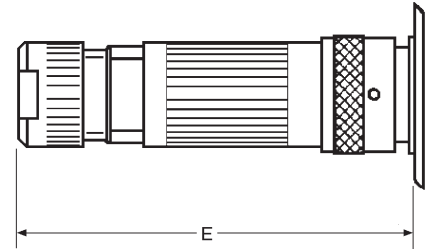
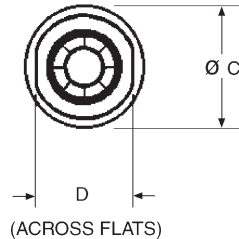
In order to meet EMC requirements it will be necessary to fit a shielded endbell to the TNM connectors. The TNM Shielded Endbell provides sealing to the connector shell, a cable braid grip and sealing to the outer sheath of the cable. Sealing rating is IP67.

Shielded endbells are used with unsealed plugs and receptacles.

*Patent Pending

Materials and Finishes

Description	Material/Finish
Housing	Aluminum/Nickel
Grounding Ring	Aluminum/Nickel
Clamp Nut	Aluminum/Nickel
Cable Grip	Nylon, UL 94 V-0
Support Sleeve	Nylon, UL 94 V-0
O-Ring	Rubber
Cable Seal	Rubber



For assembly instruction, see page 81.

Dimensions

Shell Size	Part Number	Nomenclature	A	ØB	ØC	D	E max.	
							Standard Format	Reversed Format
10	192993-0081	TNA10CCSE-00L	56,60 (2.228)	8,00 (.315)	17,90 (.705)	16,00 (.630)	88,50 (3.484)	80,00 (3.150)
12	192993-0082	TNA12CCSE-00L	56,70 (2.320)	10,00 (.394)	21,00 (.827)	19,00 (.748)	88,50 (3.484)	80,00 (3.150)
14	192993-0083	TNA14CCSE-00L	57,00 (2.441)	11,30 (.449)	24,00 (.945)	22,00 (.886)	88,50 (3.484)	80,00 (3.150)
16	192993-0084	TNA16CCSE-00L	57,40 (2.260)	13,60 (.535)	27,40 (1,079)	25,00 (.984)	88,50 (3.484)	80,00 (3.150)

Cables

The TNM Shielded Endbell covers a wide range of multicore cable used in industrial applications. The following table indicates the sizes that can be accommodated provided the outside sheath diameter is within the accommodation range shown.

For detail of contacts, see page 63.

Shielded cable to Endbell Assembly Instructions are supplied with the Endbell piece parts kit, also shown on page 82.

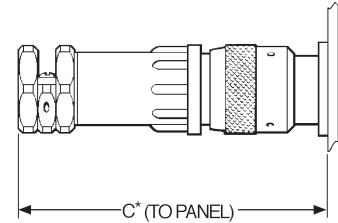
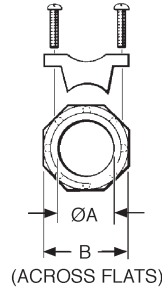
Endbell Shell Size	Number of Signal Contacts	Cable Accommodation Outer Sheath Size	
		Minimum	Maximum
10	4	4,40 (.173)	7,30 (.287)
12	8	6,40 (.252)	9,50 (.374)
14	12	8,50 (.334)	10,20 (.402)
16	19	7,90 (.311)	12,60 (.496)

Dimensions shown in mm (inch)

Specifications and dimensions subject to change

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Sealed Cable Clamps for use with TNM Circular Connectors

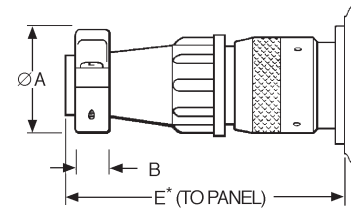
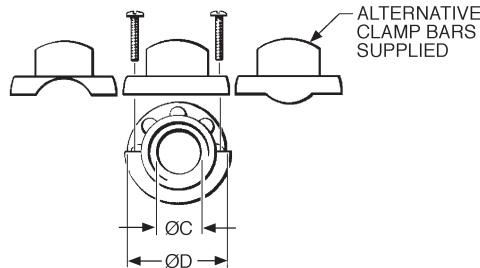
- For use with jacketed cables.
- Provides strain relief and wire protection.
- Provides sealing to IP67.
- For assembly instructions, see page 80.

* For disassembly, add 9,000 (.0354) for shell sizes 10-16.

Dimensions

Shell Size	Part Number	Nomenclature	ØA max.	B	C max.	
					Standard Format	Reversed Format
10	192900-0636	TNA10CCHC-00L	11,10 (.437)	18,80 (.740)	89,00 (3.504)	80,70 (3.177)
12	192900-0637	TNA12CCHC-00L	13,60 (.535)	20,80 (.818)	92,00 (3.622)	83,70 (3.295)
14	192900-0496	TNA14CCHC-00L	14,60 (.574)	22,80 (.897)	99,00 (3.898)	90,70 (3.571)
16	192900-0497	TNA16CCHC-00L	16,60 (.653)	24,70 (.972)	103,00 (4.055)	94,70 (3.728)

* Assumes a uniformly cylindrical cable. Variations in the diameter could effect sealing.



* For disassembly, add 9,000 (.0354) for shell sizes 10-16.

Unsealed Cable Clamps for use with TNM Circular Connectors

- Provides strain relief and wire protection.
- For use with discrete wires or jacketed cables.
- For assembly instructions, see page 80.

Dimensions

Shell Size	Part Number	Nomenclature	ØA max.	B	ØC max.	ØD	E max.	
							Standard Format	Reversed Format
10	192900-0639	TNA10CCSR-00L	21,50 (.846)	6,40 (.251)	8,70 (.342)	21,00 (.826)	74,50 (2.933)	66,20 (2.606)
12	192900-0640	TNA12CCSR-00L	24,90 (.980)	6,40 (.251)	12,80 (.503)	24,00 (.944)	74,50 (2.933)	66,20 (2.606)
14	192900-0286	TNA14CCSR-00L	27,00 (1.063)	6,40 (.251)	13,80 (.543)	27,00 (1.063)	80,50 (3.169)	71,80 (2.826)
16	192900-0343	TNA16CCSR-00L	30,10 (1.185)	6,40 (.251)	17,00 (.669)	30,20 (1.189)	80,50 (3.169)	71,80 (2.826)



Dimensions shown in mm (inch)
Specifications and dimensions subject to change

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