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 a 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

Applications

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

Product Features

RoHS COMPLIANT PART NUMBERS

- 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.

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 cotnacts. 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
Humidty 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-Connecters

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)

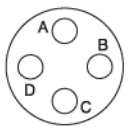
Contact Type
P = Pin
S = Socket

Shell Size and Contact Arrangement

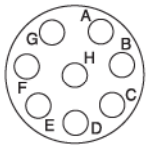
Shell Size		Number of Power Contacts	Number of Signal Contacts
10	-	00	04
12	-	00	08
14	-	00	12
14	-	03	03
14	-	03	04
16	-	00	19
16	-	04	00

Contact Cavity Arrangements

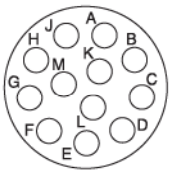
Mating Face View
Shell Size
Number of Power Contacts
Number of Signal Contacts[1]



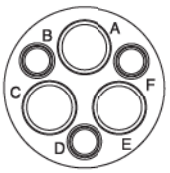
Shell Size 10
0 Power
4 Signal



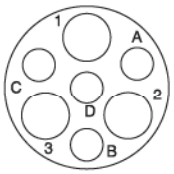
Shell Size 12
0 Power
8 Signal



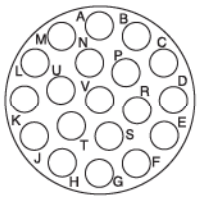
Shell Size 14
0 Power
12 Signal



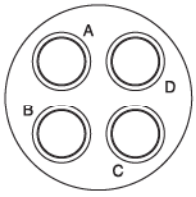
Shell Size 14
3 Power
3 Signal



Shell Size 14
3 Power
4 Signal



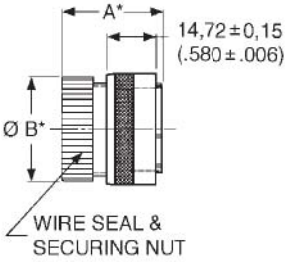
Shell Size 16
0 Power
19 Signal

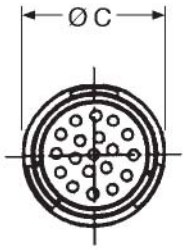


Shell Size 16
4 Power
0 Signal

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

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





Standard Plugs for Pin Contacts

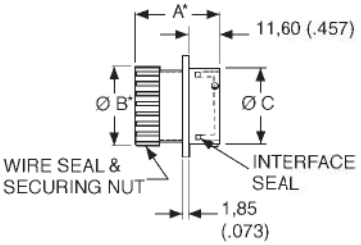
With Wire Seal and Securing Nut

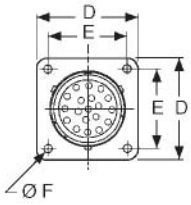
Shell Size	Contact Layout	Single Piece Connector Part Number	Nomenclature	A	ØB	ØC
10	00 04	192993-0011	TNM6S10-0004P1L	42,50 (1.673)	17,50 (.689)	21,60 (.850)
12	00 08	192993-0012	TNM6S12-0008P1L	42,50 (1.673)	20,60 (.811)	24,80 (.976)
14	03 04	192993-0695	TNM6S14-0304P1L	42,50 (1.673)	24,30 (.957)	28,00 (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♦

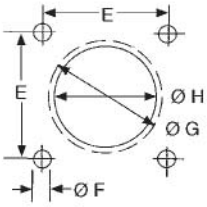
Shell Size	Contact Layout	Single Piece Connector Part Number	Nomenclature	A*	ØB*	ØC
10	00 04	192993-0001	TNM6U10-0004P1L	38,10 (1.500)	13,80 (.543)	21,60 (.850)
12	00 08	192993-0002	TNM6U12-0008P1L	38,10 (1.500)	16,90 (.665)	24,80 (.976)
14	00 12	192993-0003	TNM6U14-0012P1L	38,10 (1.500)	20,10 (.791)	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.





Panel Cutout



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

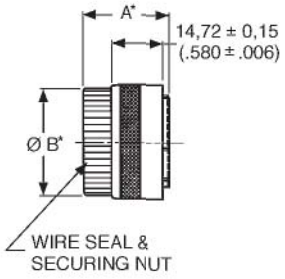
Standard Receptacles for Socket Contacts Flange Mounting

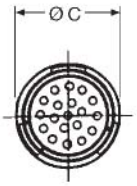
With Wire Seal and Securing Nut

Shell Size	Contact Layout	Single Piece Connector 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 Size	Contact Layout	Single Piece Connector 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)





TRIDENT
Panel Cutout

Reversed Plugs for Socket Contacts

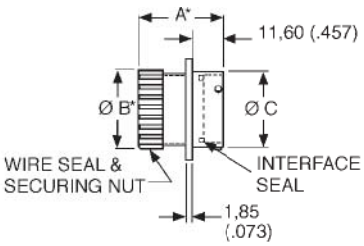
With Wire Seal and Securing Nut

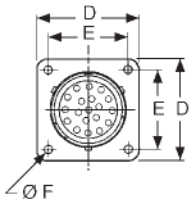
Shell Size	Contact Layout	Single Piece Connector Part Number	Nomenclature	A	ØB	ØC
10	00 04	192993-0051	TNM6S10-0004S1L	34,20 (1.346)	17,50 (.689)	21,60 (.850)
12	00 08	192993-0052	TNM6S12-0008S1L	34,20 (1.346)	20,60 (.811)	24,80 (.976)
14	03 04	192993-0696	TNM6S14-0304S1L	34,20 (1.346)	24,30 (.957)	28,00 (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♦

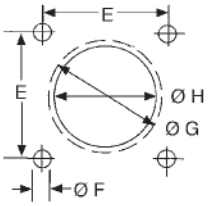
Shell Size	Contact Layout	Single Piece Connector Part Number	Nomenclature	A*	ØB*	ØC
10	00 04	192993-0041	TNM6U10-0004S1L	29,80 (1.173)	13,80 (.543)	21,60 (.850)
12	00 08	192993-0042	TNM6U12-0008S1L	29,80 (1.173)	16,90 (.665)	24,80 (.976)
14	00 12	192993-0043	TNM6U14-0012S1L	29,80 (1.173)	20,10 (.791)	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.





Panel Cutout



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

Reversed Receptacles for Pin Contacts Flange Mounting

With Wire Seal and Securing Nut

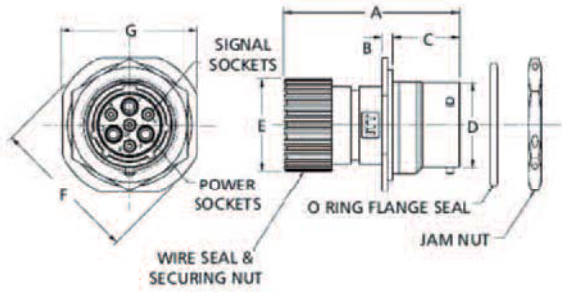
Shell Size	Contact Layouts	Single Piece Connecter Part Number	Nomenclature	A	ØB	ØC	D	E	ØF	ØG	ØH
10	00 04	192993-0071	TNM0S10-0004P1L	43,00 (1.693)	17,50 (.689)	14,92 (.563)	23,79 (.937)	18,26 (.719)	3,20 (.126)	17,30 (.681)	15,10 (.594)
12	00 08	192993-0072	TNM0S12-0008P1L	43,00 (1.693)	20,60 (.811)	18,98 (.747)	26,15 (1.030)	20,62 (.812)	3,20 (.126)	21,80 (.858)	18,20 (.717)
14	03 04	192993-0697	TNM0S14-0304P1L	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	TNM0S14-0012P1L	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	TNM0S16-0019P1L	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♦

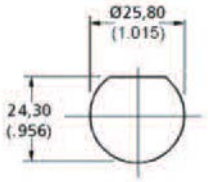
Shell Size	Contact Layouts	Single Piece Connecter Part Number	Nomenclature	A*	ØB*	ØC	D	E	ØF	ØG	ØH
10	00 04	192993-0061	TNM0U10-0004P1L	38,60 (1.520)	14,30 (.563)	14,92 (.563)	23,79 (.937)	18,26 (.719)	3,20 (.126)	17,30 (.681)	15,10 (.594)
12	00 08	192993-0062	TNM0U12-0008P1L	38,60 (1.520)	17,40 (.685)	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.

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



Panel Cutout

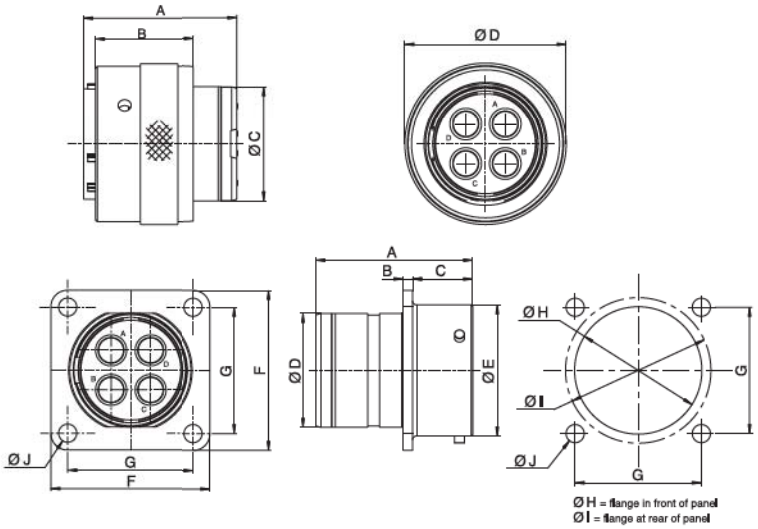


Standard/Reversed Receptacles for Pin/Socket Contacts Jam Nut Mounting

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

With Wire Seal and Securing Nut

Shell Size	Contact Layout	Type	Single Piece Connecter Part Number	Nomenclature	A	B	C	ØD	ØE	ØF	ØG
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)

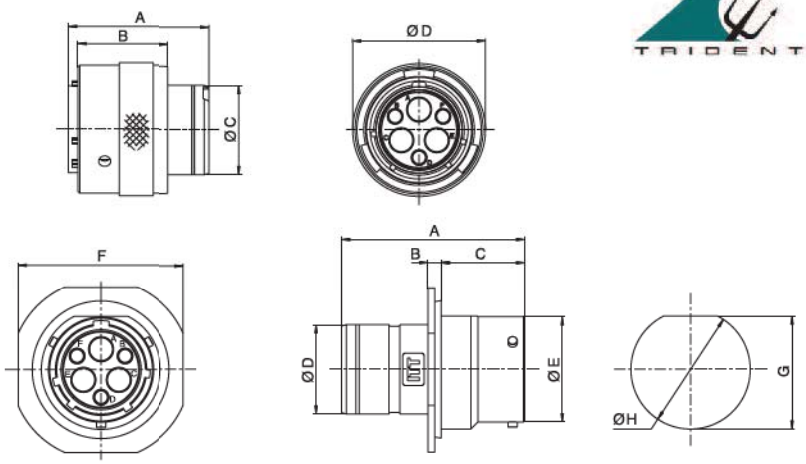


4-way Reversed Plug/Receptacle for Power Contacts

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.
- Current rating 40A.
- Voltage rating 500V.
- Short receptacle to save space.

Shell Size	Type	Contact Layout	Single Piece Connecter Part Number	Nomenclature	A	B	C	D	E	F	G	H	I	J
16	Reversed Receptacle	04 00	192993-0106	TNM192993-0106	30,3	1,85	11,6	23,7	25,33	30,9	24,4	24,6	28,1	3,5
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						



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

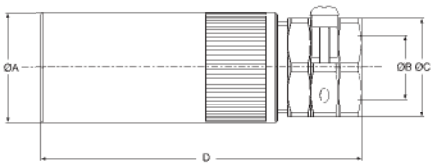
Shell Size

10
12
14
16

Packaging

L = Single Pack

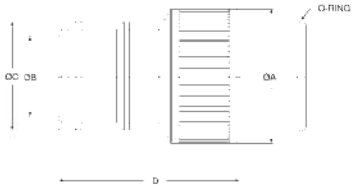
Accessory Style, Type and Size		
Cable Clamp		
CC	HC-00	Sealed
CC	SR-00	Unsealed
CC	SE-00	Universal Shielded Endbell
CC	SE-01	Shielded Endbell for larger Cable Sizes
Heat Shrink Adapter		
HS	AD-00	Heat Shrink Adapter



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	Single Piece Pack Part Number	Nomenclature	ØA max	Cable Accommodation Outer Sheath Diameter ØB min	ØB max	ØC	ØD 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

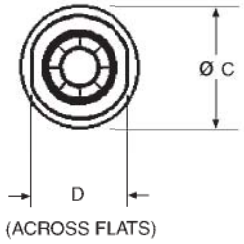
Shell Size	Single Piece Pack Part Number	Nomenclature	ØAmax	ØB min	ØC	ØDmax
10	192993-0631	TNA10HSAD-00L	18,10 (.712)	10,20 (.401)	16,00 (.629)	35,50 (1.397)
12	192993-0632	TNA12HSAD-00L	21,20 (.834)	12,20 (.480)	18,00 (.708)	36,00 (1.417)
14	192993-0633	TNA14HSAD-00L	24,20 (.952)	14,20 (5.59)	20,00 (.787)	36,00 (1.417)
16	192993-0634	TNA16HSAD-00L	27,60 (1.086)	16,30 (.641)	22,00 (.866)	36,50 (1.437)

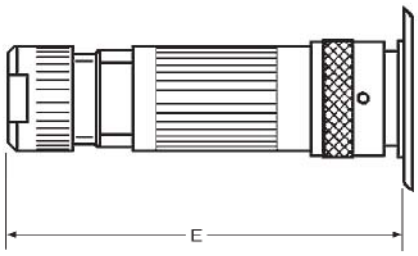
Universal Shielded Endbell*

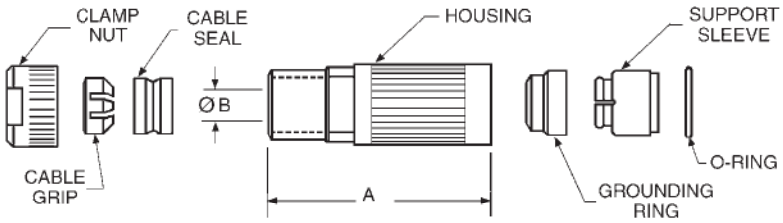
In order to meet EMC requirements it will be necessary to fit a shielded endbell to the TNM connectors. The TNM Shielded Endbell provides sealing to the connector shell, a cable braid grip and sealing to the outer sheath of the cable. Sealing rating is IP67.

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.

Shell Size	Part Number	Nomenclature	Dimensions A	ØB	ØC	D	E max. Standard Format	E max. 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

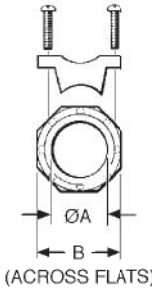
The TNM Shielded Endbell covers a wide range of multicore cable used in industrial applications. The following table indicates the sizes that can be accommodated provided the outside sheath diameter is within the accommodation range shown.

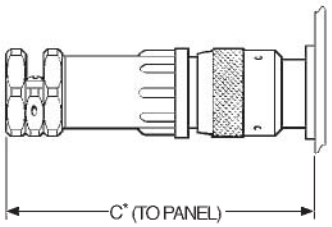
For detail of contacts, see page 63.

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	Cable Accommodation Outer Sheath Size 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





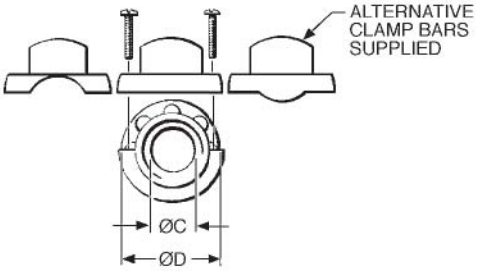
Sealed Cable Clamps for use with TNM Circular Connectors

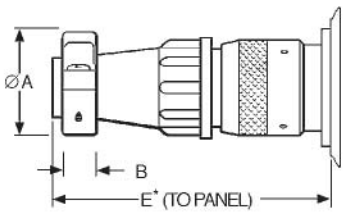
* For disassembly, add 9,000 (.0354) for shell sizes 10-16.

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

Shell Size	Part Number	Nomenclature	Dimensions ØA max.	B	C max. Standard Format	C max. 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.

Shell Size	Part Number	Nomenclature	Dimensions ØA max.	B	ØC max.	ØD	E max. Standard Format	E max. 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)

This new connector series is based on the Trident Neptune Metal housing. The insulator body has been designed for high voltage applications. These connectors rated for up to 34 A (for wire size 4,0 mm² at 20°C) and 500 V ac. This connector series is VDE certified.

VDE
REG.–Nr.D588

Performance Specifications

Electrical Data

Operating Voltage	Up to 500 V (dc and ac)
Contact Current Rating	Max. 34 A for wire size 4,0 mm² at 20°C
Contact Resistance	5mOhm max.
Voltage Proof	6kV rated impulse voltage
Insulation Resistance	5000MOhm

Mechanical Data

Durability	Up to 200 Mating cycles, depending on contact type
Mating Torque	Max. 2,31 Nm
Unmating Torque	Min, 0,23 Nm to Max 2,31 Nm

Environmental Data (acc. ISO 15170)

Operating Temperature	-40°C to +125°C
Humity Steady State	RH 90 to 95%, 40°C, 504 hours
Environmental Sealing	IP67 in mated condition
Salt Spray	48 hours
Vibration	10 g's peak, 10 to 500 Hz, 9 hours
Physical Shock	50 g's peak, 6msec., half-spine pulse

Materials and Finishes

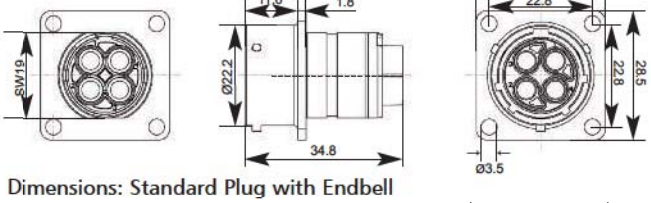
Shell	Nickel Plated Zinc Alloy
Insulator	Orange Nylon
Coupling Nut	Nickel Plated Brass
Flammability	UL 94 V-0

⚠ Attention! Connector must not be disconnected under load!

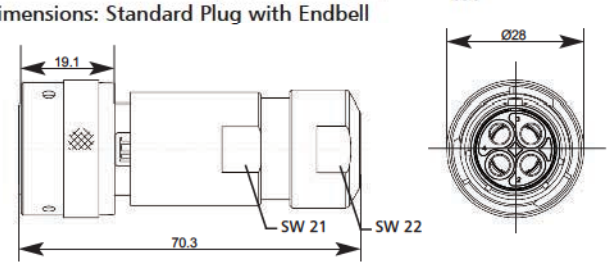
Dimensions shown in mm (inch)
Specifications and dimensions subject to change

VDE
REG.–Nr. D588

Dimensions: Standard Receptacle



Dimensions: Standard Plug with Endbell



High Voltage 4-way for Power Contacts

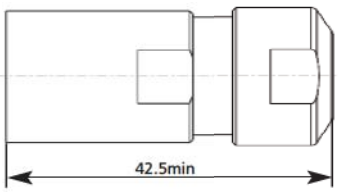
- Standard and reversed version available.
- Uses APK Power contacts, see page 65.
- For sealing the receptacle use panel gasket, see page 51.

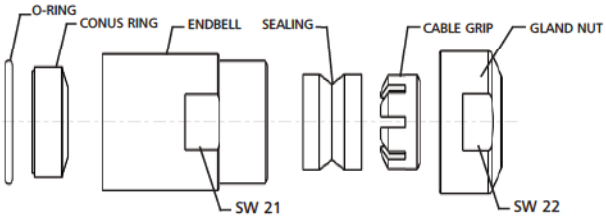
Shell Size	Type	Contact Layout	Part Number	Nomenclature
14	Standard Plug with Endbell*	04-00	192993-0702	THV6U14-0400P1L-02
14	Standard Receptacle*	04-00	192993-0704	THV0U14-0400S1L-02
14	Reversed Plug with Endbell**	04-00	192993-0706	THV6U14-0400S1L-02
14	Reversed Receptacle**	04-00	192993-0708	THV0U14-0400P1L-02

* Parts are VDE-qualified.
** Parts are not VDE-qualified.

High Voltage 4-way Jam Nut for Power Contacts

Information available upon request.





Shielded Endbell

Part Number (Pack of 100)
192993-0087

General recommendations for the selection of Trident contacts are listed below.

Platings: Tin is recommended for most applications (with 50 or fewer mating cycles). It is cost effective and matches well to most wires. Gold is preferred for special situations. Gold resists oxidation, has high surface conductivity, and has a low coefficient of friction. These features make gold the preferred plating for low level signals (a rule of thumb is <100 mA), corrosive environments (for unsealed connectors), and for increased mating cycles. The electrical performance of the contact is determined at the surface of the contact. For this reason, flash gold platings are suitable for applications with 50 or fewer mating cycles. Thicker gold platings are recommended for more than 50 mating cycles. All Trident Contacts are RoHS Compliant.

Stamped versus Machined: The two part stamped contacts are manufactured to precise tolerances and are field proven.

They can be supplied on reels which lowers assembly costs for volume production. Machined contacts offer improved precision and durability. They are recommended for applications with more than 200 mating cycles.

Crimp versus Solder: Crimp contacts offer improved electrical performance, strain relief and quality control compared to solder cup contacts. Solder cup contacts are recommended for low volume and prototype applications where the added cost of crimp tools is not justified.

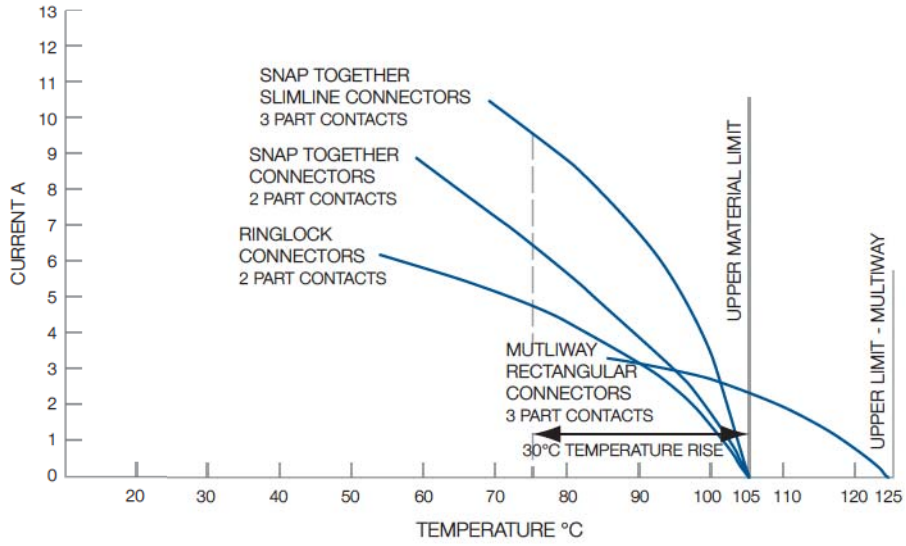
High Conductivity: These contacts use a different base material then the standard contacts. They are recommended for high current applications. These contacts will also reduce the derating of connectors with several high current lines.

Temperature/Current Rating

Derating curves define the max. current that can be applied to a connector at a given ambient temperature so that the additional temperature rise caused by the current does not exceed the material limit of the connector.

The following curves show the max. currents based on the assumption attached: As factors like current load per contact, wire size etc. may be different in your application. This chart is an indication only.

- Derived in accordance with IEC 512-3, Test 5b.
- Figures are for maximum wire sizes. Smaller wires will reduce rating.
- All contacts equally loaded.
- PCB mounted connectors will be limited by PCB performance.
- Bunched cables will further reduce values.
- Cable insulation type will affect temperature and loading.
- Figures are for maximum connector sizes in each range. Smaller connectors will increase rating.



	T2P • Two piece formed (stamped) contact • For up to 200 mating cycles • Full support tooling available		T3P • Three piece machined contact • For up to 500 mating cycles • Full support tooling available		
	Standard Crimp	**High Conductivity Crimp**	**Machined Crimp**	**Solder Cup**	**Flow Solder (PCB)**
					
Technical and Performance Data					
Supported wire sizes	AWG 14 to 26	AWG 14 to 26	AWG 16 to 26	AWG 14 to 26	-
Current rating	13 A	16 A	13 A	13 A	Up to 30 A
Contact Resistance (initial)	5 mΩ	5 mΩ	5 mΩ	5 mΩ	5 mΩ
Mechanical endurance	Up to 200 insertions	Up to 200 insertions	Up to 500 insertions	Up to 500 insertions	Up to 500 insertions
Body material	Brass	Copper Alloy	Brass	Brass	Brass
Retention spring material	Stainless Steel	Stainless Steel	Beryllium Copper	Beryllium Copper	Beryllium Copper
Contact retention force (minimum)	67 N	67 N	67 N	67 N	67 N
Plating Availability					
Tin	Yes	Yes	Yes	Yes	Yes
Gold Flash (0,1 µm)	Yes	Yes	Yes	Yes	Yes
Gold	0,75 µm	0,75 µm	0,4 µm (pin) 0,75 µm (socket)	0,4 µm (pin) 0,75 µm (socket)	0,4 µm (pin) 0,75 µm (socket)
Connector/Contact Capability					
Snap Together Rectangular, Slimline (TST) and Flame Retardant (TFR)	Yes	Yes	Yes	Yes	Yes, pre-installed in connectors
Multiway (TM)	Yes	Yes	Yes	Yes	Yes
Ringlock (TR)	Yes	Yes	Yes	Yes	Yes
Neptune (TN)	Yes	Yes	Yes	Yes	Yes
Neptune Metal (TNM)	Yes	Yes	Yes	Yes	-
High Voltage (THV)	—	—	—	—	—
Page Number					
	67	67	69	70	70

	High Power • For mixed Neptune and TNM layouts • Full support tooling available		Coaxial • Fits into standard Trident Cavities • Full support tooling available
	APK25	D Sub	TC
			
Technical and Performance Data			
Supported wire sizes	AWG 12 to 20	AWG 8 to 14	-
Current rating	30 A	Up to 40 A	n/a
Contact Resistance (initial)	2,5 mΩ	*	2,5 mΩ
Mechanical endurance	Up to 200 insertions	Up to 500 insertions	Up to 200 insertions
Body material	Copper Alloy	Copper Alloy	Brass
Retention spring material	Stainless Steel	*	Beryllium Copper
Contact retention force (minimum)	100 N	*	67 N
Plating Availability			
Tin	Yes	-	-
Gold Flash (0,1 µm)	-	-	-
Gold	-	0,76 µm	0,4 µm (pin) 0,75 µm (socket)
Connector/Contact Capability			
Snap Together Rectangular, Slimline (TST) and Flame Retardant (TFR)	-	-	Yes
Multiway (TM)	-	-	Yes
Ringlock (TR)	-	-	Yes
Neptune (TN)	Yes	-	Yes
Neptune Metal (TNM)	-	Yes	Yes
High Voltage (THV)	Yes	—	—
Page Number			
	71	71	72-73

* For details please consult the factory

Dimensions shown in mm (inch)

Specifications and dimensions subject to change

Overview - T2P Contacts

Typical Nomenclature: T2P 16 M C 1 L T

Series

T2P = Two Part Stamped Contact

Contact Size

14 = 14-16 AWG
16 = 16-20 AWG
20 = 20-22 AWG
24 = 24-26 AWG

Gender

M = Male (Pin)
F = Female (Socket)

Plating

T = Tin
Y = Gold
Z = Gold Flash

Packaging

L = Loose (bag of 100)
S = Reel of 3000

Contact Type		
Crimp Contact		
C	1	Standard, Brass
C	4	High Conductivity

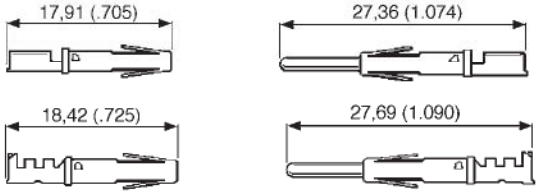
Note: This overview shows available options for formed (stamped) T2P contacts. The T2P nomenclature above appears as our description on ITT paperwork, etc, and this is for reference only. To order use the order codes on the following page.

Formed (Stamped) Crimp Contacts — Standard Brass Material

- 13 A current rating.
- Three plating styles available.
- Separate retention spring.
- Up to 200 mating cycles.
- Wide range of wire sizes.
- Full support tooling available, see pages 74-75.
- Two part design.

Size 14 to 16 AWG, No Insulation Grip

Size 16 to 26 AWG, Insulation Grip



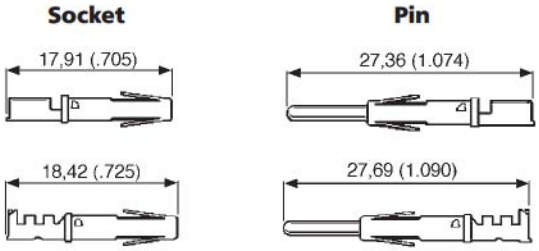
Wire Range mm²	Wire Size	Contact	Part Number Pack (100) 1µm (40 µ in.) Tin Plating	Gold Flash	Gold Plating	Part Number Reeled (3000) 1 µm (40µ in.) Tin Plating	Gold Flash	Gold Plating	Insulation Diameter	Strip Length
0,14 - 0,25	26-24 AWG	Pin	192990-0020	192990-0080	192900-0448	192990-2510	192990-2650	192900-0406	0,89 (.035) - 1,58 (.062)	3,95 (.155)±0,25(.009)
0,14 - 0,25	26-24 AWG	Socket	192990-0030	192990-0090	192900-0452	192990-2550	192990-2690	192900-0410	0,89 (.035) - 1,58 (.062)	3,95 (.155)±0,25(.009)
0,32 - 0,50	22-20 AWG	Pin	192990-0040	192922-1460	192900-0447	192990-2500	192990-2640	192900-0405	1,17 (.046) - 2,08 (.081)	3,95 (.155)±0,25(.009)
0,32 - 0,50	22-20 AWG	Socket	192990-0050	192922-1470	192900-0451	192990-2540	192990-2680	192900-0409	1,17 (.046) - 2,08 (.081)	3,95 (.155)±0,25(.009)
0,75 - 1,50	18-16 AWG	Pin	192990-0060	192990-0100	192900-0446	192990-2490	192990-2630	192900-0404	2,00 (.078) - 2,70 (.106)	3,95 (.155)±0,25(.009)
0,75 - 1,50	18-16 AWG	Socket	192990-0070	192990-0110	192900-0450	192990-2530	192990-2670	192900-0408	2,00 (.078) - 2,70 (.106)	3,95 (.155)±0,25(.009)
1,50 - 2,50	16-14 AWG	Pin	192990-1240	192990-1220	192900-0445	192990-2480	192990-2620	192900-0403	Without insulation support	5,60 (.220)±0,25(.009)
1,50 - 2,50	16-14 AWG	Socket	192990-1250	192990-1230	192900-0449	192990-2520	192990-2660	192900-0407	Without insulation support	5,60 (.220)±0,25(.009)

Formed (Stamped) Crimp Contacts — High Conductivity Material

- 16 A current rating.
- Recommended for elevated temperatures.
- High conductivity copper alloy with tin plating.
- For use with standard crimp tooling, see pages 74-75.
- Two part design.
- Up to 200 mating cylces.

Size 14 to 16 AWG, No Insulation Grip

Size 16 to 26 AWG, Insulation Grip



Wire Range mm²	Wire Size	Contact	Part Number Pack (100) Tin Plating	Reeled (3000) Tin Plating	Insulation Diameter	Strip Length
0,14 - 0,25	26-24 AWG	Pin	192900-0122	192900-0120	0,89 (.035) - 1,58 (.062)	3,95 (.155)±0,25 (.009)
0,14 - 0,25	26-24 AWG	Socket	192900-0123	192900-0121	0,89 (.035) - 1,58 (.062)	3,95 (.155)±0,25 (.009)
0,32 - 0,50	22-20 AWG	Pin	192900-0126	192900-0124	1,17 (.046) - 2,08 (.081)	3,95 (.155)±0,25 (.009)
0,32 - 0,50	22-20 AWG	Socket	192900-0127	192900-0125	1,17 (.046) - 2,08 (.081)	3,95 (.155)±0,25 (.009)
0,75 - 1,50	18-16 AWG	Pin	192900-0002	192900-0000	2,00 (.078) - 2,70 (.106)	3,95 (.155)±0,25 (.009)
0,75 - 1,50	18-16 AWG	Socket	192900-0003	192900-0001	2,00 (.078) - 2,70 (.106)	3,95 (.155)±0,25 (.009)
1,50 - 2,50	16-14 AWG	Pin	192900-0005	192900-0004	Without insulation support	5,60 (.220)±0,25 (.009)
1,50 - 2,50	16-14 AWG	Socket	192900-0007	192900-0006	Without insulation support	5,60 (.220)±0,25 (.009)

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

Overview - T3P Contacts

Typical Nomenclature: T3P 16 M C 1 L T

Series

T3P = Three Part machined Contact

Gender

M = Male (Pin)
F = Female (Socket)

Plating

T = Tin
X = 3µ–m (120µ in.) Gold
Y = Gold
Z = Gold Flash (only for Pin Contacts)

Packaging

L = Loose (bag of 100)

Type and Configuration Variant				
AWG Size	Gender	**Crimp Contacts**		
16		C	1	No insulation support, Black colorband
20		C	1	Insulation dia ∅1,6 (.062)-2,1 (.082), Green colorband
22		C	1	Insulation dia ∅1,6 (.062)-2,15 (.084), Red colorband
24		C	1	Insulation dia ∅1,05 (.041)-1,6 (.062), Blue colorband
26		C	1	Insulation dia ∅0,9 (.035)-1,4 (.055), Black colorband
		Earth Contact		
16		E	1	Extended contractzone, Black colorband
20		E	1	Green colorband
		Solder Cup Contact		
16		S	1	
		Flow Solder Contact		
20		F	1	∅0,76 (.030) short (female only)
20		F	3	∅0,76 (.030) long (female only)
20		F	5	∅0,71 (.028)
20		F	11	∅1,50 (.059) *(TN)*

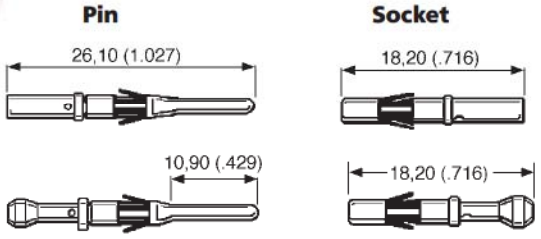
Note: This overview shows available options for formed (stamped) T3P contacts. The T3P nomenclature above appears as our description on ITT paperwork, etc, and this is for reference only. To order use the order codes on the following page.

Machined Crimp Contacts

- 13 A current rating.
- Separate contact and retention spring.
- Up to 500 mating cycles.
- Variety of plating options.
- Full support tooling available, see pages 74-75.

Size 16 AWG, No Insulation Grip

Size 20 to 26 AWG, Insulation Grip



Wire Range mm²	Wire Size	Contact	Part Number (Pack of 100) Gold Plating(X)	Gold Plating(Y)	Tin Plating	Insulation Diameter	Strip Length	Color Band
0,08 - 0,23	26 AWG	Pin	192991-0101	192991-0100	192991-0102	0,90 (.035) - 1,40 (.055)	5,08 (.200)±0,25 (.009)	Black
0,08 - 0,23	26 AWG	Socket	192991-0054	192991-0042	192991-0048	0,90 (.035) - 1,40 (.055)	5,08 (.200)±0,25 (.009)	Black
0,20 - 0,24	24 AWG	Pin	192991-0093	192991-0092	192991-0094	1,05 (.041) - 1,60 (.062)	5,08 (.200)±0,25 (.009)	Blue
0,20 - 0,24	24 AWG	Socket	192991-0055	192991-0043	192991-0049	1,05 (.041) - 1,60 (.062)	5,08 (.200)±0,25 (.009)	Blue
0,25 - 0,50	22 AWG	Pin	192991-0097	192991-0096	192991-0098	1,60 (.062) - 2,15 (.084)	5,08 (.200)±0,25 (.009)	Red
0,25 - 0,50	22 AWG	Socket	192991-0056	192991-0044	192991-0050	1,60 (.062) - 2,15 (.084)	5,08 (.200)±0,25 (.009)	Red
0,44 - 0,64	20 AWG	Pin	192991-0089	192991-0088	192991-0090	1,60 (.062) - 2,10 (.082)	5,08 (.200)±0,25 (.009)	Green
0,44 - 0,64	20 AWG	Socket	192991-0058	192991-0046	192991-0052	1,60 (.062) - 2,10 (.082)	5,08 (.200)±0,25 (.009)	Green
0,60 - 1,51	16 AWG	Pin	192991-0085	192991-0084	192991-0086	Without insulation support	7,11 (.279)±0,25 (.009)	Black
0,60 - 1,51	16 AWG	Socket	192991-0059	192991-0047	192991-0053	Without insulation support	7,11 (.279)±0,25 (.009)	Black

(Y) Gold plating Pin: 0,4 µ m (16 µ in.). Gold plating Socket: 0,75 µ m (30 µ in.).

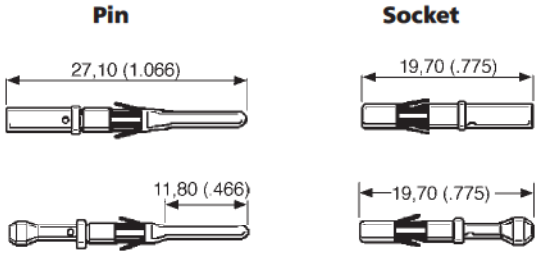
(X) Gold plating Pin & Socket: 3 µ m (120 µ in.).

Machined Earth (First Mate/Last Break) Contacts

- 13 A current rating.
- Separate contact and retention spring.
- Up to 500 mating cycles.
- Variety of plating options.
- Full support tooling available, see pages 74-75.

Size 16 AWG, No Insulation Grip

Size 20 AWG, Insulation Grip



Wire Range mm²	Wire Size	Contact	Part Number (Pack of 100) Gold Plating(Y)	Description	Insulation Diameter	Strip Length	Color Band
0,44 - 0,64	20 AWG	Pin	192991-0164	T3P20ME1LY	1,60 (.062) - 2,10 (.082)	5,08 (.200)±0,25 (.009)	Green
0,44 - 0,64	20 AWG	Socket	192991-0207	T3P20FE1LY	1,60 (.062) - 2,10 (.082)	5,08 (.200)±0,25 (.009)	Green
0,60 - 1,51	16 AWG	Pin	192991-0160	T3P16ME1LY	Without insulation support	7,11 (.279)±0,25 (.009)	Black
0,60 - 1,51	16 AWG	Socket	192991-0208	T3P16FE1LY	Without insulation support	7,11 (.279)±0,25 (.009)	Black

(Y) Gold plating Pin: 0,4 µ m (16 µ in.). Gold plating Socket: 0,75 µ m (30 µ in.).
For Gold Flash Plating, please consult the factory.

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

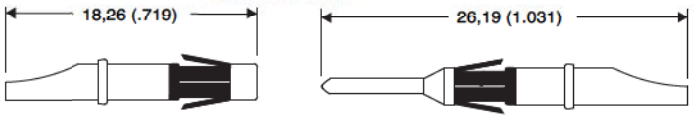
Solder Cup Contacts

- 13 A current rating.
- Ideal for prototypes and small volume applications.
- Fits into all Trident connectors.
- Simple solder, then insert.

Description	Part Number Tin Plating	Gold Plating (Y)
Socket	192900-0634	192900-0635
Pin	192900-0632	192900-0633

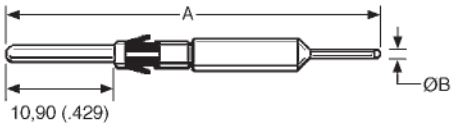
(Y) Gold plating 0,4 µ m (16 µ in.)

Socket Pin



Flow Solder (PCB) Contacts

- 13 A current rating.
- Available in different lengths depending on connector.
- Socket versions available.
- High Volume packaging available.
- 30 A power version available.



Connector Series	Type	Part Number (Pack of 100) Tin Plating	Gold Flash Plating	A ±1,00 (.039)	ØB
Ringlock Standard Receptacle	Socket	***	192991-0524		0,76 (.030)
Ringlock Standard Receptacle	Socket	***	192991-0066		0,76 (.030
Ringlock Reversed Receptacle, Multiway	Pin	192991-0122	192991-0119	34,70 (1.366)	0,76 (.030)
Neptune	Pin	192900-0465	192900-0356	40,75 (1.604)	0,71 (.028)
Neptune Power**	Pin	192991-0617	192991-0618	40,60 (1.598)	1,50 (.059)

** Note: Appearance differs slightly from the picture.
*** For details please consult the factory

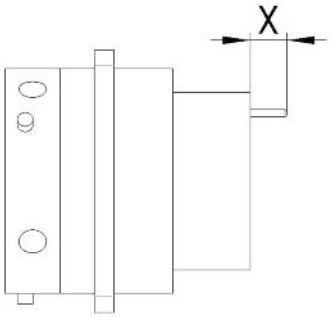
Nominal lengths (x) of Flow Solder Contacts out of the connector*

Ringlock Standard Receptacle

Shell Size	192991-0066	192991-0524
10	4,5 (.177)	11,6 (.456)
12	2,7 (.106)	9,8 (.386)
14	4,5 (.177)	11,6 (.456)
16	2,7 (.106)	9,8 (.386)
18	2,7 (.106)	9,8 (.386)
20	3,0 (.118)	10,1 (.398)
22	2,0 (.079)	9,1 (.358)
24	1,2 (.047)	8,3 (.327)

Ringlock Reversed Receptacle

Shell Size	192991-0119 192991-0122
10	4,7 (.177)
12	4,7 (.177)
14	4,7 (.177)
16	4,7 (.177)
18	4,7 (.177)
20	4,6 (.181)
22	4,6 (.181)
24	4,6 (.181)



* For other connector series please consult the factory

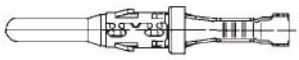
Dimensions shown in mm (inch)
Specifications and dimensions subject to change

APK
Power Contacts

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

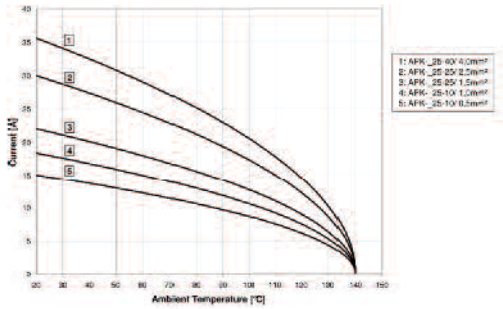
Socket

Pin



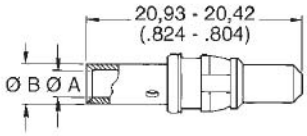
Wire Range mm²	Wire Size	Contact	Description*	Part Number Loose (100) Tin Plated	Part Number Reeled (3000) Tin Plated	Insulation Diameter	Strip Length
0,50 - 1,00	20-18 AWG	Pin	APK-PB25A10	031-8717-020	121668-0000	1,40 (.055) - 2,00 (.078)	5,00 (.196)±0,25 (.009)
0,50 - 1,00	20-18 AWG	Socket	APK-SB25A10	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

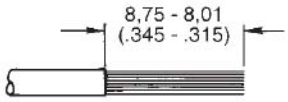


D Subminiature Loose Contacts, Size 8- High Power-Crimp

Plug

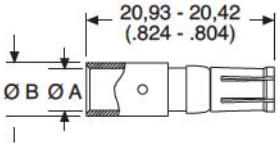


Recommended Wire Trim Length

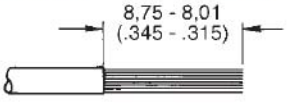


Part Number (30 µin) 0,76µm Gold over Copper	A	B	Current Rating A	Wire Size AWG
DM130338	4,60 (.181)	5,84 (.230)	40 A	8 AWG
DM130339	2,54 (.100)	5,54 (.218)	20 A	12 AWG

Receptacle



Recommended Wire Trim Length



Part Number (30 µin) 0,76µm Gold over Copper	A	B	Current Rating A	Wire Size AWG
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

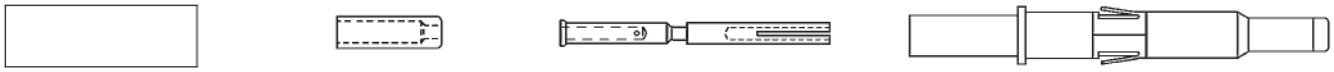
Materials and Finishes		
Description	Material	Finish
Inner Contact	Brass	0,75 µm (30 µ in.) Gold
Outer Contact	Brass	0,40 µm (16 µ in.) Gold

Outer Female Contact Assembly

Ring | Support Sleeve | Inner Male | Outer Female

Outer Male Contact Assembly

Ring | Support Sleeve | Inner Female | Outer Male



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

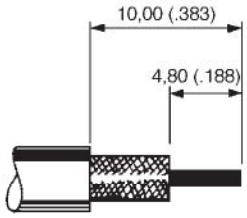
Cable Type — B

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

Cable Type — Twisted Pair

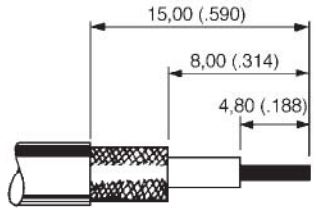
Insulation Diameter	Dimension X	Dimension Y
0,56 (.022) - 1,12 (.044)	4,80 (.189)	6,30 (.248)
Less than 0,56 (.022)	5,10 (.200)	13,00 (.512)

Outer Male Contact Assembly



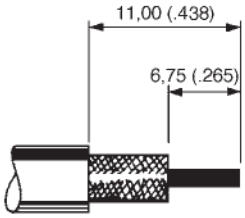
Part Number: 192943-4580

Outer Male Contact Assembly



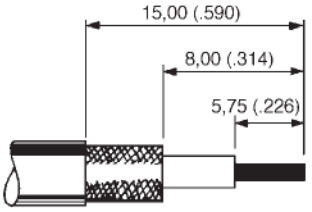
Part Number: 192945-4390

Outer Male Contact Assembly

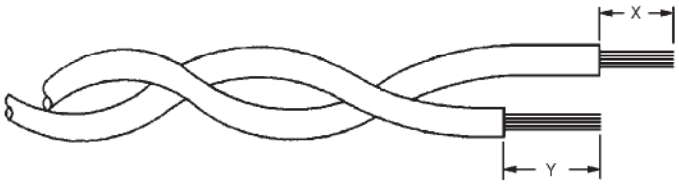


Part Number: 192945-4930

Outer Male Contact Assembly



Part Number: 192945-4530



Part Number: 192945-4930 & 192945-4530

Accessories

Discriminating (Keying) Pins and Caps

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)

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.

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**

[1] Nomenclature: 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.

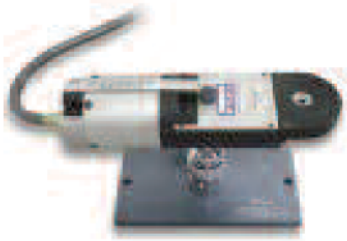
AWG Size	Contact Description	Mecal Part Number
14-16	Trident Signal	121586-5240
16-18	Trident Signal	121586-5217
20-26	Trident Signal	121586-5239
12-14	Trident 30 A Power	*
14-16	Trident 30 A Power	*
18-20	Trident 30 A Power	*

* 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 food 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

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

Crimping Instructions — Formed (Stamped) Crimp Contacts

Assembly Instructions:

1. Strip wires to length. For wire strip lengths, see page 67.
2. 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.
3. Insert the wire.
4. Cycle the tool.
5. 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

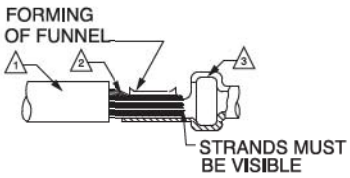


Figure 2 - Unacceptable

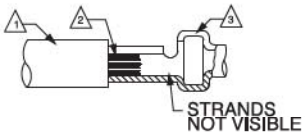


Figure 3 - Unacceptable

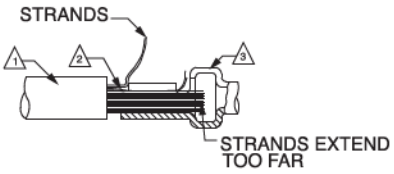
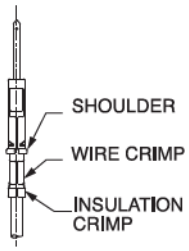


Figure 4 - Correct

Side View



Front View

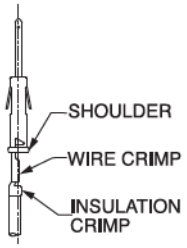
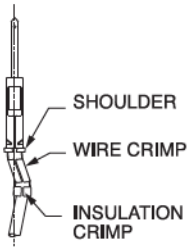
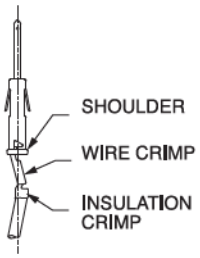


Figure 5 - Unacceptable

Side View



Front View



Crimping Instructions — Machined Crimp Contacts

Assembly Instructions:

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

Contact Type	Locator Color
Pin	Blue
Socket	Green
Earthing	Black

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

Figure 6 - Correct

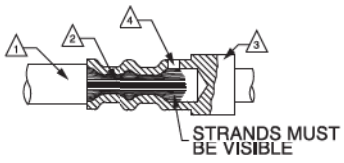


Figure 7 - Unacceptable

5. Cycle the tool.
6. 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).

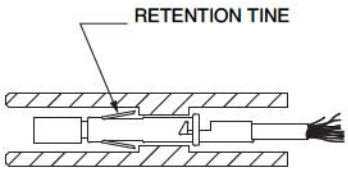
Notes:

1. Wire Insulation.
2. Wire Strands.
3. Contact.
4. Inspection Window. Strands must be visible.

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

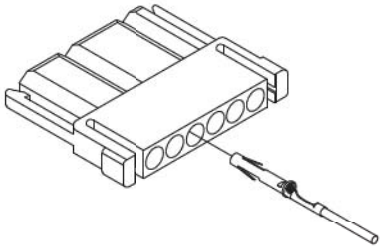
Note: Newton is a metric unit of force. One pound = 4.45 Newtons

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

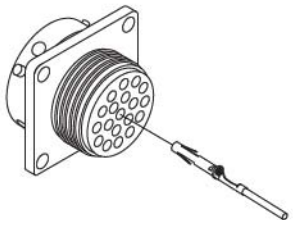
Assembly instructions:

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.

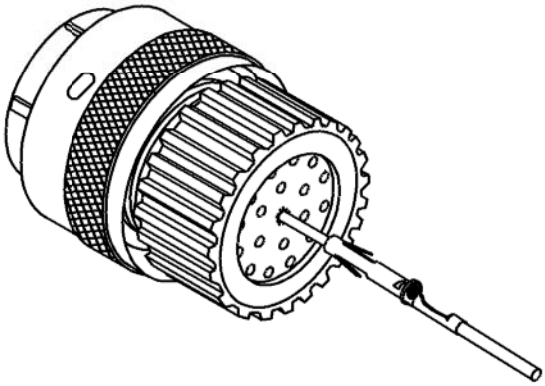
2. Grasp the crimped or soldered contact just behind where the wire enters the contact. If using a stitching tool, insert the contact into the rear of the tool.

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.

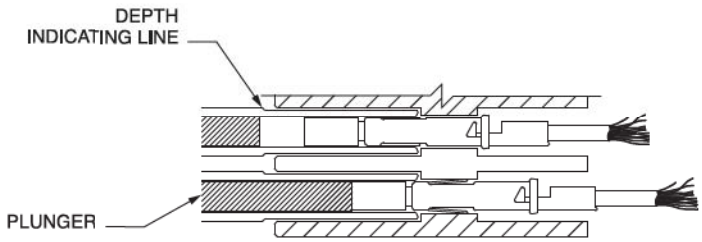
2. Insert the tube into the contact cavity from the mating surface. Push the tube fully into the cavity.

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