

# 100 SERIES

Underwater Electrical Dry-Mate  
Keyless Connectors



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100 Series - Introduction

100 Series Connector Overview

The Scorpion 100 Series is a compact, high density, dry mate electrical connector for harsh environment and subsea applications.

Its keyless design ensures ease of coupling under any conditions whilst its piston mounted coupling O-ring provides dependable and easy to maintain sealing.

Cable plugs are factory fitted to a choice of bespoke cables, whilst Flanged and Bulkhead Receptacles come as standard with equipment wire tails.

SPECIFICATIONS	
Shell Sizes:	2
Contacts:	2 to 10
Voltage Rating:	Up to 800 Vdc / 560 Vac
Current Rating:	Up to 20 Amps
External Pressure Rating:	Up to 8,700 psi / 600 Bar
Temp Rating:	-20°C to 70°C
Mating Cycles:	>500



MATERIALS	
Connector Shell:	316 Stainless Steel.
Coupling Nut:	Nickel Aluminium Bronze.
Contacts:	UNS C38500, Copper/ Nickel/ Gold Plated.
Insulator:	PEEK.



100 Series - Connector Part Numbering

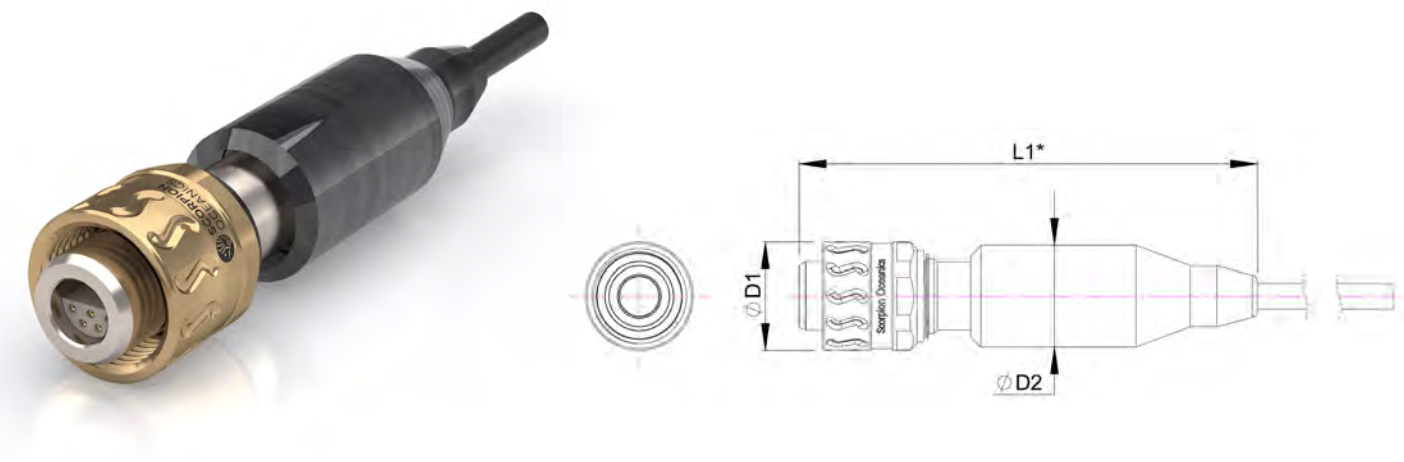
1	16	-	10	-	CCP	/	RA	-	00	-	1000	-	NW
100 Series													
Shell Size													
16 Size 16													
20 Size 20													
Number of Contacts													
10 See Page 13 for Contact Configurations													
Connector Type													
CCP (Cable Connector Plug)													
CCR (Cable Connector Receptacle)													
FCR (Flange Connector Receptacle)													
BCR (Bulkhead Connector Receptacle)													
PSC (Plug Sealing Cap)													
RSC (Receptacle Sealing Cap)													
Right Angle													
RA													
Wiring Configuration													
00 Standard Configuration													
01 01 and Onwards are Custom Configurations													
Cable Length													
1000 = 1 Metre													
2000 = 2 Metre													
3000 = 3 Metre													
4000 = 4 Metre													
With Nut / Washer (Optional accessory for BCR)													
NW													

PART NUMBER EXAMPLES	
Description:	100 Series: Size 16, 10 Contact, Cable Plug c/w 1Mtr Cable in the Standard Wiring Configuration.
Part Number:	116-10-CCP-00-1000
Description:	100 Series: Size 16, 10 Contact, Flanged Receptacle c/w 0.5Mtr tails in the Standard Wiring Configuration.
Part Number:	116-10-FCR-00-0500

Scorpion Oceanics holds a wide range of Electrical & Category Cables sheathed in PU, PE & Neoprene together with equipment wire all ideally suited to the “100 Series” for the manufacture of stock and bespoke assemblies.

100 Series Connector Dimensions - Moulded

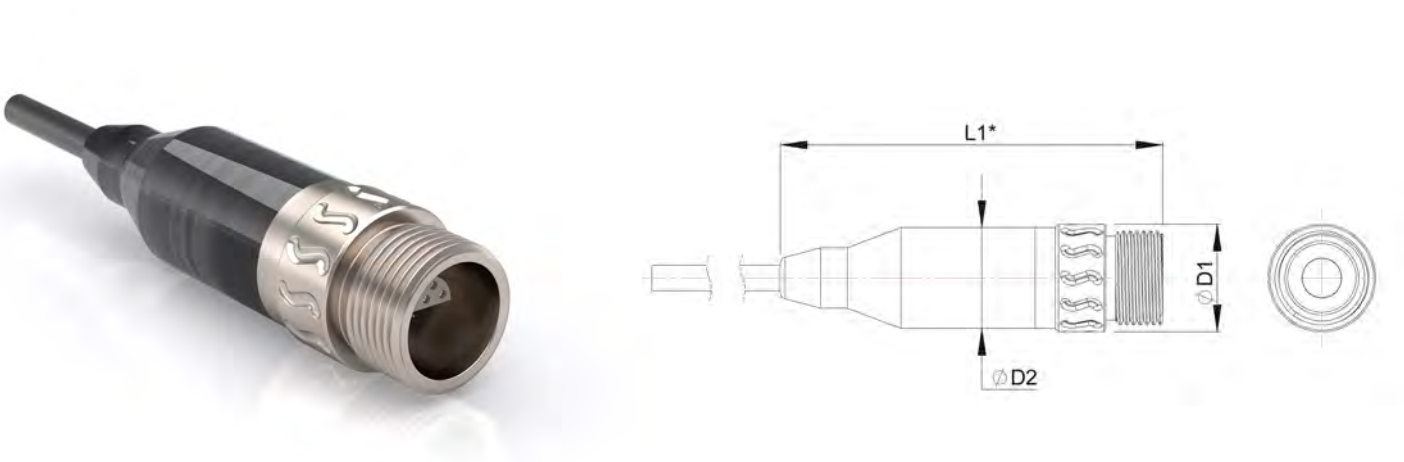
CCP (Cable Connector Plug)



Shell Size	Part Number	L1mm (In)	ØD1mm (In)	ØD2mm (In)
16	116-##-CCP-00-####	68.00 / (2.68)	16.00 / (0.63)	15.00 / (0.59)
20	120-##-CCP-00-####	77.50 / (3.05)	20.00 / (0.79)	18.00 / (0.71)

\* Moulded length is given as a typical guide and can be amended to suit different applications and cable types.

CCR (Cable Connector Receptacle)

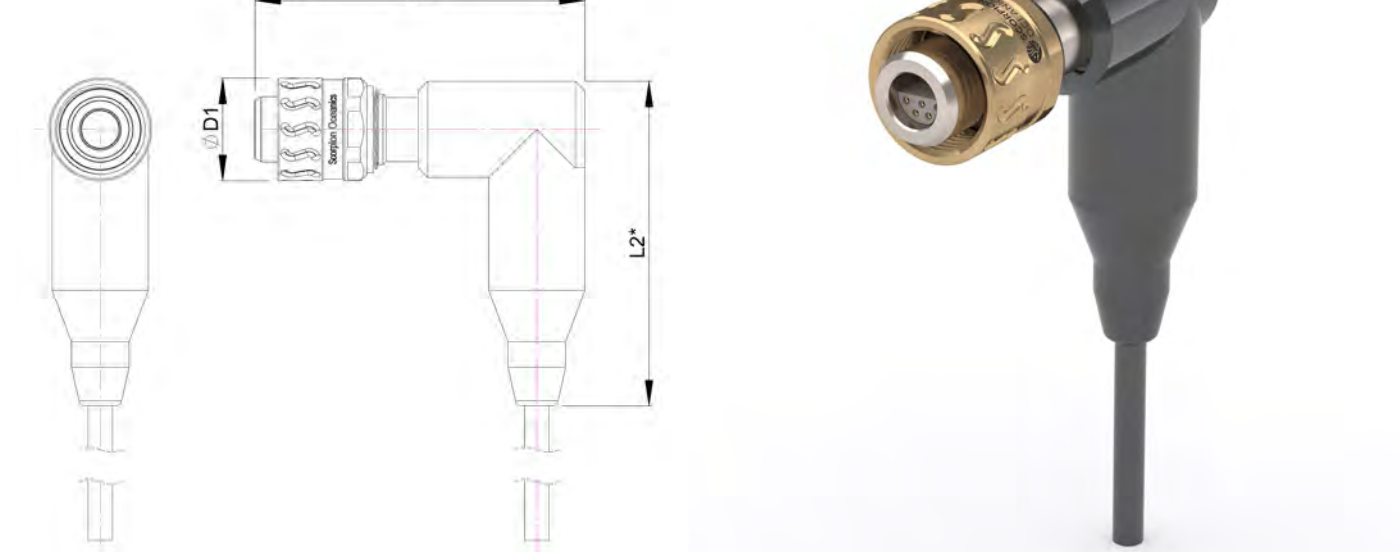


Shell Size	Part Number	L1mm (In)	ØD1mm (In)	ØD2mm (In)
16	116-##-CCR-00-####	57.00 / (2.24)	16.00 / (0.63)	15.00 / (0.59)
20	120-##-CCR-00-####	70.00 / (2.76)	20.00 / (0.79)	18.00 / (0.71)

\* Moulded length is given as a typical guide and can be amended to suit different applications and cable types.

100 Series Connector Dimensions - Moulded

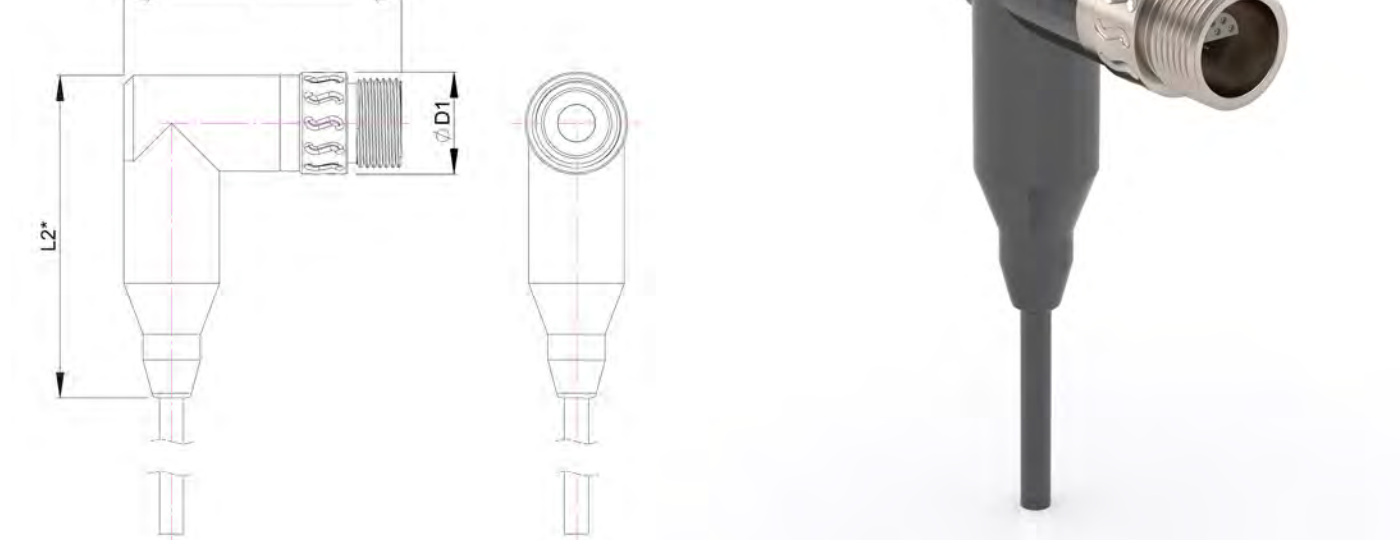
CCP/RA (Cable Connector Plug 90°)



Shell Size	Part Number	L1mm (In)	L2mm (In)	ØD1mm (In)
16	116-##-CCP/RA-00-####	51.50 / (2.03)	50.50 / (1.99)	16.00 / (0.63)
20	120-##-CCP/RA-00-####	57.50 / (2.26)	54.20 / (2.13)	20.00 / (0.79)

\* Moulded length is given as a typical guide and can be amended to suit different applications and cable types.

CCR/RA (Cable Connector Receptacle 90°)



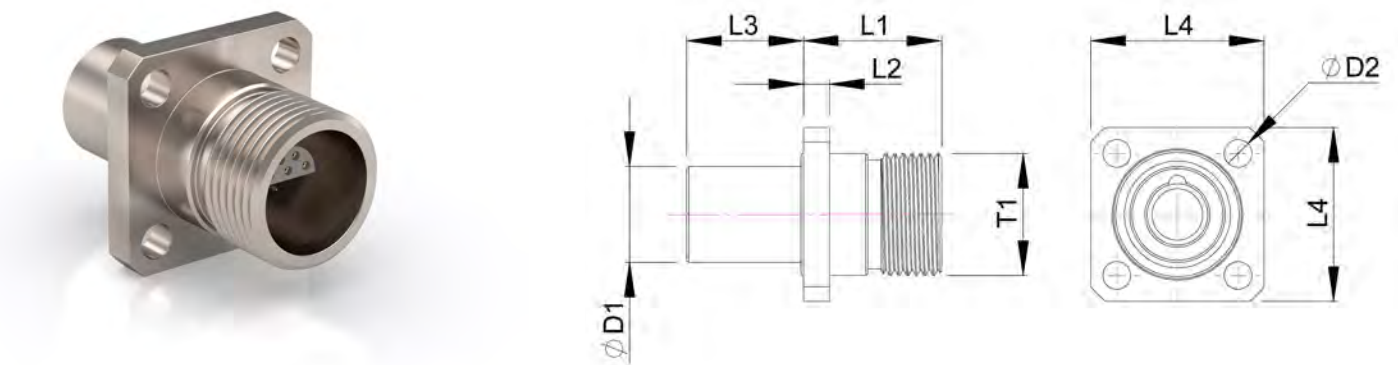
Shell Size	Part Number	L1mm (In)	L2mm (In)	ØD1mm (In)
16	116-##-CCR/RA-00-####	43.50 / (1.71)	50.50 / (1.99)	16.00 / (0.63)
20	120-##-CCR/RA-00-####	50.50 / (1.99)	54.50 / (2.15)	20.00 / (0.79)

\* Moulded length is given as a typical guide and can be amended to suit different applications and cable types.



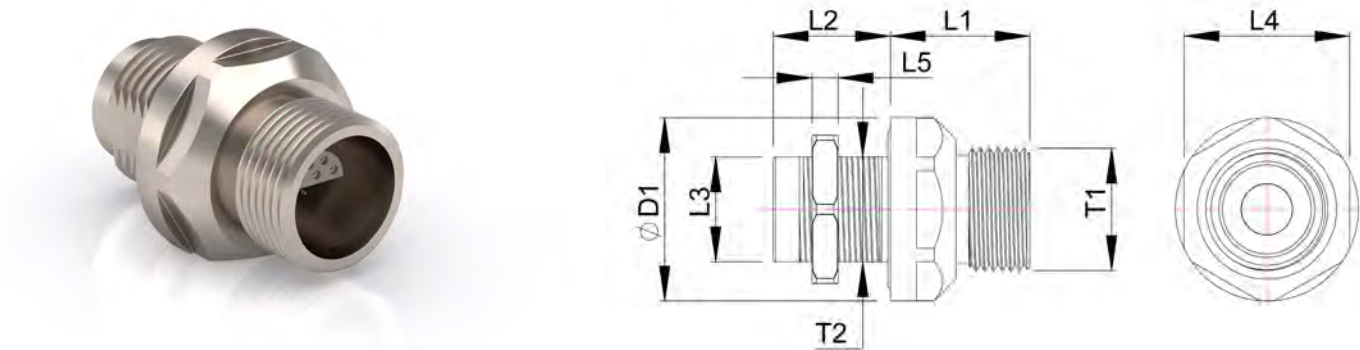
100 Series Connector Dimensions – Mounted Receptacles

FCR (Flanged Connector Receptacle)



Shell Size	Part Number	L1mm (In)	L2mm (In)	L3mm (In)	L4mm (In) A/F	ØD1mm (In)	ØD2mm (In)	T1
16	116-##-FCR-00-####	16.00 / (0.63)	3.00 / (0.12)	13.50 / (0.53)	20.00 / (0.79)	11.00 / (0.43)	3.20 / (0.13)	M14.00x1.00
20	120-##-FCR-00-####	19.00 / (0.75)	4.00 / (0.16)	14.25 / (0.56)	26.00 / (1.02)	14.00 / (0.55)	4.20 / (0.17)	M17.50x1.00

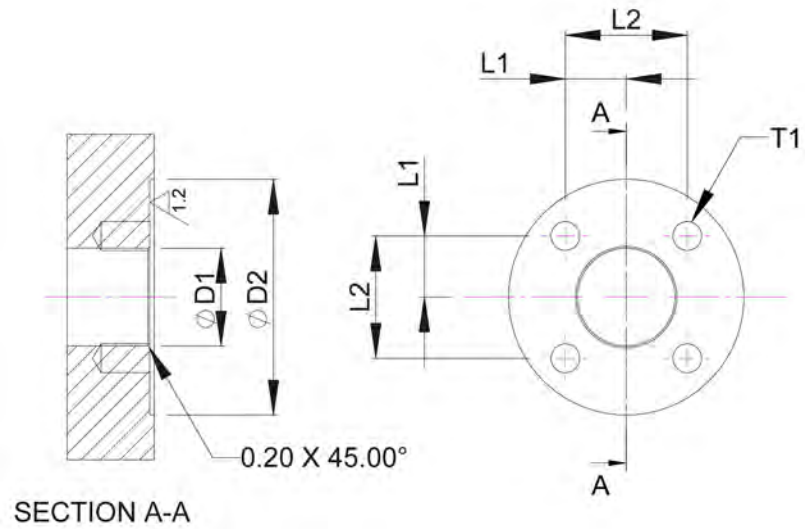
BCR (Bulkhead Connector Receptacle)



Shell Size	Part Number	L1mm (In)	L2mm (In)	L3mm (In) A/F	L4mm (In) A/F	L5mm (In)	ØD1mm (In)	T1	T2
16	116-##-BCR-00-####	16.00 / (0.63)	13.50 / (0.53)	12.00 / (0.47)	19.00 / (0.75)	3.00 / (0.12)	21.00 / (0.83)	M14.00x1.00	9/16-18 UNF
20	120-##-BCR-00-####	19.00 / (0.75)	14.25 / (0.56)	14.00 / (0.55)	23.00 / (0.91)		25.00 / (0.98)	M17.50x1.00	M16.00x1.25

100 Series Mounted Receptacle Interface Machining Detail

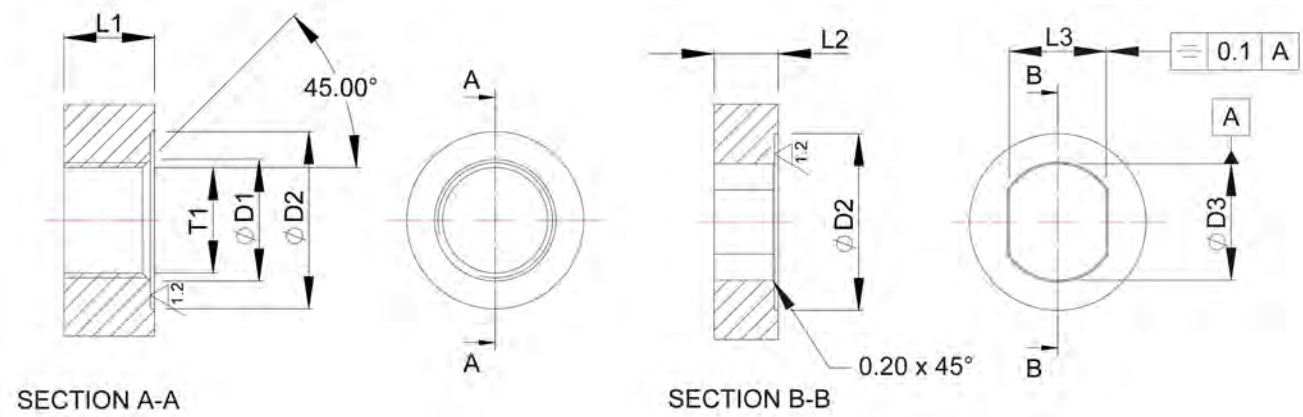
FCR (Flanged Connector Receptacle)



Shell Size	L1mm (In) Min.	L2mm (In)	ØD1mm (In) <sup>+0.1</sup> / <sub>-0.0</sub>	ØD2mm (In)	T1
16	7.00 / (0.28)	14.00 / (0.55)	11.20 / (0.44)	27.00 / (1.06)	M3-6H
20	9.00 / (0.35)	18.00 / (0.71)	14.20 / (0.56)	35.00 / (1.38)	M4-6H

A general tolerance of ±0.10mm applies to all dimensions unless otherwise stated.

BCR (Bulkhead Connector Receptacle)



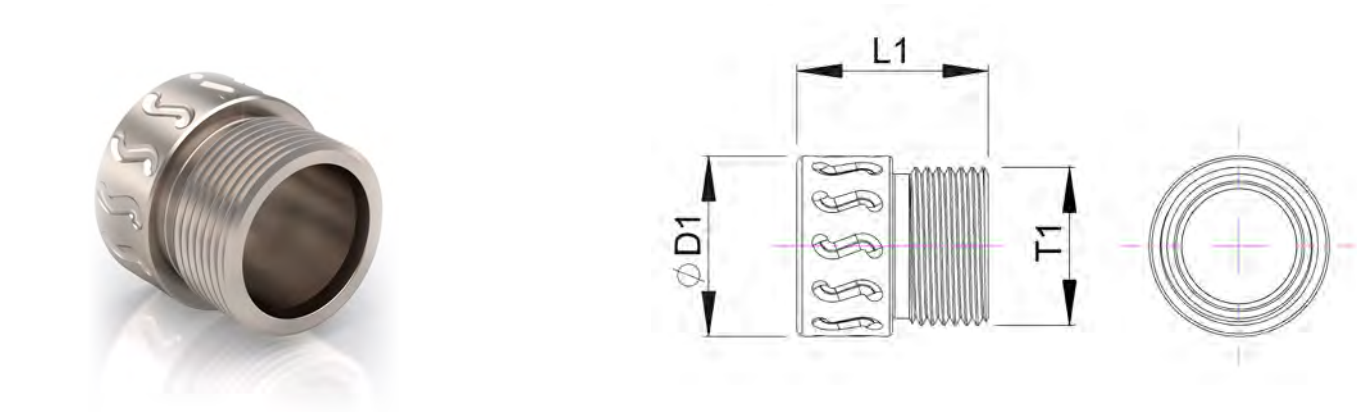
Shell Size	L1mm (In) Min.	ØD1mm (In)	ØD2mm (In)	T1	L2mm (In) Max.	L3mm (In) <sup>+0.1</sup> / <sub>-0.0</sub>	ØD3mm (In) <sup>+0.1</sup> / <sub>-0.0</sub>	Installation Torque Nm (inch-lb)
16	10.50 / (0.41)	15.00 / (0.59)	22.00 / (0.87)	9/16-18 UNF	7.50 / (0.30)	12.10 / (0.48)	14.50 / (0.57)	12.00 / (106.21)*
20	11.25 / (0.44)	16.50 / (0.65)	26.00 / (1.02)	M16.00x1.25	8.25 / (0.33)	14.10 / (0.56)	16.10 / (0.63)	14.00 / (123.91)*

A general tolerance of ±0.10mm applies to all dimensions unless otherwise stated.

\* Value based on installation into suitable material and dry metal threads.

100 Series Connector Dimensions – Sealing Caps

PSC (Plug Sealing Cap)



Shell Size	Part Number	L1mm (In)	ØD1mm (In)	T1
16	116-PSC	17.00 / (0.67)	16.00 / (0.63)	M14.00x1.00
20	120-PSC	18.50 / (0.73)	20.00 / (0.79)	M17.50x1.00

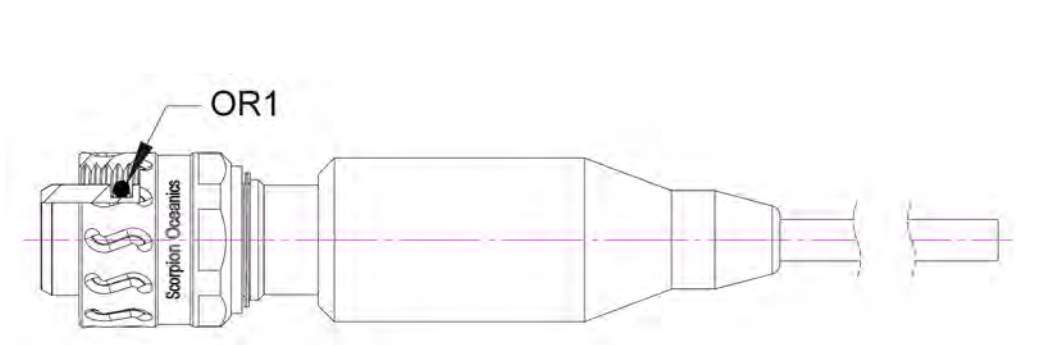
RSC (Receptacle Sealing Cap)



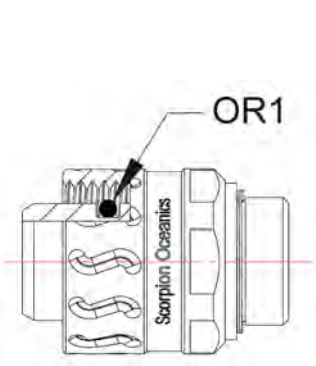
Shell Size	Part Number	L1mm (In)	ØD1mm (In)	ØD2mm (In)
16	116-RSC	23.00 / (0.91)	16.00 / (0.63)	11.00 / (0.43)
20	120-RSC	27.00 / (1.06)	20.00 / (0.79)	14.00 / (0.55)

100 Series Connector – Plug O-Rings

CCP, CCP/RA (Cable Connector Plug)



RSC (Receptacle Sealing Cap)

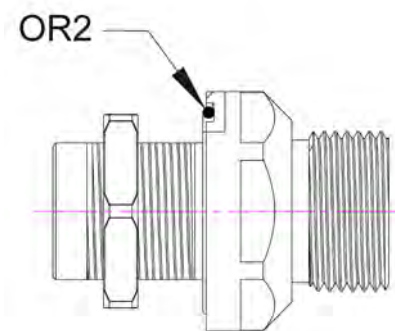


Shell Size	OR1
16	7.50ID x 1.50CS
20	10.50ID x 1.50CS

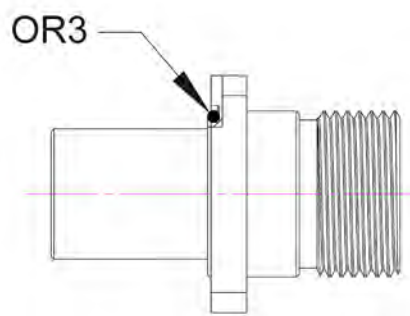
All measurements in mm.  
All O-rings are Nitrile 70 as standard.

100 Series Connector - Receptacle O-Rings

BCR (Bulkhead Connector Receptacle)



FCR (Flanged Connector Receptacle)



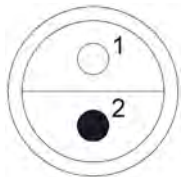
Shell Size	OR2	OR3
16	15.50ID x 1.00CS	12.00ID x 1.00CS
20	17.00ID x 1.50CS	15.00ID x 1.50CS

All measurements in mm.  
All O-rings are Nitrile 70 as standard.

100 Series - Contact Configurations & Specifications

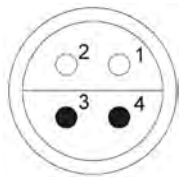
Shell Size 116

02



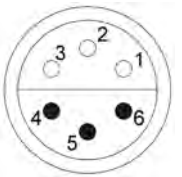
0.50mm² (20 AWG)  
600 Vdc/400 Vac  
15A

04



0.34mm² (22 AWG)  
600 Vdc/400 Vac  
10A

06



0.25mm² (24 AWG)  
700 Vdc/500 Vac  
7A

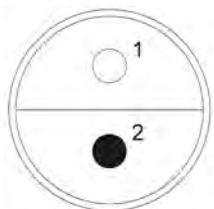
10



0.09mm² (28 AWG)  
400 Vdc/300 Vac  
2.5A

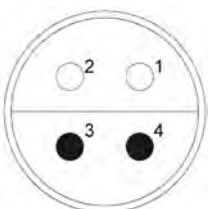
Shell Size 120

02



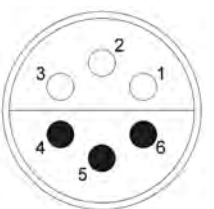
1.00mm² (16 AWG)  
800 Vdc/560 Vac  
20A

04



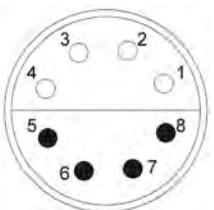
0.50mm² (20 AWG)  
800 Vdc/560 Vac  
15A

06



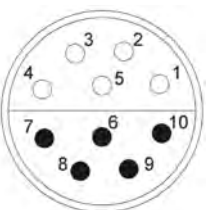
0.50mm² (20 AWG)  
700 Vdc/500 Vac  
12A

08



0.34mm² (22 AWG)  
400 Vdc/260 Vac  
9A

10



0.34mm² (22 AWG)  
400 Vdc/260 Vac  
7A

○	Pins
●	Sockets

**Notes:**  
Contact Configuration shown is of front face of CCP.  
Operating voltage as stated above is one third of the test voltage.  
Test voltage (measured in accordance to standard IEC 60512-2 test 4a).  
Rated current (measured in accordance to standard IEC 60512-3 test 5a).  
The specified current can be applied to all contacts simultaneously and corresponds to an average temperature rise of 40°C.



105 Series - Introduction

105 Series Connector Overview

The Scorpion 105 Series is a compact, 50Ω & 75Ω, dry mate coaxial connector for harsh environment and subsea applications.

Its keyless design ensures ease of coupling under any conditions whilst its piston mounted coupling o-ring provides dependable and easy to maintain sealing.

Cable plugs are factory fitted to a choice of bespoke cables, whilst Flanged and Bulkhead Receptacles provide openface “fail safe” pressure resistance and come as standard with an SMB interfaced cable tail.



SPECIFICATIONS	
Shell Size:	2
Impedance:	50 / 75 ohm
Frequency Range:	0-4GHz / 0-2GHz
Voltage Rating:	Up to 335 Vdc
Dielectric Withstand Voltage:	Up to 1000 Vrms
Insulation Resistance:	1000 MΩ min
External Pressure Rating:	Up to 8700 psi / 600 Bar
Open Face Pressure Rating:	Up to 600 Bar*
Temp Rating:	-20°C to 70°C
Mating Cycles:	>500

\* Open Face pressure rating is on the receptacle only. This is only a safety feature, the connector cannot be electrically operational when subjected to open face pressure and must be employed in a mated condition or with sealing caps.

MATERIALS	
Connector Shell:	CCP: PEEK. FCR & BCR: 316 Stainless Steel.
Coupling Nut:	Nickel Aluminium Bronze.
Contacts:	UNS C38500, Copper / Nickel / Gold Plated.



105 Series - Connector Part Numbering

										105	-	50	-	CCP	/	RA	-	00	-	1000	-	NW
105 Series																						
Contact Configuration																						
50		50Ω																				
75		75Ω																				
Connector Type																						
CCP		(Cable Connector Plug)																				
CCR		(Cable Connector Receptacle)																				
FCR		(Flange Connector Receptacle)																				
BCR		(Bulkhead Connector Receptacle)																				
PSC		(Plug Sealing Cap)																				
RSC		(Receptacle Sealing Cap)																				
Right Angle																						
RA																						
Wiring Configuration																						
Cable Length																						
1000		= 1 Metre																				
2000		= 2 Metre																				
3000		= 3 Metre																				
With Nut / Washer (Optional accessory for BCR)																						
NW																						

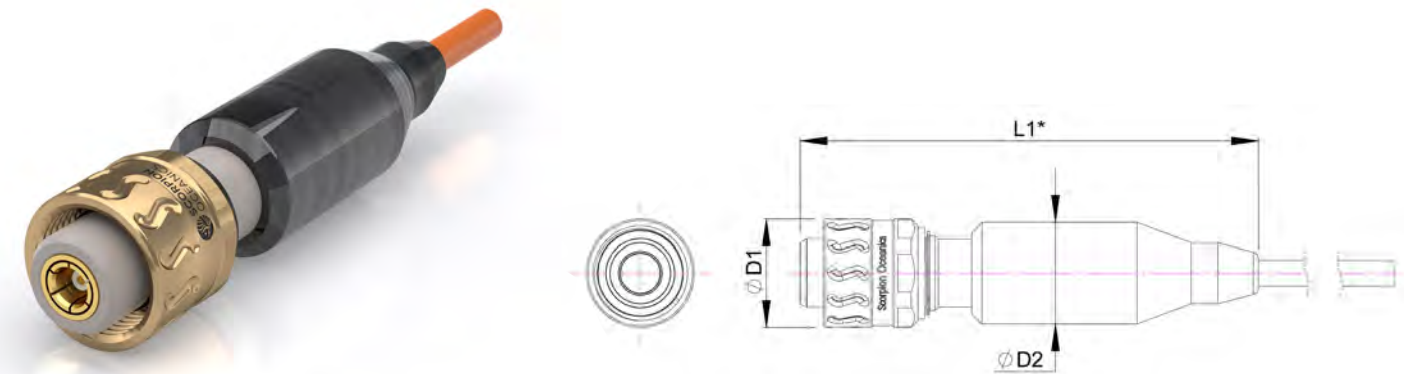
PART NUMBER EXAMPLES	
Description:	105 Series: 50Ω Cable Plug to 90° Cable Plug, c/w 1Mtr Cable.
Part Number:	105-50-CCP-CCP/RA-00-1000
Description:	105 Series: 50Ω Flanged Receptacle c/w 0.5Mtr tail.
Part Number:	105-50-FCR-00-0500

Scorpion Oceanics holds a wide range of Electrical, Coaxial & Category Cables sheathed in PU, PE & Neoprene together with equipment wire all ideally suited to the “100 Series” for the manufacture of stock and bespoke assemblies.



105 Series Connector Dimensions - Moulded

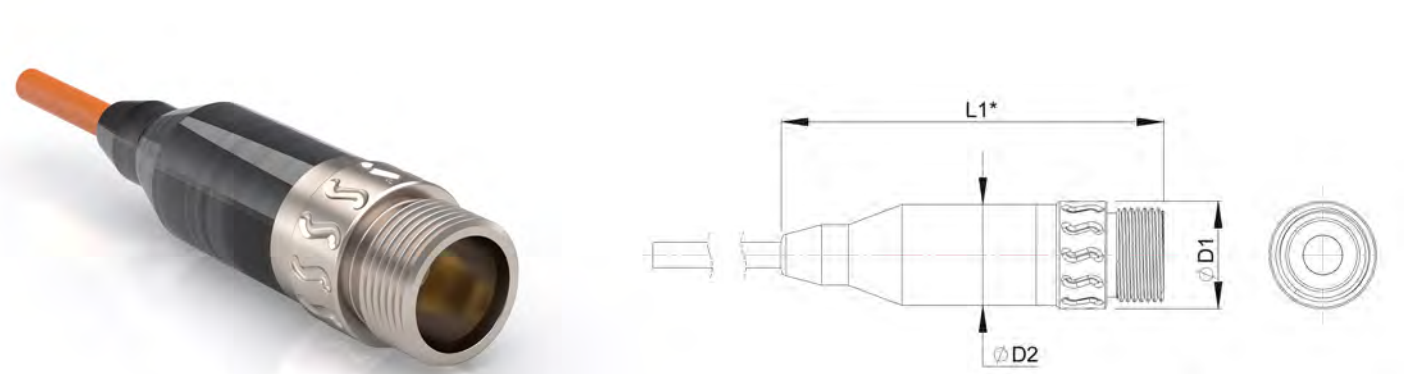
CCP (Cable Connector Plug)



Shell Size	Part Number	L1mm (In)	ØD1mm (In)	ØD2mm (In)
105-50	105-50-CCP-00-####	68.00 / (2.68)	16.00 / (0.63)	15.00 / (0.59)
105-75	105-75-CCP-00-####	77.50 / (3.05)	20.00 / (0.79)	18.00 / (0.71)

\* Moulded length is given as a typical guide and can be amended to suit different applications and cable types.

CCR (Cable Connector Receptacle)

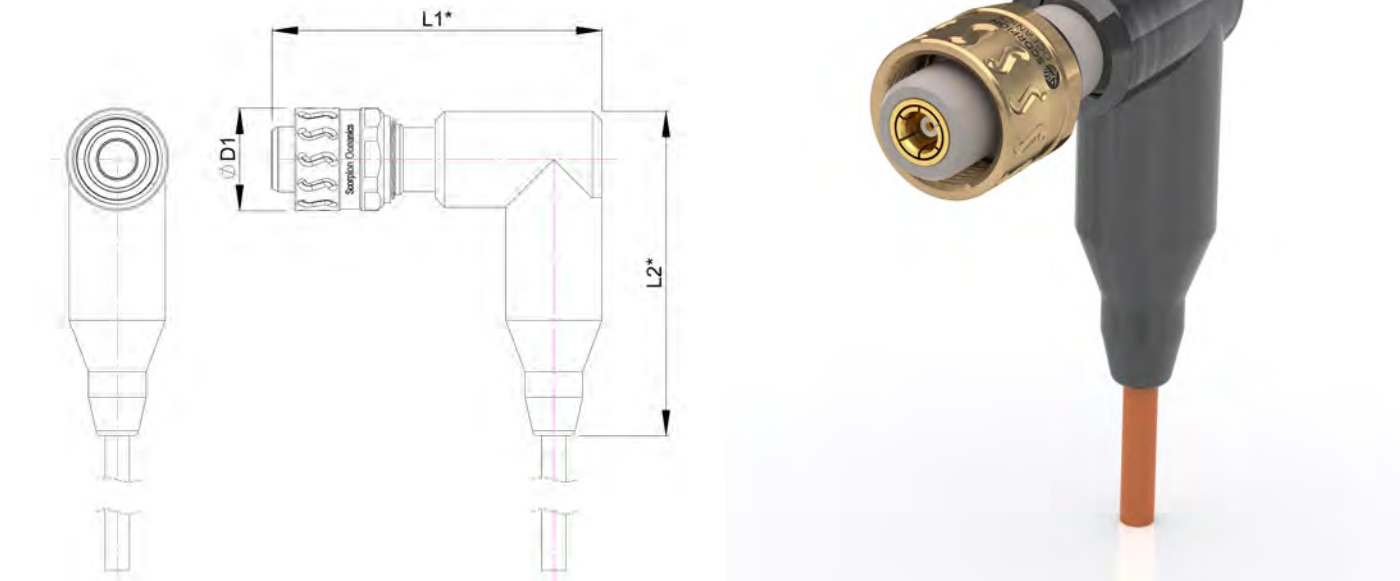


Shell Size	Part Number	L1mm (In)	ØD1mm (In)	ØD2mm (In)
105-50	105-50-CCR-00-####	57.00 / (2.24)	16.00 / (0.63)	15.00 / (0.59)
105-75	105-75-CCR-00-####	70.00 / (2.76)	20.00 / (0.79)	18.00 / (0.71)

\* Moulded length is given as a typical guide and can be amended to suit different applications and cable types.

105 Series Connector Dimensions - Moulded

CCP/RA (Cable Connector Plug 90°)



Shell Size	Part Number	L1mm (In)	L2mm (In)	ØD1mm (In)
105-50	105-50-CCP/RA-00-####	51.50 / (2.03)	50.50 / (1.99)	16.00 / (0.63)
105-75	105-75-CCP/RA-00-####	57.50 / (2.26)	54.20 / (2.13)	20.00 / (0.79)

\* Moulded length is given as a typical guide and can be amended to suit different applications and cable types.

CCR/RA (Cable Connector Receptacle 90°)

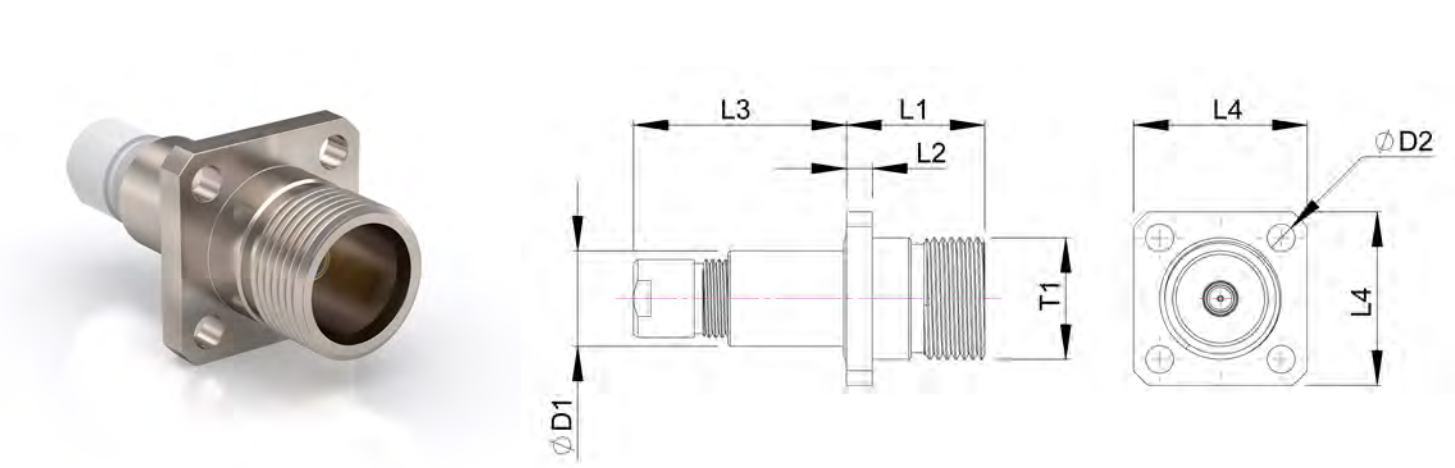


Shell Size	Part Number	L1mm (In)	L2mm (In)	ØD1mm (In)
105-50	105-50-CCR/RA-00-####	43.50 / (1.71)	50.50 / (1.99)	16.00 / (0.63)
105-75	105-75-CCR/RA-00-####	50.50 / (1.99)	54.50 / (2.15)	20.00 / (0.79)

\* Moulded length is given as a typical guide and can be amended to suit different applications and cable types.

105 Series Connector Dimensions – Mounted Receptacles

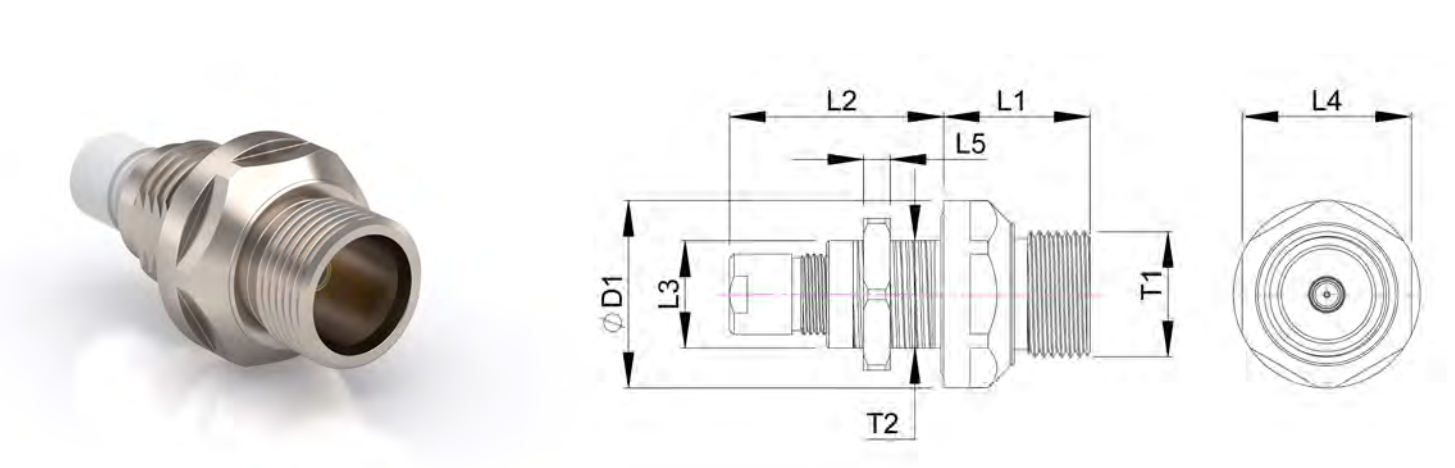
FCR (Flanged Connector Receptacle)



Shell Size	Part Number	L1mm (In)	L2mm (In)	L3mm (In)	L4mm (In) A/F	ØD1mm (In)	ØD2mm (In)	T1
105-50	105-50-FCR-00-####	15.95 / (0.63)	3.00 / (0.12)	24.50 / (0.97)*	20.00 / (0.79)	11.00 / (0.43)	3.20 / (0.13)	M14.00x1.00
105-75	105-75-FCR-00-####	18.95 / (0.75)	4.00 / (0.16)	23.85 / (0.94)*	26.00 / (1.02)	14.00 / (0.55)	4.20 / (0.17)	M17.50x1.00

\* Approx. length incorporating coax rear retaining sleeve.

BCR (Bulkhead Connector Receptacle)

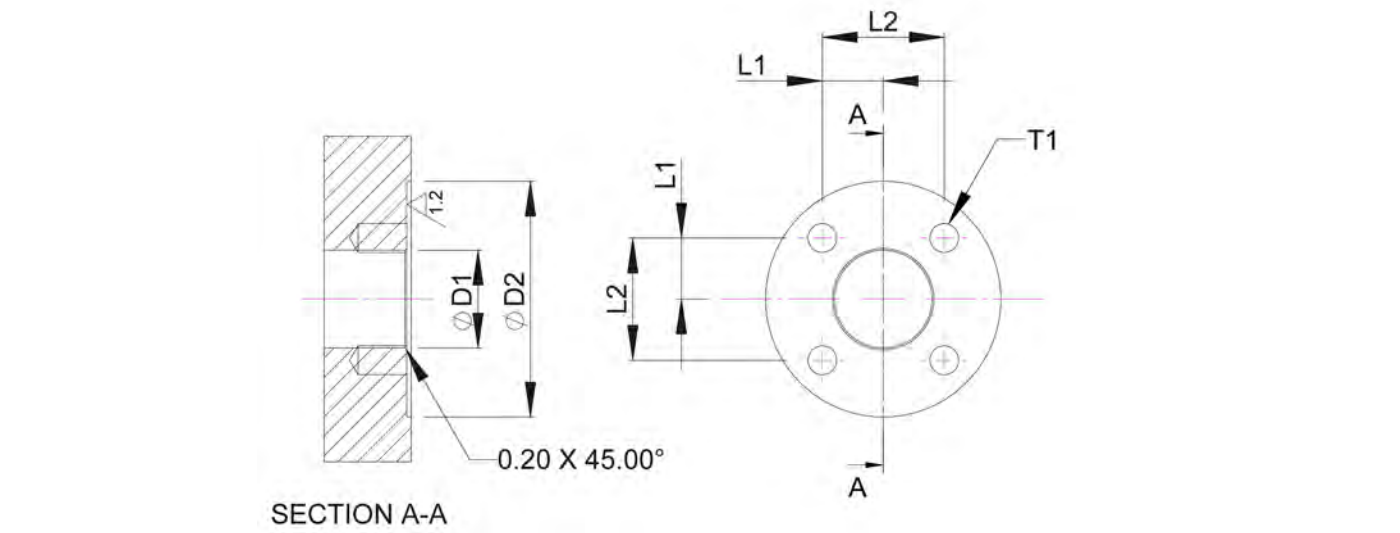


Shell Size	Part Number	L1mm (In)	L2mm (In)	L3mm (In) A/F	L4mm (In) A/F	L5mm (In)	ØD1mm (In)	T1	T2
105-50	105-50-BCR-00-####	16.00 / (0.63)	24.50 / (0.97)*	12.00 / (0.47)	19.00 / (0.75)	3.00 / (0.12)	21.00 / (0.83)	M14.00x1.00	9/16-18 UNF
105-75	105-75-BCR-00-####	19.00 / (0.75)	23.85 / (0.94)*	14.00 / (0.55)	23.00 / (0.91)		25.00 / (0.98)	M17.50x1.00	M16.00x1.25

\* Approx. length incorporating coax rear retaining sleeve.

105 Series Mounted Receptacle Interface Machining Detail

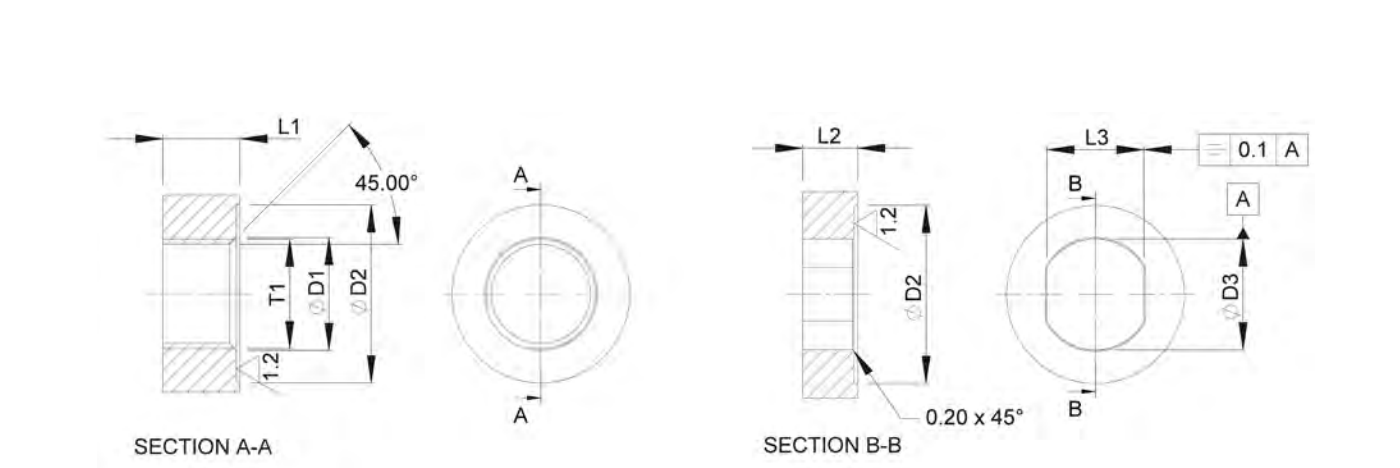
FCR (Flanged Connector Receptacle)



Shell Size	L1mm (In) Min.	L2mm (In)	ØD1mm (In) <sup>+0.1</sup> / <sub>-0.0</sub>	ØD2mm (In)	T1
105-50	7.00 / (0.28)	14.00 / (0.55)	11.20 / (0.44)	27.00 / (1.06)	M3 - 6H
105-75	9.00 / (0.35)	18.00 / (0.71)	14.20 / (0.56)	35.00 / (1.38)	M4 - 6H

A general tolerance of ±0.10mm applies to all dimensions unless otherwise stated.

BCR (Bulkhead Connector Receptacle)



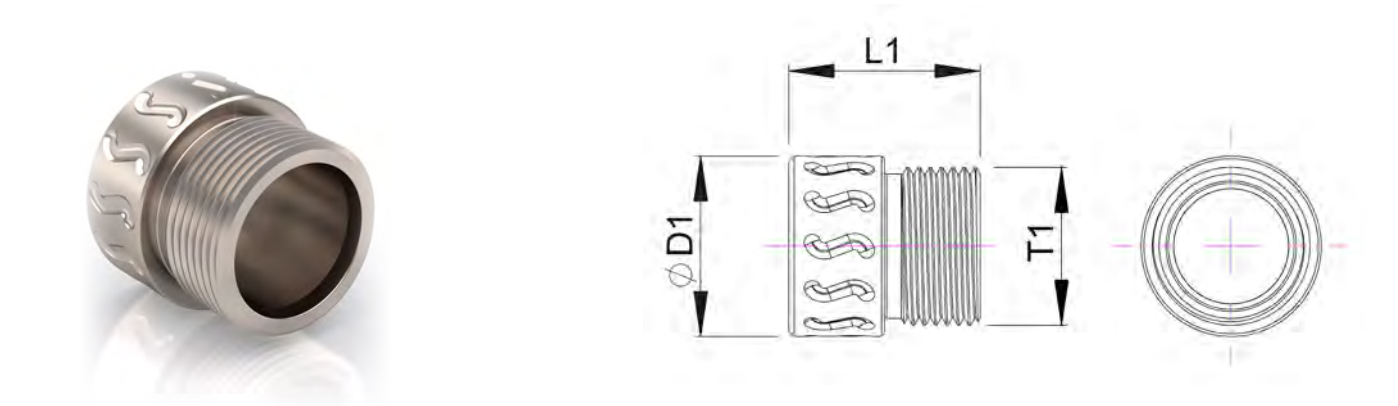
Shell Size	L1mm (In) Min.	ØD1mm (In)	ØD2mm (In)	T1	L2mm (In) Max.	L3mm (In) <sup>+0.1</sup> / <sub>-0.0</sub>	ØD3mm (In) <sup>+0.1</sup> / <sub>-0.0</sub>	Installation Torque Nm (inch-lb)
105-50	10.50 / (0.41)	15.00 / (0.59)	22.00 / (0.87)	9/16-18 UNF	7.50 / (0.30)	12.10 / (0.48)	14.50 / (0.57)	12.00 / (106.21)*
105-75	11.25 / (0.44)	16.50 / (0.65)	26.00 / (1.02)	M16.00x1.25	8.25 / (0.33)	14.10 / (0.56)	16.10 / (0.63)	14.00 / (123.91)*

A general tolerance of ±0.10mm applies to all dimensions unless otherwise stated.

\* Value based on installation into suitable material and dry metal threads.

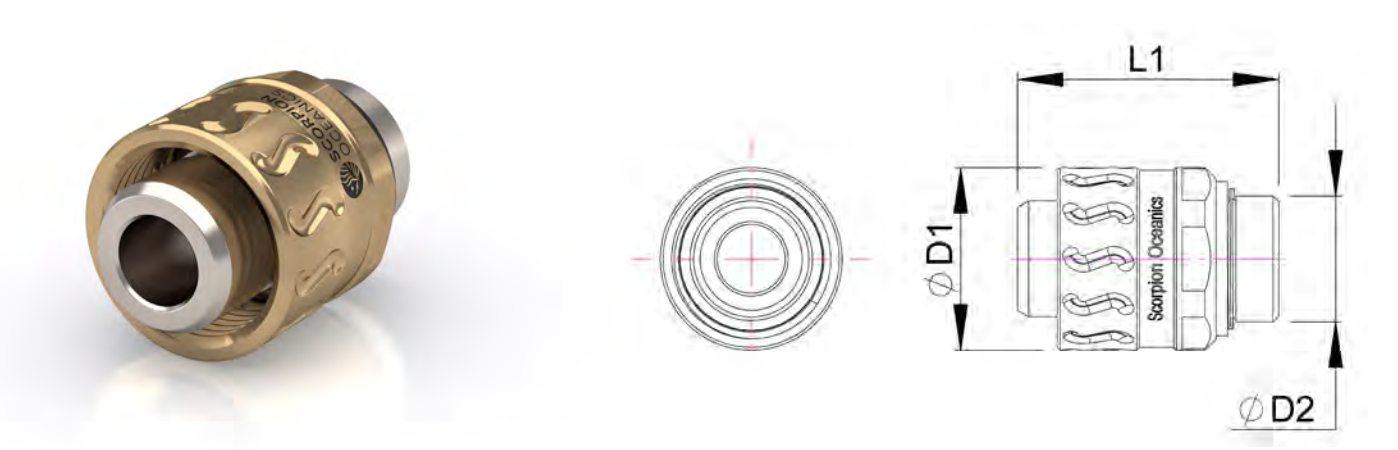
105 Series Connector Dimensions – Sealing Caps

PSC (Plug Sealing Cap)



Shell Size	Part Number	L1mm (In)	ØD1mm (In)	T1
105-50	105-50-PSC	17.00 / (0.67)	16.00 / (0.63)	M14.00x1.00
105-75	105-75-PSC	18.50 / (0.73)	20.00 / (0.79)	M17.50x1.00

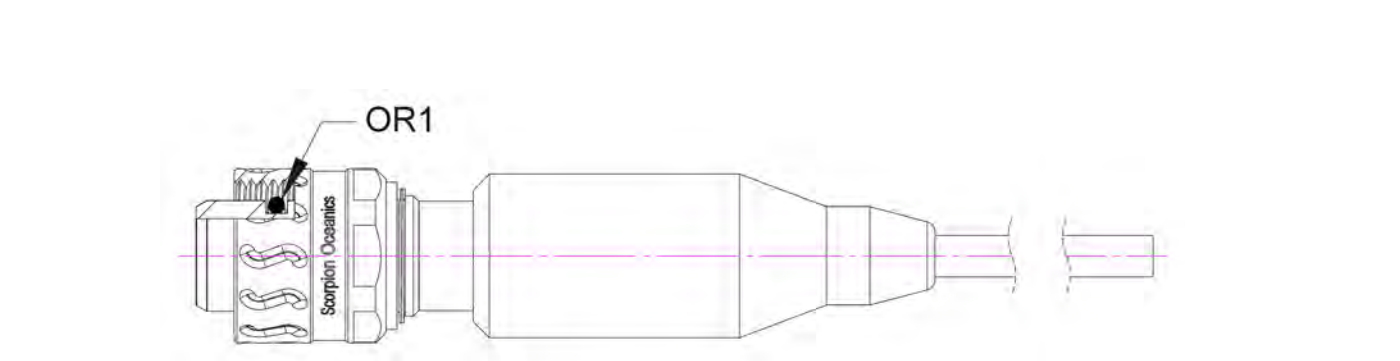
RSC (Receptacle Sealing Cap)



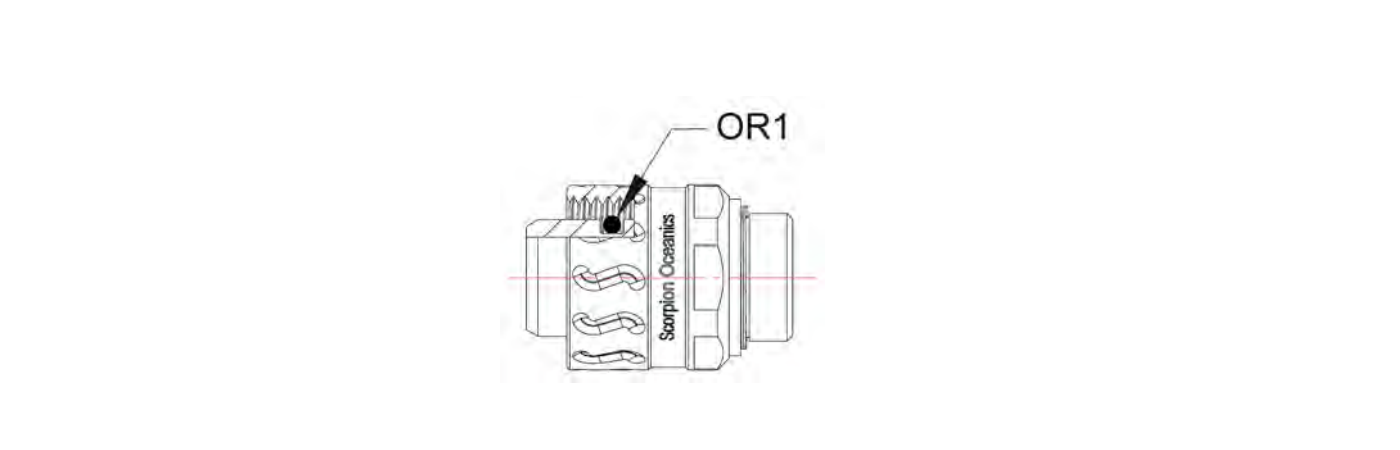
Shell Size	Part Number	L1mm (In)	ØD1mm (In)	ØD2mm (In)
105-50	105-50-RSC	23.00 / (0.91)	16.00 / (0.63)	11.00 / (0.43)
105-75	105-75-RSC	27.00 / (1.06)	20.00 / (0.79)	14.00 / (0.55)

105 Series Connector – Plug O-Rings

CCP, CCP/RA (Cable Connector Plug)



RSC (Receptacle Sealing Cap)

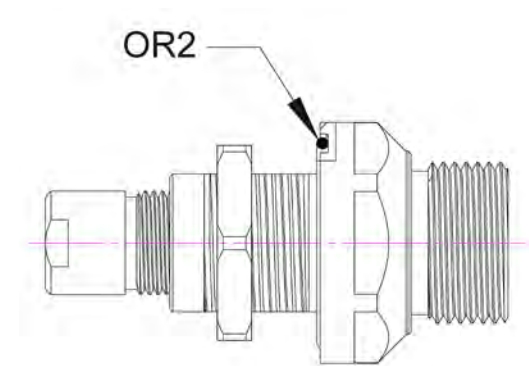


Shell Size	OR1
105-50	7.50ID x 1.50CS
105-75	10.50ID x 1.50CS

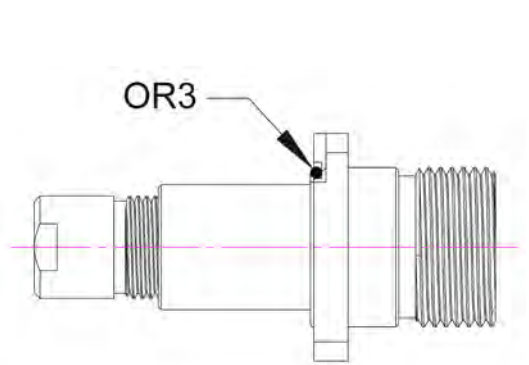
All measurements in mm.  
All O-rings are Nitrile 70 as standard.

105 Series Connector - Receptacle O-Rings

BCR (Bulkhead Connector Receptacle)



FCR (Flanged Connector Receptacle)

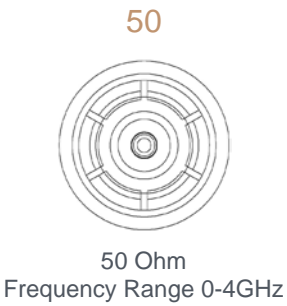


Shell Size	OR2	OR3
105-50	15.50ID x 1.00CS	12.00ID x 1.00CS
105-75	17.00ID x 1.50CS	15.00ID x 1.50CS

All measurements in mm.  
All O-rings are Nitrile 70 as standard.

105 Series Contact Configurations & Specifications

Shell Size 105



Shell Size 105





## Installation & Maintenance Guide

**To avoid risk of electric shock, only energise when conductors are fully mated.**

## Plug

**The moulded plug should be inspected along the cable length to ensure there is no damage or deformation prior to use.**

The moulding itself is bonded to both the cable and the connector shell and any inspection should not place undue stress on these areas as damage to the connector and conductors may be caused. The face and shoulder of the connector should be clean and dry prior to use. Do not pack the face of the connector with grease. Although no specific keyways require alignment on the connectors, the connector insert section carrying the sockets should roughly align with the mating pins prior to attempting engagement, the insert body will then correct the alignment. Once the initial engagement is completed the connector should be mated with the coupling nut until fully hand tight.

No tooling is required to tighten the pair of connectors and overtightening may cause permanent damage.

## Receptacle

**O-ring seals must be checked to ensure they are free from damage or deformation prior to use, the advised lubricant is Novagard G624 silicone grease. Oils or spray silicone should not be used as they can contain materials which will damage or prematurely age the O-seal material.**

The groove in the rear face of the receptacle should be clean and free from dents or scratches. Lubricate the O-ring with a light coating of the advised silicone grease ensuring full coverage of the seal. Do not pack the seal groove with grease as this is detrimental to the seal operation.

After fitting the receptacle to the mating face, the securing hardware should be fitted hand tight before tightening to the advised torque. The fitted connector should sit perpendicular to the mated face. If there is any angular misalignment of the receptacle, loosen the securing hardware and re-inspect all faces before refitting.

## Cleaning

In order to clean the connectors, a soft bristle brush may be used with Isopropyl Alcohol. A gentle air blast can be used to facilitate the cleaning and also flash off the Isopropyl Alcohol.

No thinners or abrasives should be used to clean the connectors.

Attention must be paid to the mating surfaces of the connectors to ensure that no damage is caused and no debris left prior to re-greasing the O-rings.

## Notes



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