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Underwater Connectivity

‘J’ Electrical Connector
Subsea / Underwater / Marine

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Underwater Connectivity

‘J’ Electrical Connector Subsea / Underwater / Marine

Introduction:

CRE has developed a wide range of metal shell connectors over the years focussed on delivering high reliability in tough environments. They are designed for heavy duty use in the most rigorous underwater applications on the planet. The design offers a high integrity sealing arrangement, metal key-ways,multiple options,size,pin quantity,voltage and current rating along with our ability to design specific solutions for your application.

Manufactured as standard from stainless steel or custom built with any material specified, they come with high open face pressure resistance. The standard connectors are rated to 6000m WD and are designed for use in moulded, oil filled and PBOF assemblies in power, signal and electro-mechanical applications.

Common applications:

- ROV, Resident ROV & AUV
- Manned underwater vehicles
- Aquaculture
- Renewables
- Ocean science/research
- Dive / depressurisation systems

Key features:

- Up to 39 contacts
- Mixed contact sizing options
- Custom solutions (contact qty/size/type, glass to metal)
- Rated for 6000m WD mated and open face as standard, higher pressure available on application
- Oil filled (OF) available as standard, pressure balanced oil filled (PBOF) available for certain pin configurations (connector & bulkhead assemblies)
- Working voltage and current dependent on contact density and diameter.

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Underwater Connectivity

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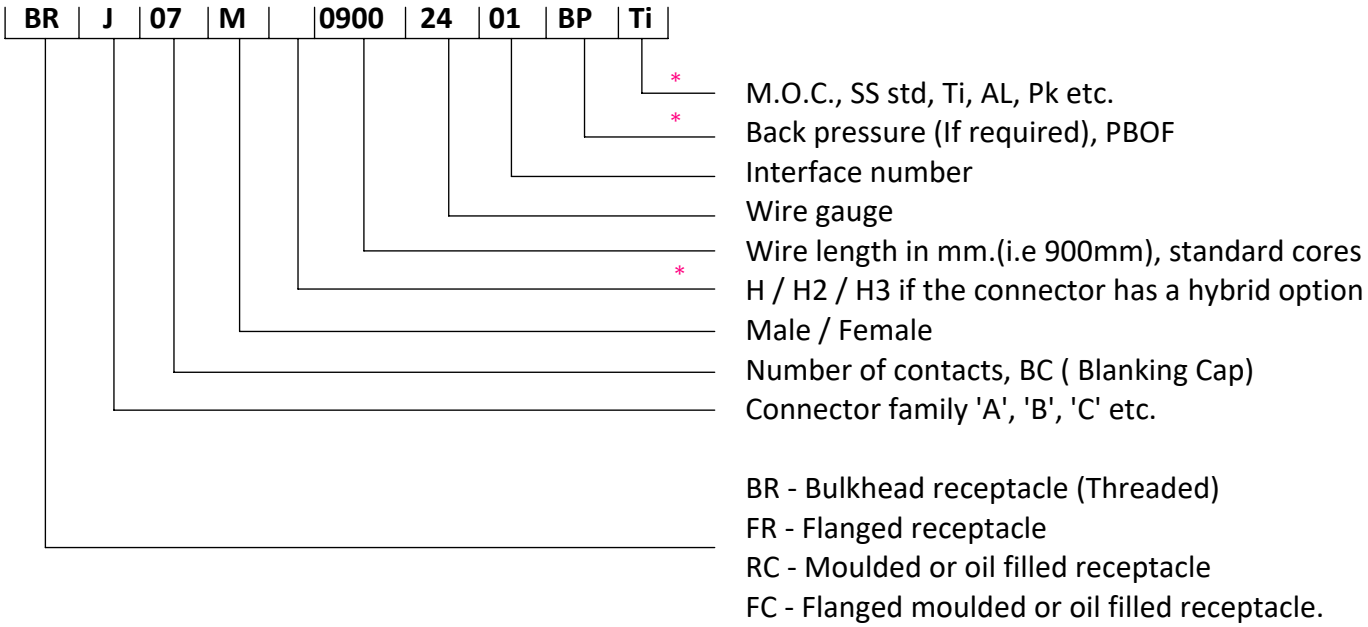
Part numbering:

Bulkhead example:



Notes:

1. For standard assemblies, the part number structure indicated * above is left blank.
2. Where custom wiring is required, Engineering will issue a BA**** (Bulkhead Assembly Part Number) to substitute for the wire length/gauge in the part number structure. For example, in the part nunber above 090024 would be replaced by BA followed by a four digit number to create a unique identifier.

Component	Material
Bulkhead Body	Stainless steel 316L standard
Contact Insert	Epoxy or Glass to Metal
Electrical contacts	Leaded Nickel Copper C(&or K41)
Plating detail	1um Acid Gold over 2.5 um Nickel Copper Flash
Retaining nut/washer (optional, order if req.)	Stainless steel
Flange retainers (optional, order if req.)	Stainless steel
'O' Rings	Nitrile NI70 or as specified by customer

Notes:

1. Contact CRE for any special-order materials required

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Underwater Connectivity

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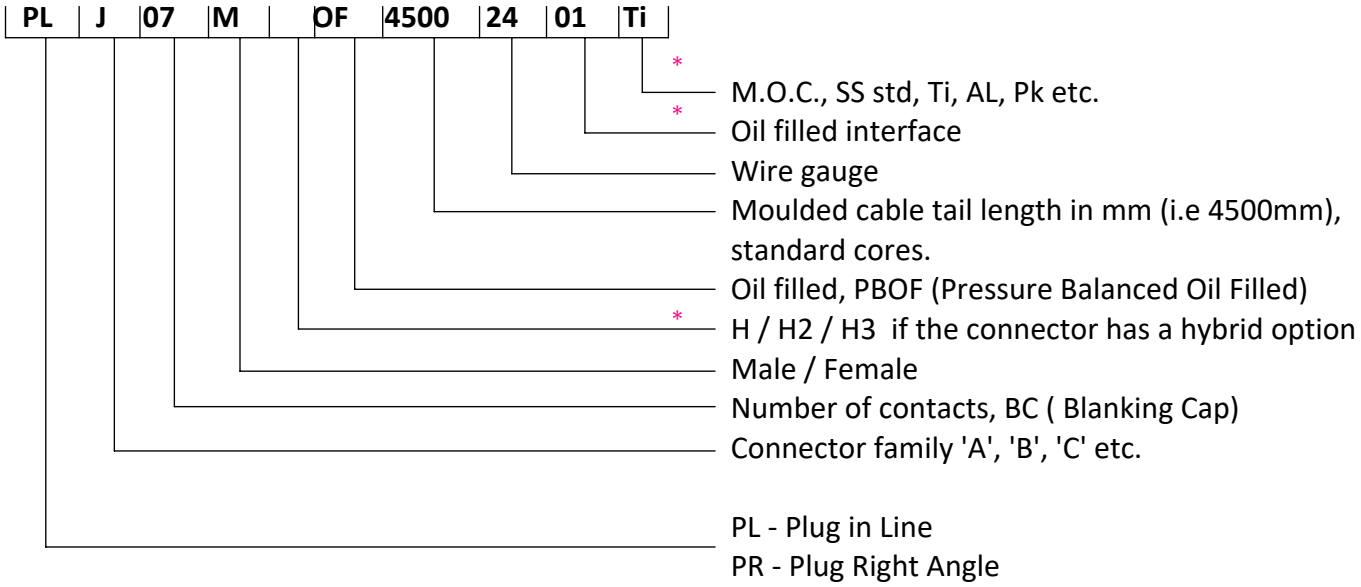
Subsea / Underwater / Marine

Part numbering:

Connector example:



Notes:

1. For standard moulded assemblies, the part number structure indicated * above is left blank.
2. Where custom wired moulded tail is required, Engineering will issue a CA**** (Connector Assembly Part Number) to substitute for the wire length/gauge in the part number structure. For example, in the part nunber above 090024 would be replaced by CA followed by a four digit number to create a unique identifier.

Component	Material
Connector Body	Stainless steel 316L standard
Locking Collar	Aluminium Nickel Bronze
Backing Washer	Acetal
Contact Insert	Epoxy or Glass to Metal
Electrical Contacts	Leaded Nickel Copper C(& or K41)
Plating detail	1um Acid Gold over 2.5 um Nickel Copper Flash
'O' Rings	Nitrile NI70 or as specified by customer

Notes:

1. Contact CRE for any special-order materials required

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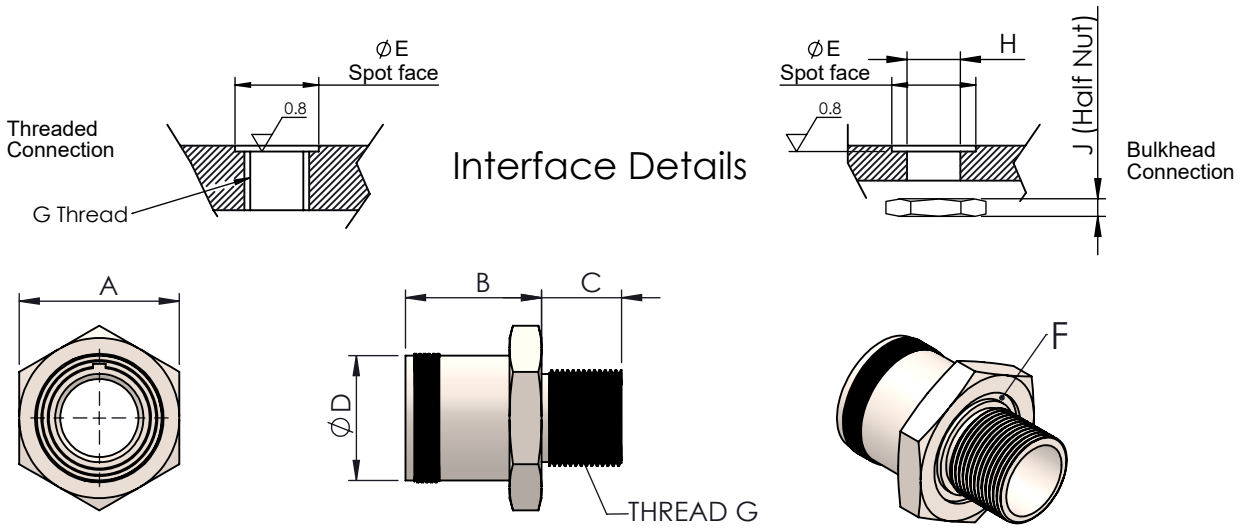
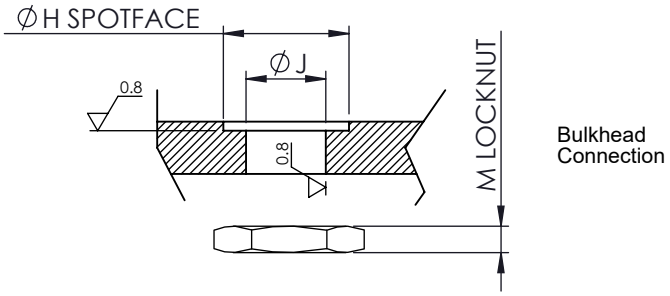
Underwater Connectivity

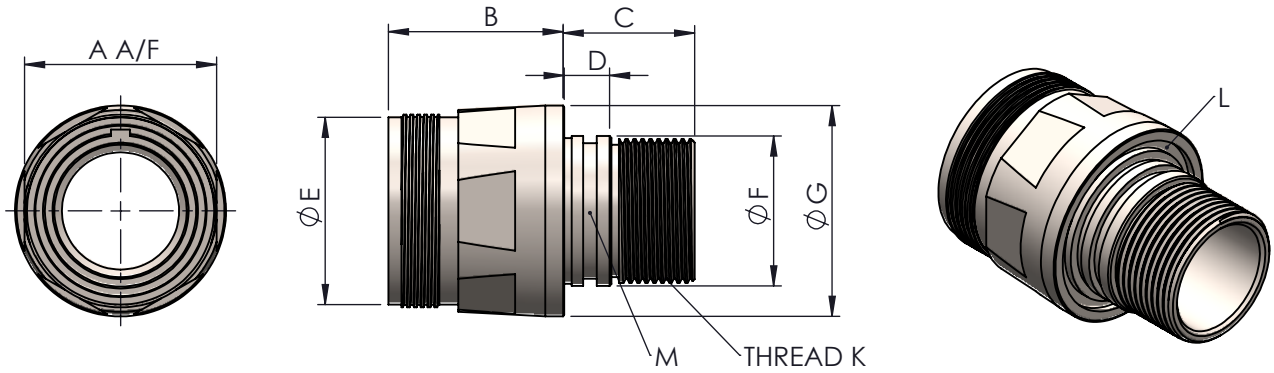
Reference Dimensions 'J' Connector

Threaded Bulkhead Connector Receptacle (BR)



A	B	C	D	E	F-'O'Ring	G	H	J	TYPE
50.8	50	12.7	49.5	60	BS130	1.5" - 12 UNF	40	5	03
63.5	54	31.75	49.5	76	BS130	1.5" - 12 UNF	40	5	01





A	B	C	D	E	F	G	H	J	K	L-'O'RING	M-'O'RING	M	TYPE
50.8	46.5	34.5	12.5	49.5	39.68	55.8	58	39.7/39.74	1.5"- 12 UNF	BS132	BS126	6	02
63.5	74	38	N/A	49.5	N/A	70	72	N/A	2.0"-12 UNF	BS138	N/A	6	04

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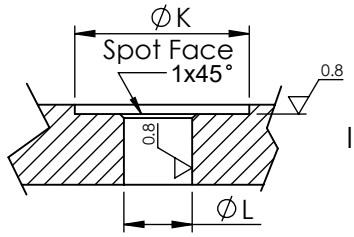
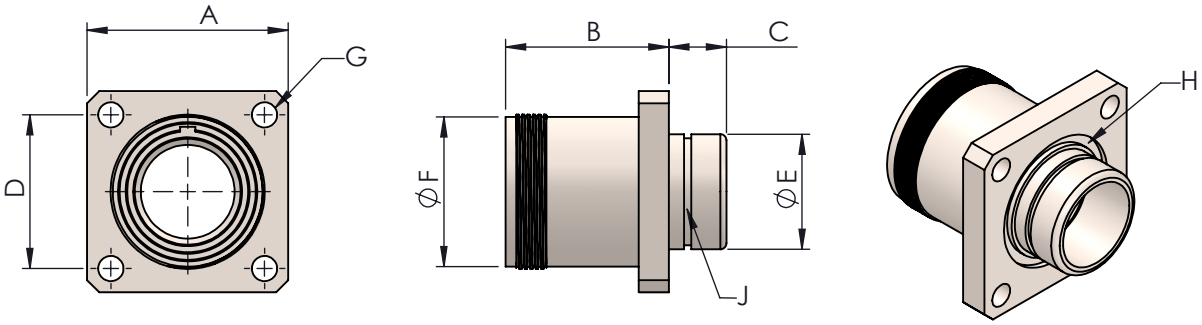
Underwater Connectivity

Reference Dimensions 'J' Connector

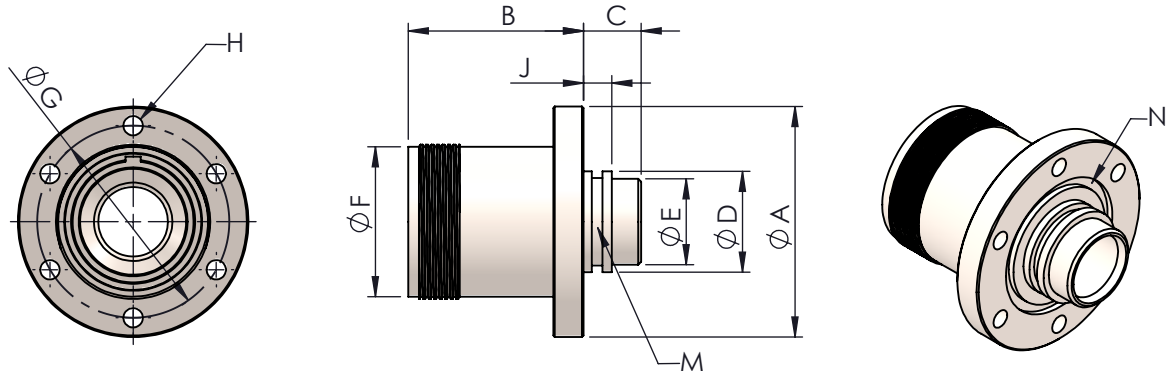
Flanged Bulkhead Connector Receptacle (FR)



INTERFACE DETAILS



A	B	C	D	E	F	G	H-'O'RING	J-'O'Ring	K	L	TYPE
66.5	54	19	50.8	38.05	49.5	8.35	BS130	BS028	92	38.1/38.15	01



A	B	C	D	E	F	G	H	J	K	L	M-'O'Ring	N-'O'RING	TYPE
76.2	58	19	33.3	28.5	49.5	63.5	6.4	9.4	80	33.25/33.29	BS122	BS131	02

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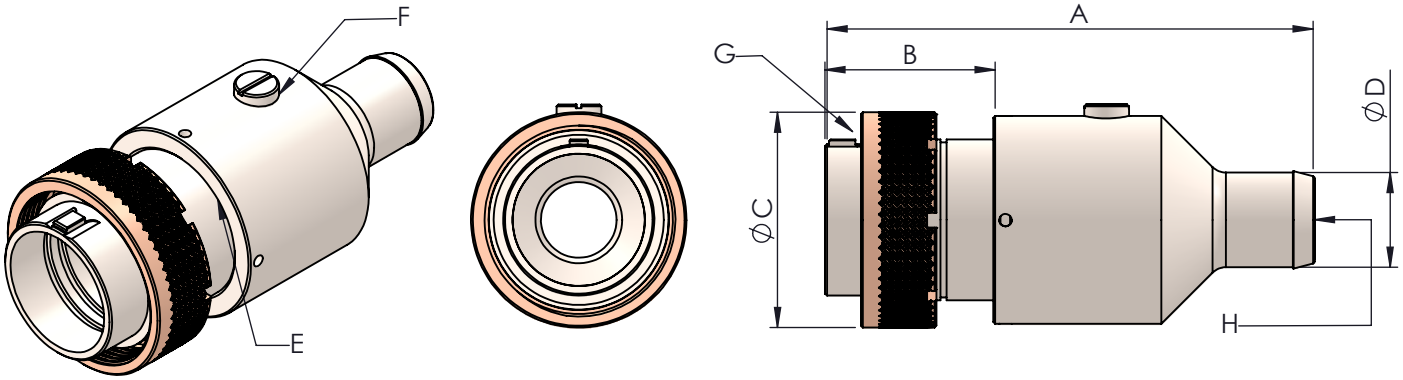
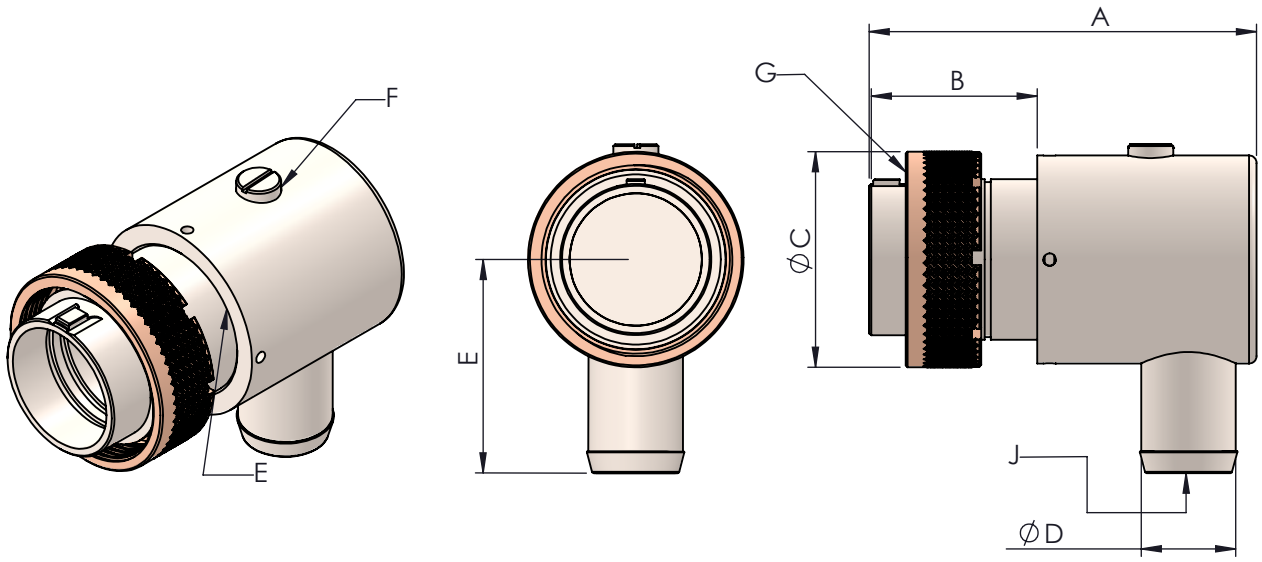
Reference Dimensions 'J' Connector



A	B	C	D	E-'O'Ring	F-'O'Ring	G-'O'Ring	BORE H	TYPE
129.5	44.5	57	25	BS030	6 x 1.5	BS030	20	01



A	B	C	D	E	F-'O'Ring	G-'O'Ring	H-'O'Ring	BORE J	TYPE
102.5	44.5	57	25	56.5	BS030	BS030	6 x 1.5	20	01

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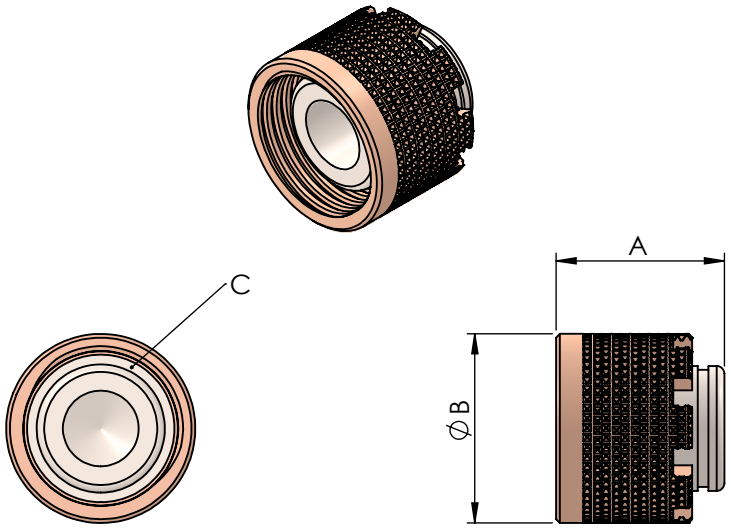
Underwater Connectivity

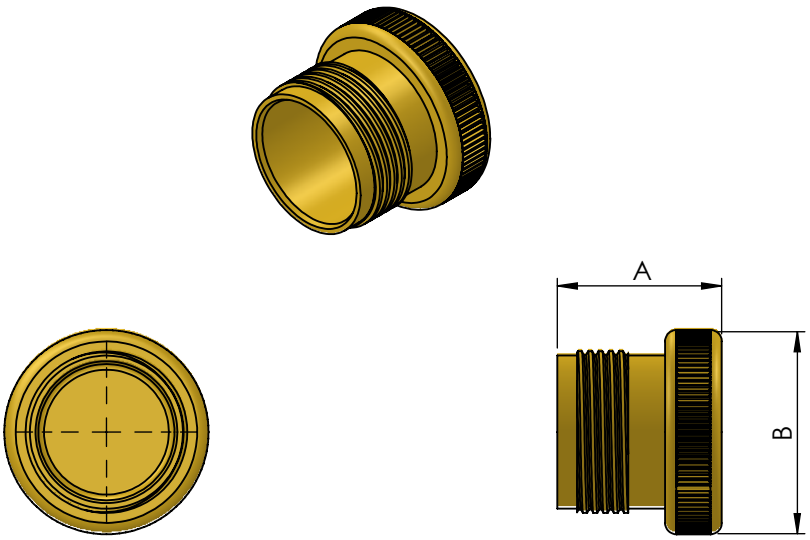
Reference Dimensions 'J' Connector

Bulkhead Blanking Plug - PLJBC



A	B	C-'O'Ring
24.5	57	BS030

Cable Connector Blanking Plug - BRJBC



A	B
32	60

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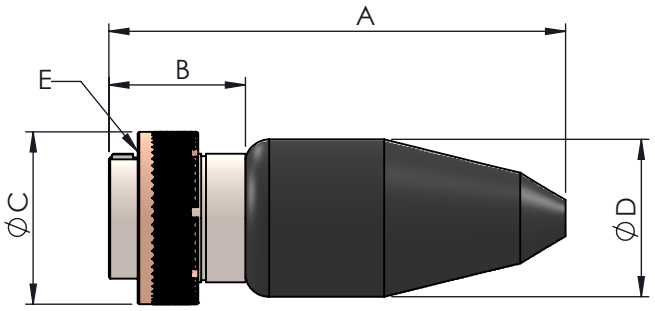
Reference Dimensions 'J' Connector

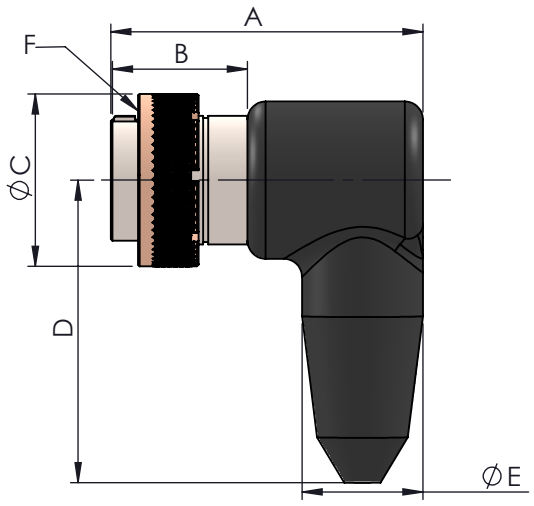
Moulded Cable Connector Receptacle-Straight



PLJ

A	B	C	D	E-'O'Ring	TYPE
150	45	57	52	BS030	01

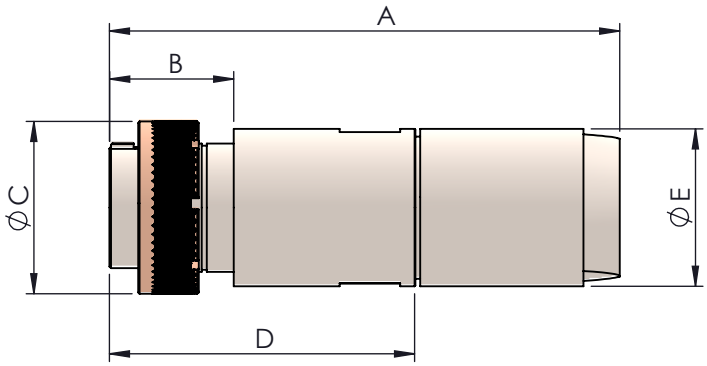
Moulded Cable Connector Receptacle-90°



PRJ

A	B	C	D	E	F-'O'Ring	TYPE
105	45	57	97	40	BS030	01

Field Installable Connector



FIJ

A	B	C	D	E
170.5	41	57	101	52

Mould Sizes Are Indicative

Note: Step files for design purposes available from engineering@CRE-marine.com

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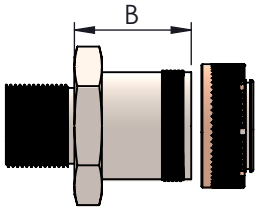
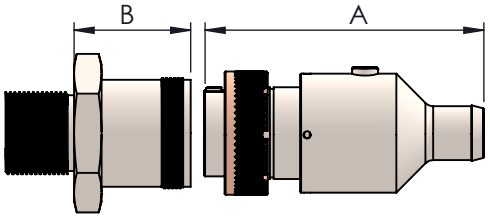
Underwater Connectivity

Assembled Dimensions 'J' Connector



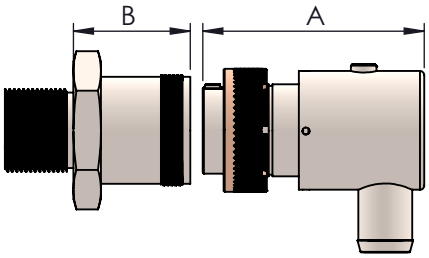
PLJBC

Assembled Dimension = 'B' + 11mm



PLJOF01

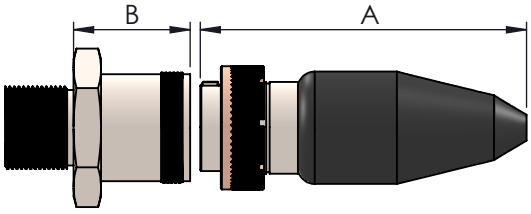
Assembled Dimension = 'B' + 'A' - 23mm



PRJOF01

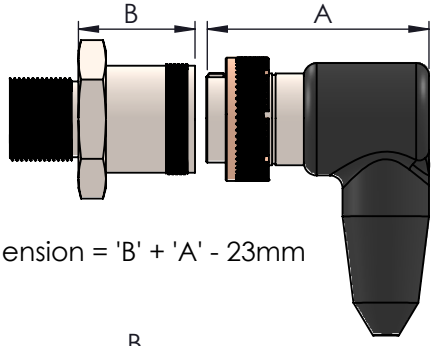
Assembled Dimension = 'B' + 'A' - 23mm

THREADED BULKHEADS
BRJ01 - BRJ04



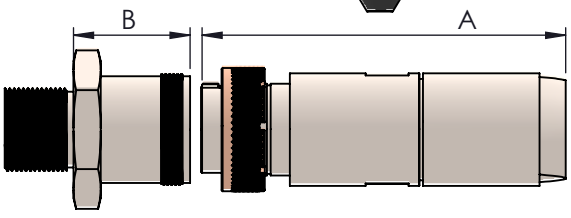
PLJ01

Assembled Dimension = 'B' + 'A' - 23mm



PRJ01

Assembled Dimension = 'B' + 'A' - 23mm



FIJ

Assembled Dimension = 'B' + 'A' - 23mm

EXAMPLE: BRJ01 'B' = 54.0, PLJOF01 'A' = 129.5
THEREFORE ASSEMBLED DIMENSION IS 54.0 + 129.5 - 23 = 160.5

Mould Sizes Are Indicative

Note: Step files for design purposes available from engineering@CRE-marine.com

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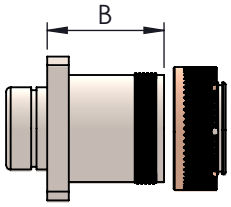
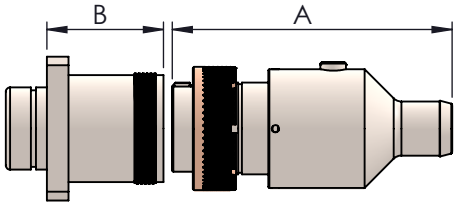
Underwater Connectivity

Assembled Dimensions 'J' Connector



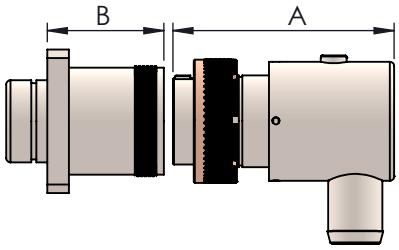
PLJBC

Assembled Dimension = 'B' + 11mm



PLJOF01

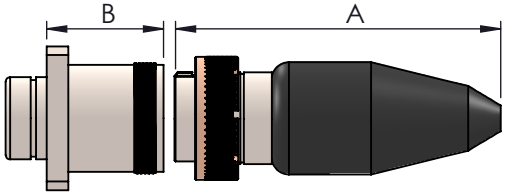
Assembled Dimension = 'B' + 'A' - 23mm



PRJOF01

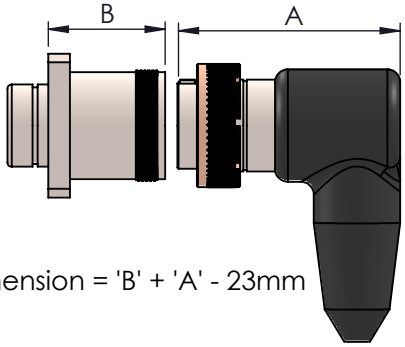
Assembled Dimension = 'B' + 'A' - 23mm

FLANGED BULKHEADS
FRJ01 - FRJ02



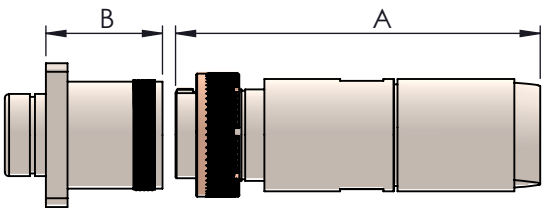
PLJ01

Assembled Dimension = 'B' + 'A' - 23mm



PRJ01

Assembled Dimension = 'B' + 'A' - 23mm



FIJ

Assembled Dimension = 'B' + 'A' - 23mm

EXAMPLE: FRJ01 'B' = 54.0, PLJOF01 'A' = 129.5
THEREFORE ASSEMBLED DIMENSION IS 54.0 + 129.5 - 23 = 160.5

Mould Sizes Are Indicative

Note: Step files for design purposes available from engineering@CRE-marine.com

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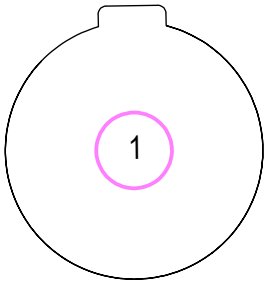
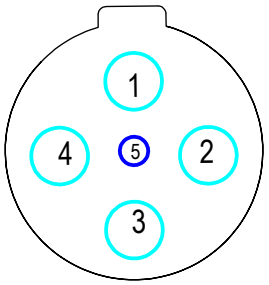
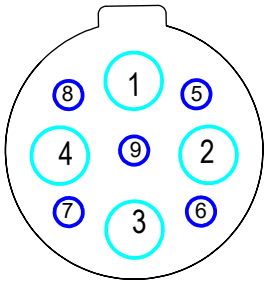
Pin Face View



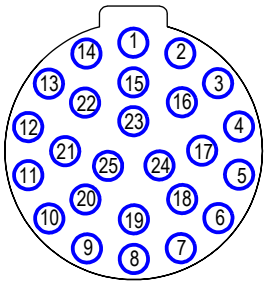
1 WAY
600 VDC



5 WAY
600 VDC

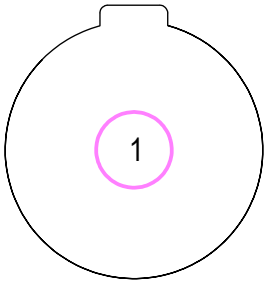


9 WAY
600 VDC

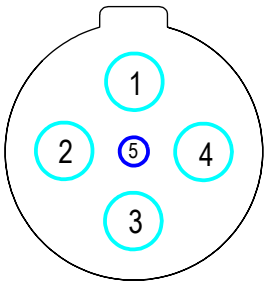


25 WAY
600 VDC

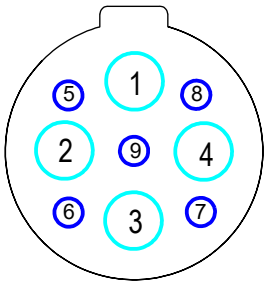
Socket Face View



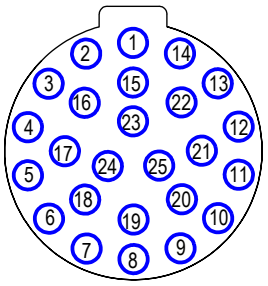
1 WAY
600 VDC



5 WAY
600 VDC



9 WAY
600 VDC



25 WAY
600 VDC

∅1.56 Pin

∅6.5 Pin
(4 AWG)

∅8.0 Pin
(0 AWG)

For current carrying capacity and wire recommendations see page 14

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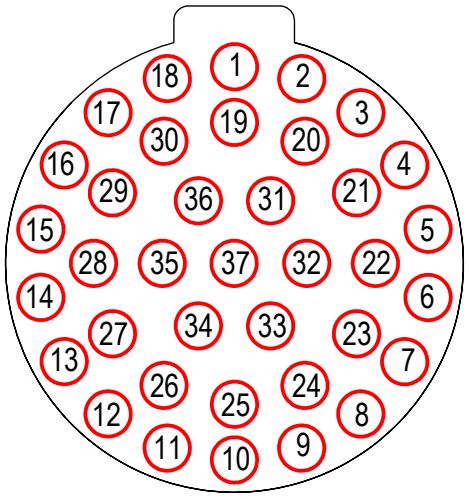
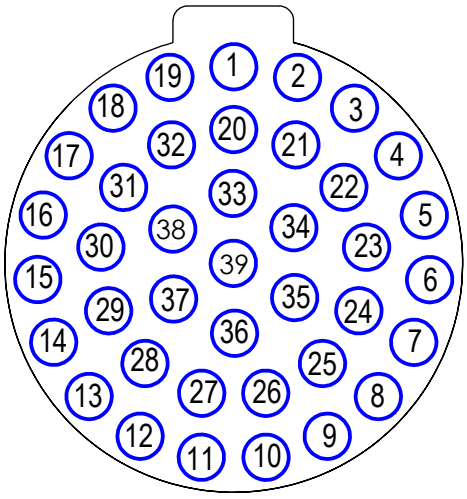
Pin Face View

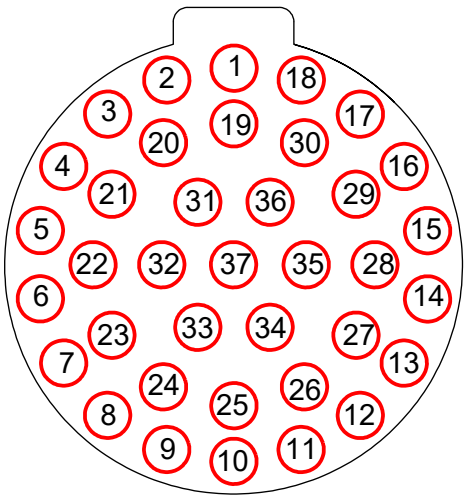


37 WAY
600 VDC

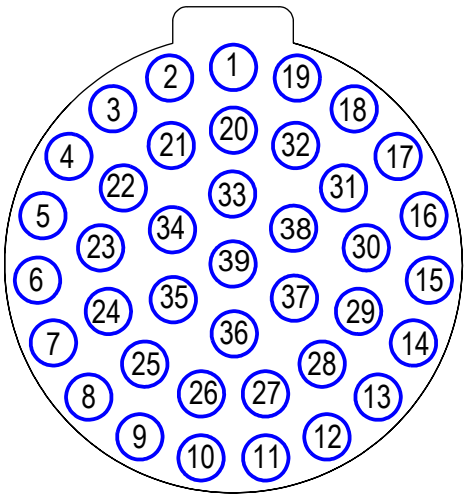


39 WAY
600 VDC

Socket Face View



37 WAY
600 VDC



39 WAY
600 VDC

∅2.0 Pin
(Barrel Spring)

∅1.56 Pin

For current carrying capacity and wire recommendations see page 14

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Underwater Connectivity

Current Capacity and Wire Recommendations

- The wire options for bulkheads are governed by the through bore of the bulkhead body and the dimensions of the solder bucket on the contact.
- Heat, caused by an electrical current flowing through a conductor will determine the amount of current that the wire will handle.
- The current rating follows industry standards for a single wire in free air at 30 deg. C with derating for bundled wires.
- The table below shows the current required to raise the temperature of a single insulated conductor to the limits of its insulation temperature.

Contact dia.	**1.56**	**2.0**	**6.5**	**8.0**
Wire size	16 awg	12 awg	4 awg	0 awg
Current	26 amps	50 amps	170 amps	320 amps
Contact rating based on PTFE type C cable				

Derating Factors for Bundled Conductors	
Bundle #	Derating Factor (x Amps)
2 - 5	0.8
6 - 15	0.7
16 - 30	0.5

Recommended torque for threaded intefaces manufactured in 316L Stainless Steel assembled into metallic housings.

Thread	**Torque N/m (Lubricated)**	**Torque Inch Pounds (Lubricated)**
11/2-12 UNF	164	1450
2.0-12 UNF	424	3750

The table above shows the recommended tightening torque values for threaded bulkhead interfaces into metallic housings.
We recommend the use of a small quantity of anti-seize lubricant such as Copaslip applied to the pin thread as a lubricant to aid the make-up process.
Should you require any further information or advice please contact CRE direct on sales@cre-marine.com