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Underwater Connectivity

‘W’ Electrical Connector Subsea / Underwater / Marine

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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, 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 7 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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Part numbering:

Bulkhead example:

BR	W	07	M		0900	24	01	BP	Ti	
									*	M.O.C., SS std, Ti, AL, Pk etc.
									*	Back pressure (If required), PBOF
										Interface number
										Wire gauge
									*	Wire length in mm.(i.e 900mm), standard cores
										H / H2 / H3 if the connector has a hybrid option
										Male / Female
										Number of contacts, BC (Blanking Cap)
										Connector family 'A', 'B', 'C' etc.

BR - Bulkhead receptacle (Threaded)
FR - Flanged receptacle
RC - Moulded or oil filled receptacle
FC - Flanged moulded or oil filled receptacle.

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 number 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

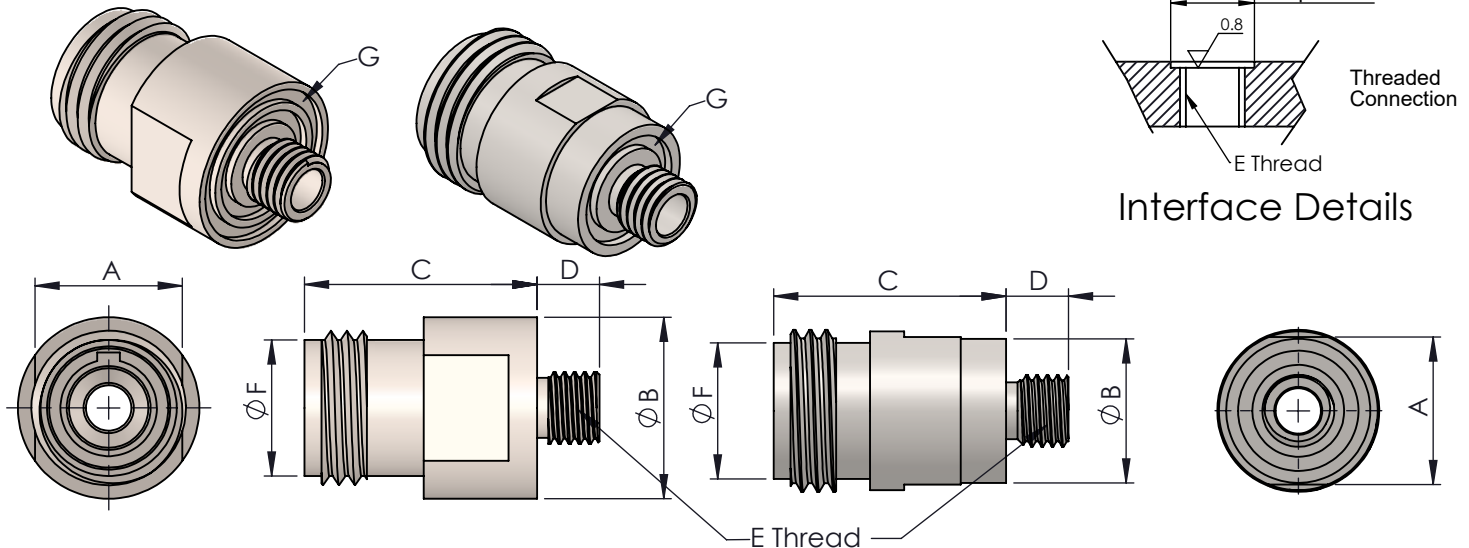
Notes:

1. Contact CRE for any special-order materials required

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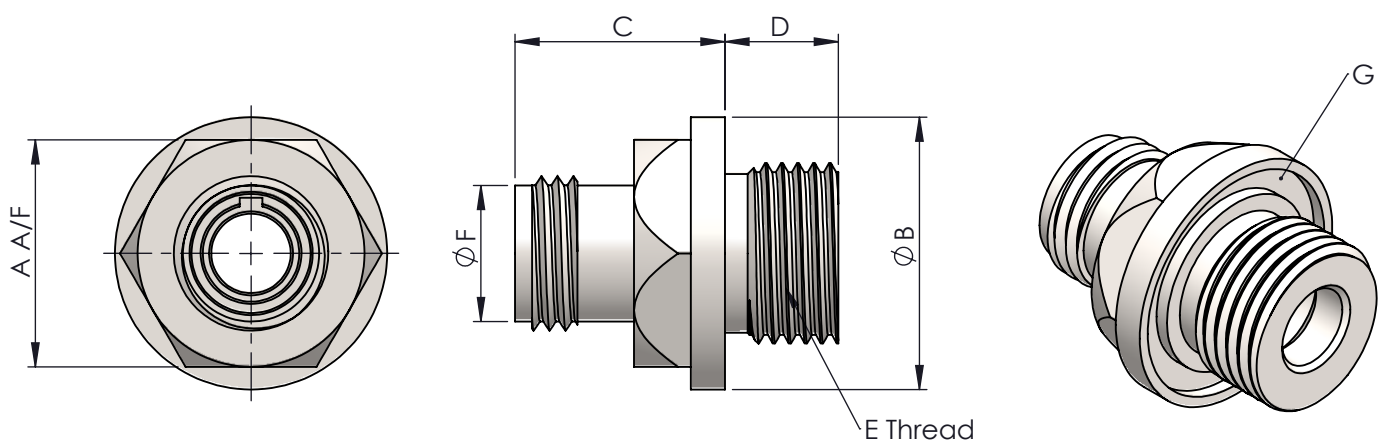
Reference Dimensions 'W' Connector

Bulkhead Connector Receptacle (BR)



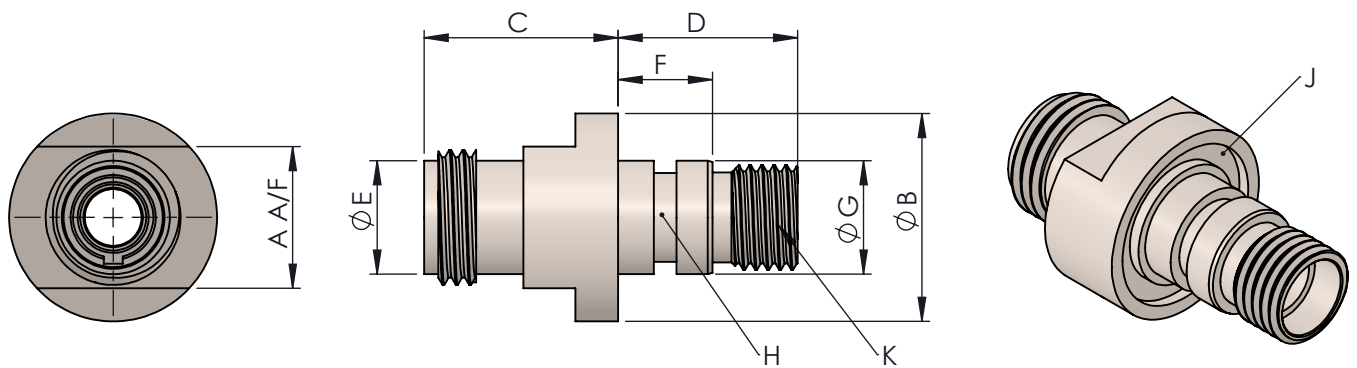
A	B	C	D	E	F	G-'O'Ring	H	TYPE
13	12.7	20.5	5.5	1/4-28 UNF	12	8 x 1	14	06
12.5	14	20.5	5.5	1/4-28 UNF	12	10.5 ; 7x 1	15	02
13	16	20.5	5.5	1/4-28 UNF	12	12 ; 8 x 1	17	01
12.5	14	20.5	5.5	1/8" BSPP	12	10 x 1	15	05
15	20	18.5	10	7/16"-20 UNF	12	16 X 1 ; 12 X 1	21	03
15	20	18.5	19	7/16"-20 UNF	12	16 X 1 ; 12 X 1	21	09
15	20	18.5	10	1/4" BSPP	12	14 x 1.5	21	04

Bulkhead Connector Receptacle (BR)



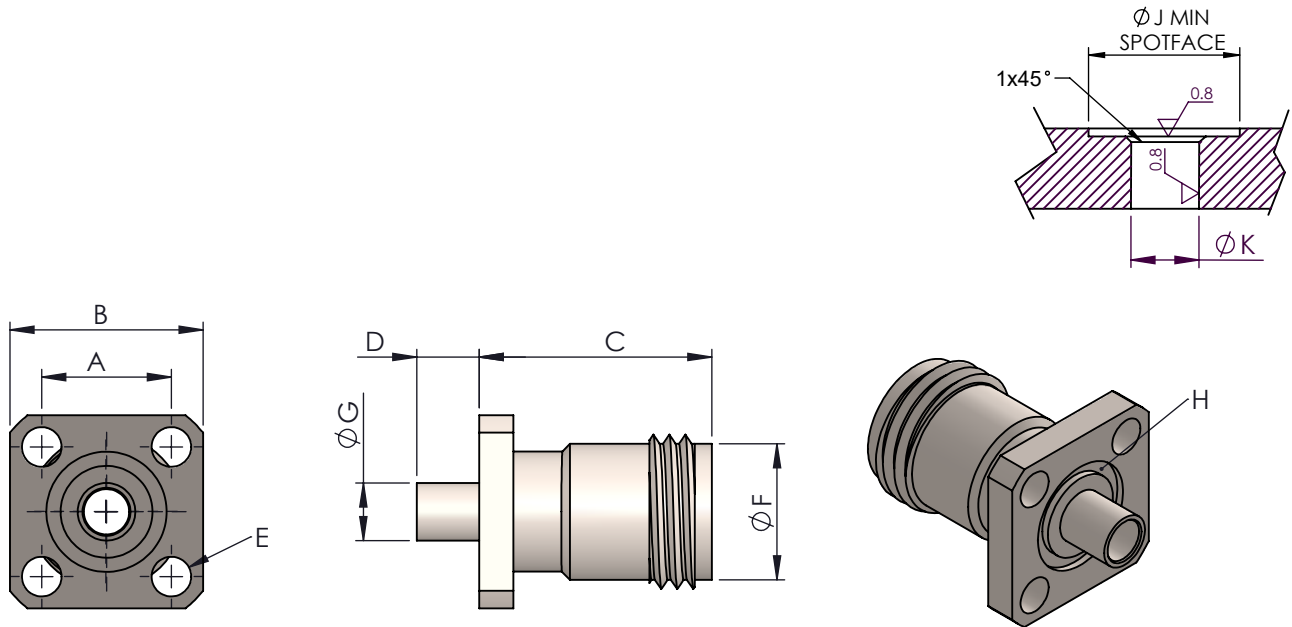
A	B	C	D	E	F	G-'O' Ring	H	TYPE
15	23.5	18.5	10	9/16"-18 UNF	12	19 x 1 ; 17 x 1	25	10
20	24	18.5	10	5/8"-18 UNF	12	BS017	25	07

Bulkhead Connector Receptacle (BR)

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Reference Dimensions 'W' Connector

Flanged Bulkhead Connector Receptacle (FR)

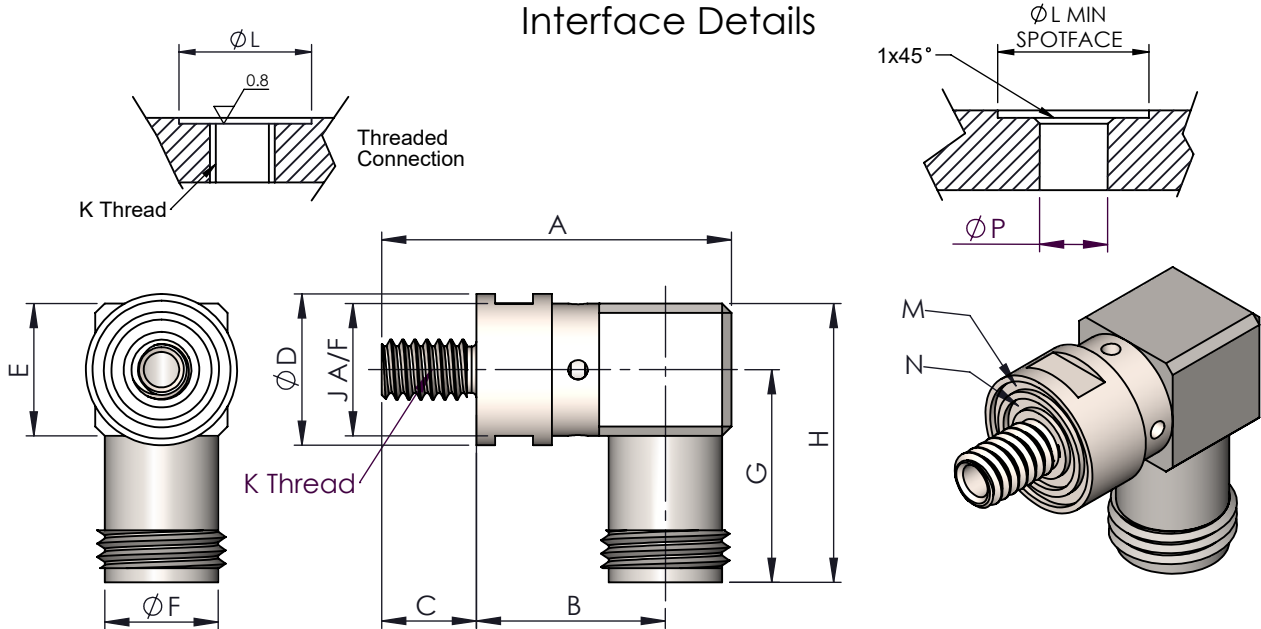


A	B	C	D	E	F	G	H-'O'Ring	J	K	TYPE
11.4	17	20.5	5.5	3.5	12	5.08	8 x 1	24	5.15/5.25	01

Reference Dimensions 'W' Connector

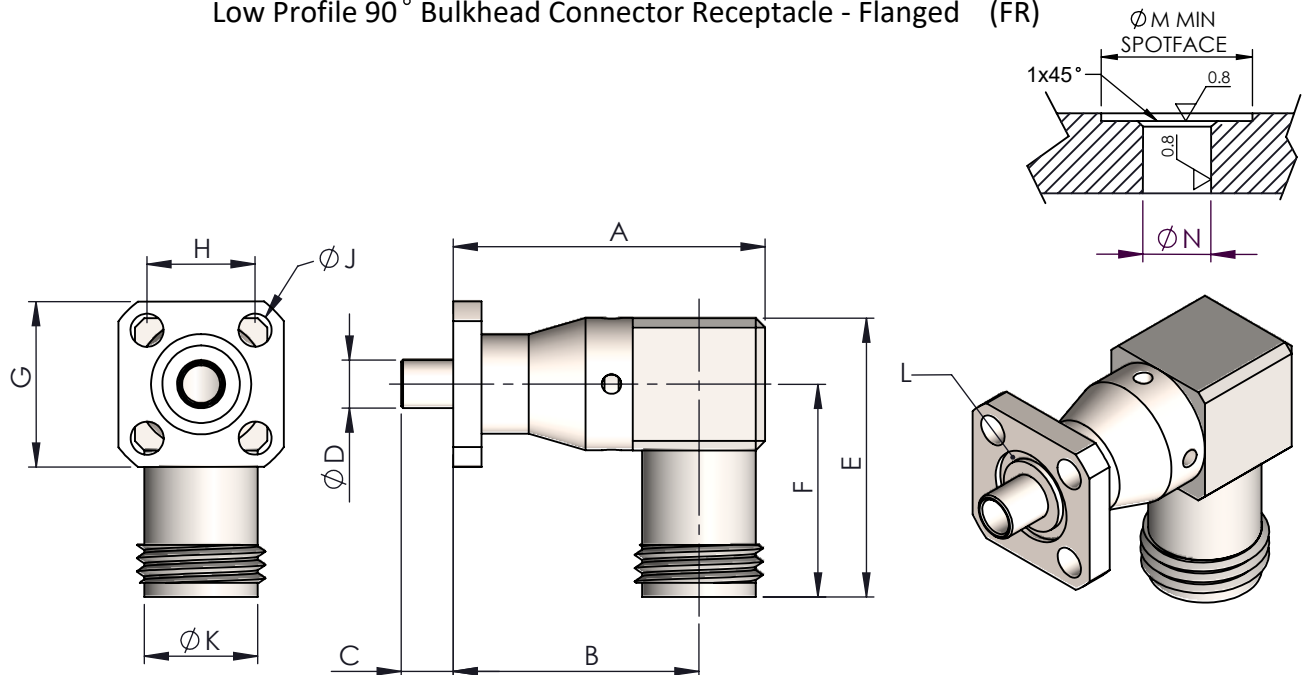
Low Profile 90° Bulkhead Connector Receptacle - Threaded (BR)

Interface Details



A	B	C	D	E	F	G	H	J	K	L	M-'O' Ring	N-'O' Ring	P	TYPE
37	20	10	14	14	12	22.5	29.5	12	1/4"-28 UNF	16	10 x 1	7 x 1	7.5	LPT02
37	20	10	16	14	12	22.5	29.5	14	1/4"-28 UNF	18	12 x 1	8 x 1	7.5	LPT01
37	20	10	20	14	12	22.5	29.5	17	7/16"-20 UNF	22	16 x 1	12 x 1	12.5	LPT03
58	20	31	20	14	12	22.5	29.5	17	7/16"-20 UNF	22	16 x 1	12 x 1	12.5	LPT04

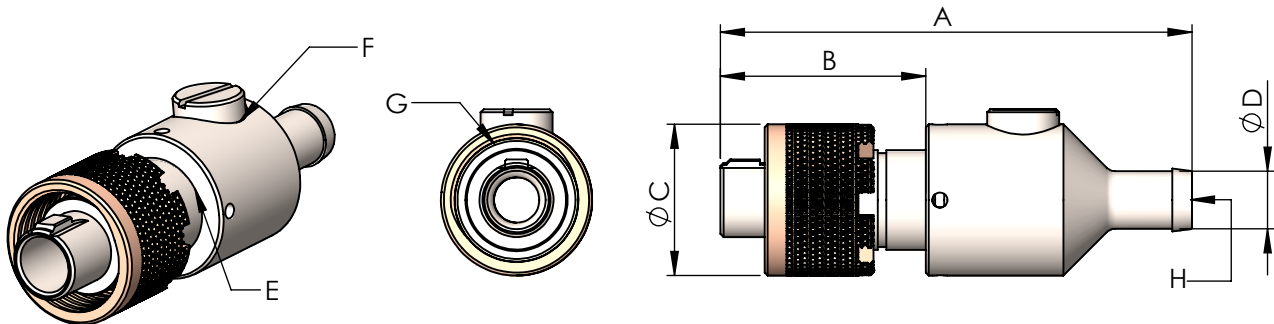
Low Profile 90° Bulkhead Connector Receptacle - Flanged (FR)



A	B	C	D	E	F	H	J	K	L-'O'Ring	M	N	TYPE
33	26	5.5	5.08	29.5	22.5	11.4	3.5	12	8 x 1	24	5.15/5.25	LFP01

Reference Dimensions 'W' Connector

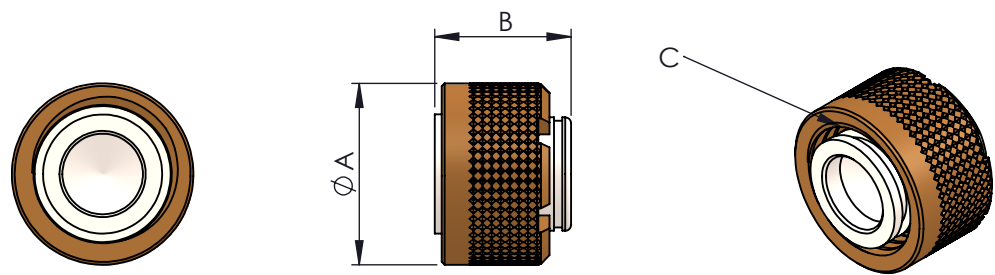
Backshell Cable Connector Receptacle (PL)



A	B	C	D	E-O'Ring	F-O'Ring	G-O'Ring	BORE H	TYPE
48.75	16.75	16	9.5	4 x 1	10 x 1	8.5 x 1	7.5	01
57	16.75	16	12.5	4 x 1	10 x 1	8.5 x 1	8.5	02

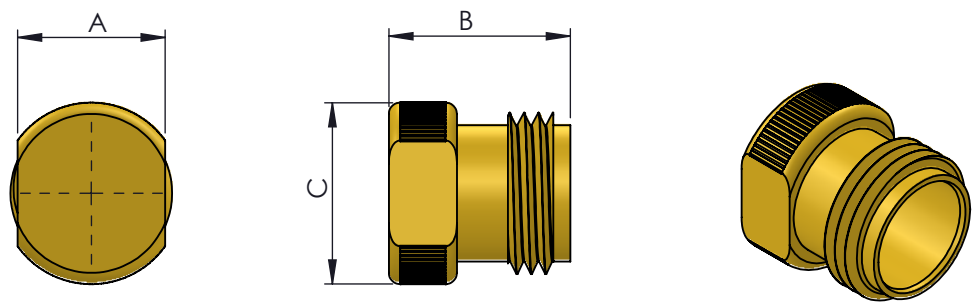
Reference Dimensions 'W' Connector

Bulkhead Blanking Plug - PLWBC



A	B	C-'O'Ring
16	12	8.5 x 1

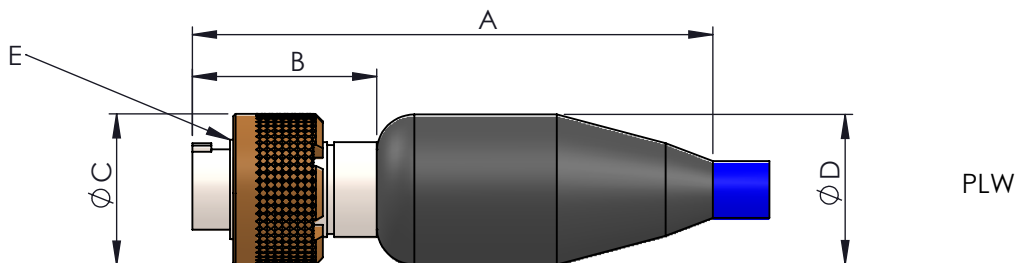
Cable Connector Blanking Plug - BRWBC



A	B	C
13	16	16

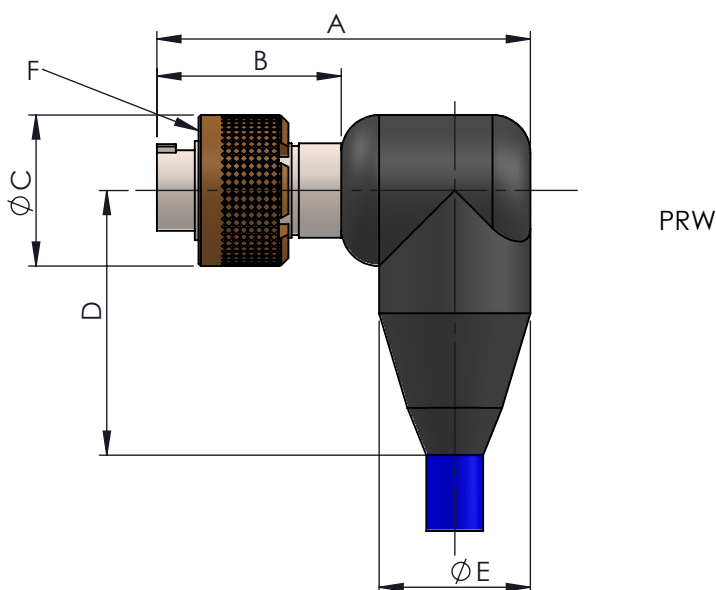
Reference Dimensions 'W' Connector

Moulded Cable Connector Receptacle-Straight



A	B	C	D	E-'O'Ring	TYPE
56	19.5	16	16	8.5 x 1	01

Moulded Cable Connector Receptacle-90°

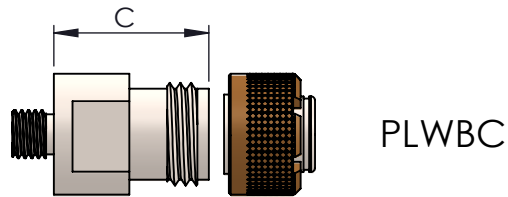


A	B	C	D	E	F-'O'Ring	TYPE
39.5	19.5	16	28	16	8.5 x 1	01

Mould Sizes Are Indicative

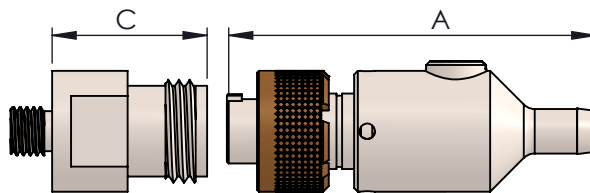
Note: Step files for design purposes available from engineering@CRE-marine.com

Assembled Dimensions 'W' Connector



PLWBC

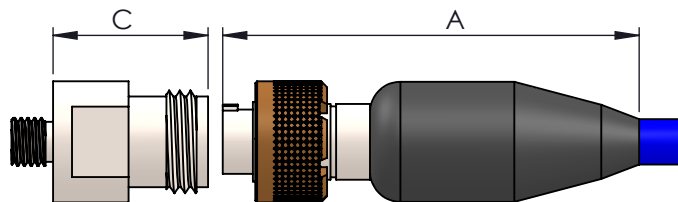
Assembled Dimension = 'C' + 8.5mm



PLWOF01
PLWOF02

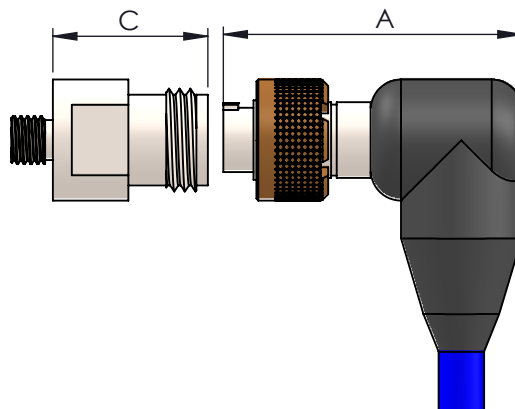
Assembled Dimension = 'C' + 'A' - 9.5mm

THREADED BULKHEADS
BRW01 - BRW11



PLW01

Assembled Dimension = 'C' + 'A' - 9.5mm



PRW01

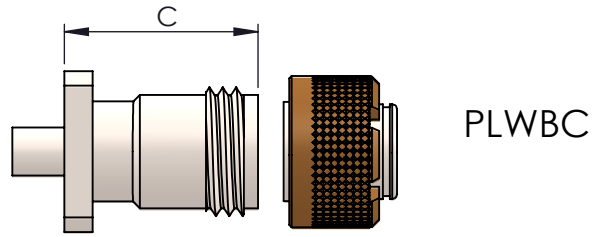
Assembled Dimension = 'C' + 'A' - 9.5mm

EXAMPLE: BRW01 'C' = 20.5, PLWOF01 'A' = 56
THEREFORE ASSEMBLED DIMENSION IS $20.5 + 56 - 9.5 = 67$

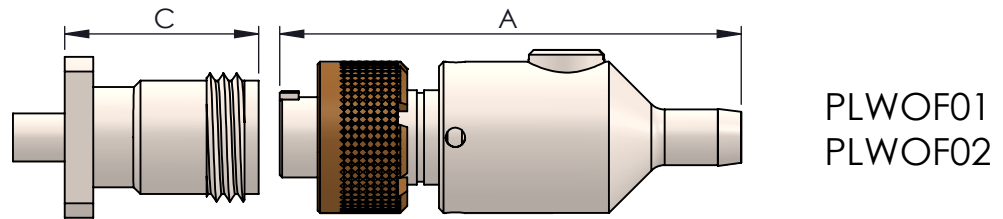
Mould Sizes Are Indicative

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

Assembled Dimensions 'W' Connector

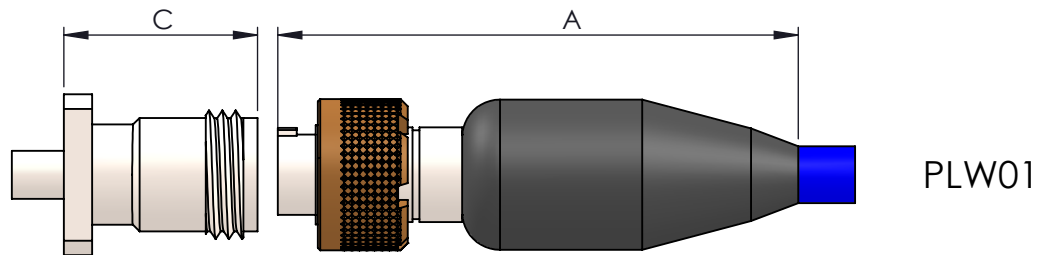


Assembled Dimension = 'C' + 6.5mm

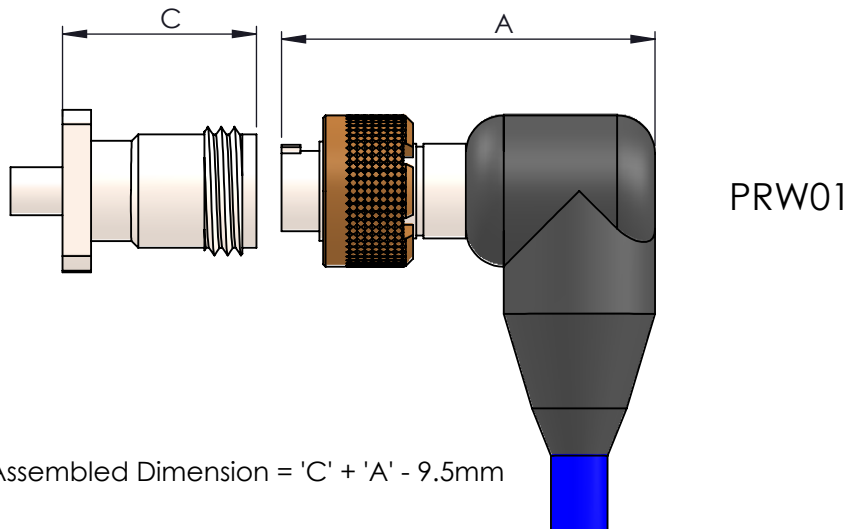


Assembled Dimension = 'C' + 'A' - 9.5mm

FLANGED BULKHEAD
FRW01



Assembled Dimension = 'C' + 'A' - 9.5mm



Assembled Dimension = 'C' + 'A' - 9.5mm

EXAMPLE: FRW01 'C' = 18.5, PLWOF01 'A' = 56
THEREFORE ASSEMBLED DIMENSION IS $18.5 + 56 - 9.5 = 65$

Mould Sizes Are Indicative

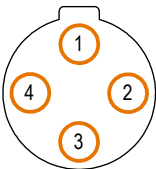
Note: Step files for design purposes available from engineering@CRE-marine.com



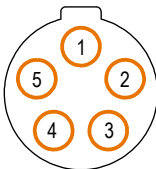
Pin Face View



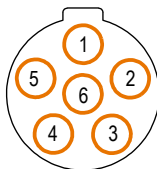
3 WAY
600 VDC



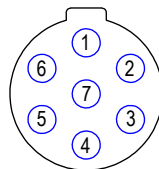
4 WAY
600 VDC



5 WAY
600 VDC

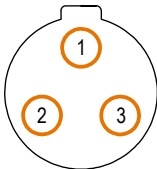


6 WAY
600 VDC

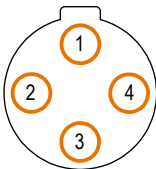


7 WAY
600 VDC

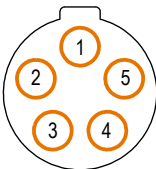
Socket Face View



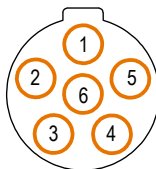
3 WAY
600 VDC



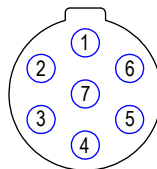
4 WAY
600 VDC



5 WAY
600 VDC



6 WAY
600 VDC



7 WAY
600 VDC

○ 0.75 mm Pin ○ 1 mm Pin

For current carrying capacity and wire recommendations see page 15

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.	0.75	1.0
Wire size	24 awg	22 awg
Current	8 amps	11 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 interfaces manufactured in 316L Stainless Steel assembled into metallic housings.

Thread	Torque N/m (Lubricated)	Torque Inch Pounds (Lubricated)
1/4-28 UNF	1-2	10-15
1/8-28 BSP	3-4	30-35
1/4-19 BSP	4-5	35-45
7/16-20 UNF	3-4	30-35
5/8-18 UNF	5-7	50-55

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