



## CVB-EX

# Mil-C-5015 reverse bayonet ATEX Connectors



### Standards

#### Certification

94/9/EC (ATEX) Directive

#### According to European Standards

EN 60079-0

EN 60079-1

EN 61241-0

EN 61241-1

#### Protection degree

IP66/67 EN60529

Certificate **ICEPI 08 ATEX 03C002X**



I M2 Ex d I



II 2G Ex d IIC



II 2GD Ex d IIC tD A21 IP66/IP67

### Application area

Suitable for **surface applications**

Group II Zones 1, 21, 2 and 22 (Gas and Dust)

Gas Group **IIC**

Ambient temperature **-40°C/+120°C**

Suitable for **underground applications**

Group I category M2

Can be installed on devices and enclosures designed with following type of protection

Explosion proof

**Ex d – EN60079-1**

Increased safety

**Ex e – EN60079-7**

Intrinsic safety

**Ex i – EN60079-11**

Pressurization

**Ex p – EN60079-2**

Messrs.  
**DYNAMIN S.r.l.**  
P.za Venini, 8  
VITTUONE (MI)

To the att.n of Mr. Carlo Grassi

Piacenza, 10.06.2008

**SUBJECT:** Verification of the conformity to the directive **94/9/EC** of Your **Connectors** series **CVB-Ex** and **CVBM-Ex**, protected by "flameproof enclosure" and by "enclosure tD".

With reference to Your request, we confirm You the conformity of the above mentioned **connectors** to the directive 94/9/EC (ATEX), with the following characteristics:

**Group I cat. M2 - Group II cat. 2GD**  
**Ex d I - Ex d IIC, Ex tD A21 IP66/67**

Reference standards:

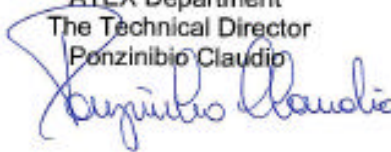
**EN 60079-0 EN 60079-1 EN 61241-0 EN EN 61241-1**

The relevant EC-Type Examination Certificate will bear the following number:

**ICEPI 08 ATEX 03C002X**

Regards

**ICEPI S.p.A.**  
ATEX Department  
The Technical Director  
Ponzinibio Claudio

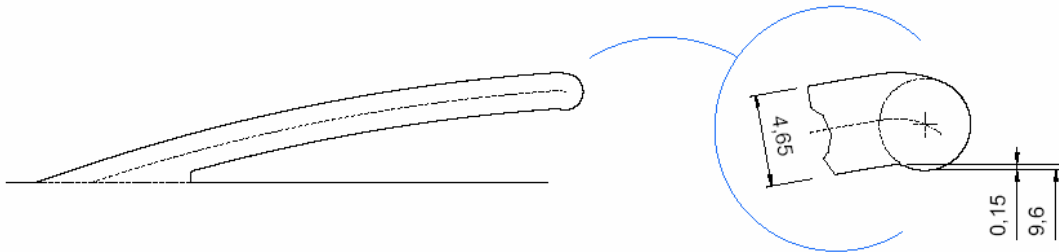


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## Reverse bayonet coupling system

The reverse bayonet connectors are derived from the threaded Mil-C-5015 series to provide faster coupling and anti-vibration resistance.

In this series the coupling system is composed by 3 bayonet ramps (see drawing below) machined on the external side of the receptacle connector and 3 stainless steel studs mounted inside the plug connector's coupling nut.



### Characteristic

To mate connectors rotate coupling-nut 120° only  
Audible, visible and tactile mating.

The bayonet ramps are resistant to damage

### Advantages against the thread coupling

*Fast coupling and uncoupling*

*Security of coupling is guaranteed and consequently improved reliability*

*Higher number of mating cycles*

### General Characteristics

– Working Temperature:	-40°C / +135°C
– Protection degree:	IP66/IP67 according to EN 60529
– Shell material:	Hard anodized aluminium alloy or nickel plated brass
– Safety lock:	Stainless steel hexagon socket screw
– Available arrangements:	Wide range according to Mil-C-5015
– Shell sizes:	from 16S to 40
– Contacts quantity:	from 2 to 150
– Contacts termination:	Crimp

## Contacts rating

		Service									
		A		D		E		I		L	W
		500 Vdc	700 Vac	1250 Vdc	900 Vac	1750 Vdc	1250 Vac	200 Vdc	200 Vac	48 V max	5V
Contact Size	Pin dia. mm.	Max. operating current (A)									
20	1	3								5	1
18	1.42	6									
16S	1.58	10									
16	1.58	10									
12	2.38	20									
8	3.6	40									
4	5.7	63									
0	9.05	125									

Determination of max admissible current (Amps) for each contact size depends on connector's ambient temperature and temperature class for **mounting on Ex d equipments**.

Amb.Temp.		= 60° C	70°C		90°C		110°C	120°C
Temp.Class		T6	T6	T5	T5	T4	T4	T4
Contact size	20	3	1,5	3	1,5	3	1,5	0,75
	18	6	3	6	3	6	3	1,5
	16S	10	5	10	5	10	5	2,5
	16	10	5	10	5	10	5	2,5
	12	20	10	20	10	20	10	5
	8	40	20	40	20	40	20	10
	4	63	31,5	63	31,5	63	31,5	15,5
	0	125	62,5	125	62,5	125	62,5	31

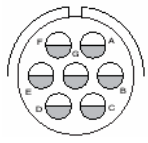
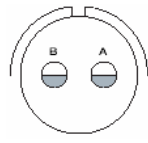
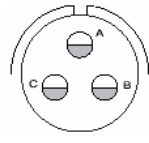
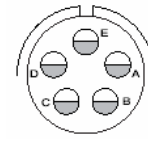
Determination of max admissible current (Amps) for each contact size depends on connector's ambient temperature and temperature class for **mounting on Ex e / Ex p equipments**.

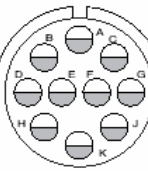
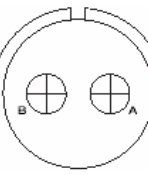
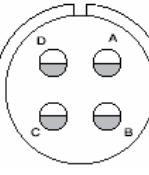
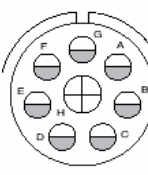
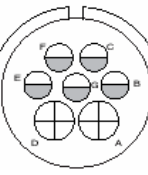
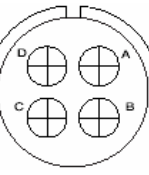
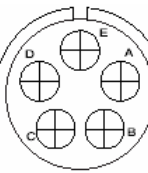
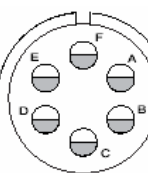
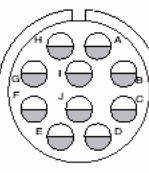
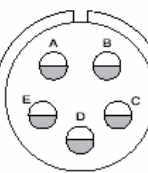
Amb.Temp.		40°C		60°C		80°C		90°C		110° C	120° C
Temp.Class		T6	T5	T6	T4	T5	T4	T5	T4	T4	T4
Contact size	20	1,5	3	1,5	3	1,5	3	0,75	1,5	1,5	0,75
	18	3	6	3	6	3	6	1,5	3	3	1,5
	16S	5	10	5	10	5	10	2,5	5	5	2,5
	16	5	10	5	10	5	10	2,5	5	5	2,5
	12	10	20	10	20	10	20	5	10	10	5
	8	20	40	20	40	20	40	10	20	20	10
	4	31,5	63	31,5	63	31,5	63	15,5	31,5	31,5	15,5
	0	62,5	125	62,5	125	62,5	125	31	62,5	62,5	31

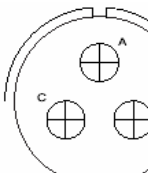
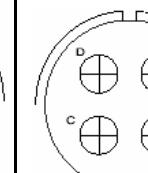
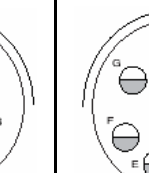
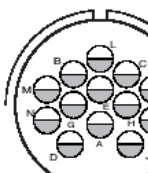
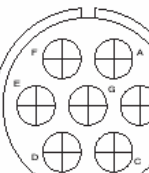
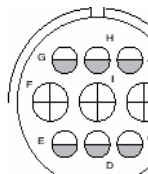
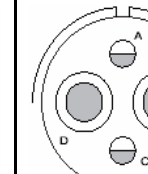
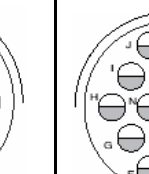
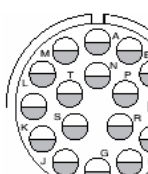
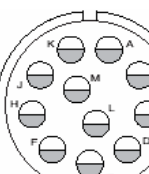
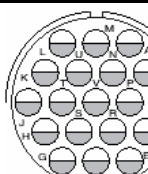
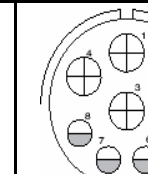
## Normally available arrangements

Arrangement	Service	Tot ct.	AWG contact size					
			0	4	8	12	16	18
16S-1	A	7					7	
16S-4	D	2					2	
16S-5	A	3					3	
16S-8	A	5					5	
18-1	X (B,C,F,G=A; bal.=I)	10					10	
18-3	D	2				2		
18-4	D	4					4	
18-8	A	8				1	7	
18-9	I	7				2	5	
18-10	A	4				4		
18-11	A	5				5		
18-12	A	6					6	
18-19	A	10					10	
18-20	A	5					5	
18A-5	X	5					5	
20-3	D	3				3		
20-4	D	4				4		
20-7	X(A,B,H,G=D; bal.=A)	8					8	
20-11	I	13					13	
20-15	A	7				7		
20-18	A	9				3	6	
20-24	A	4			2		2	
20-27	A	14					14	
20-29	A	17					17	
20-33	A	11					11	
20A-48	I	19					19	
20B-8	X	8				4	4	

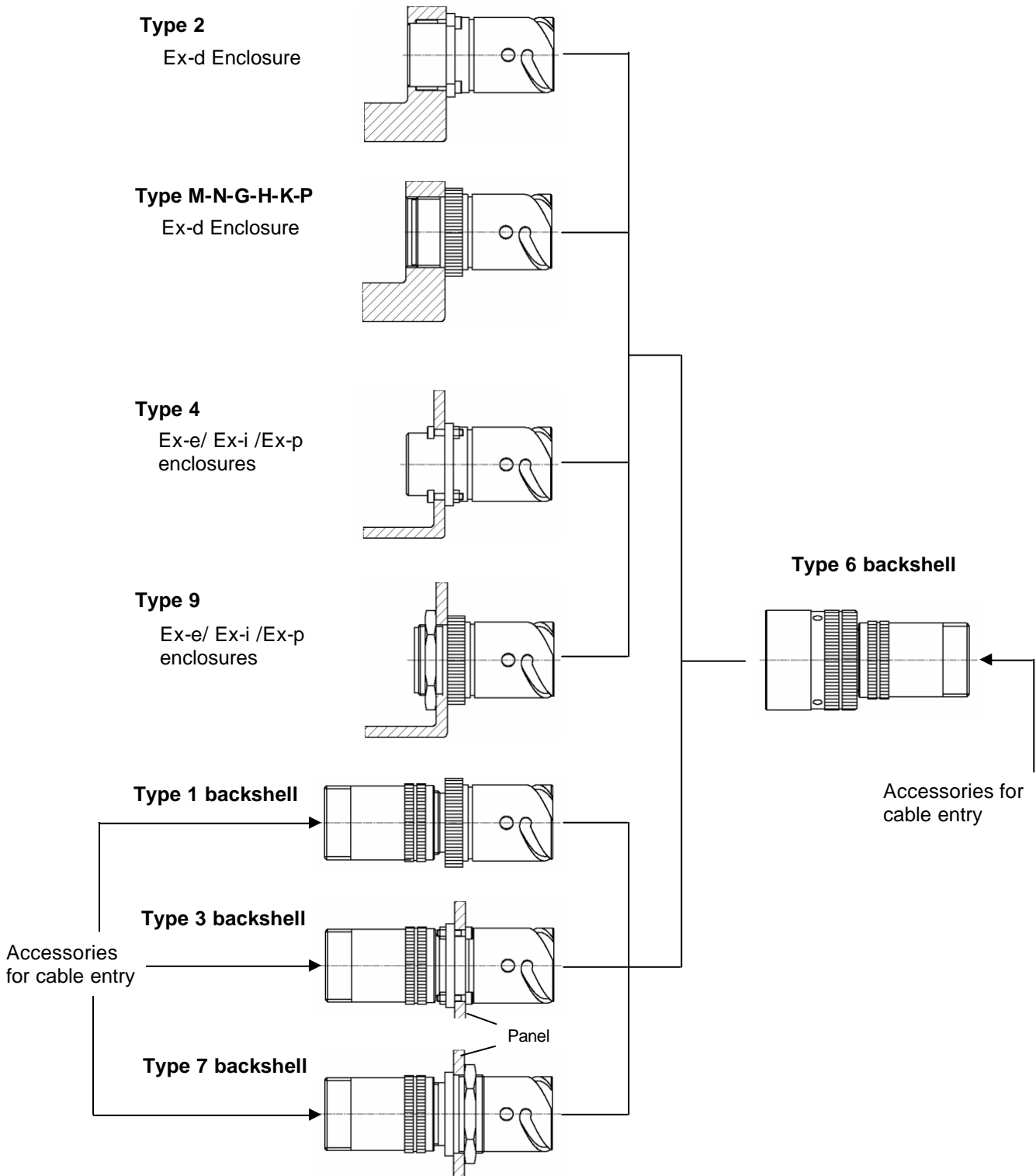
## Arrangements front view (male insert) by shell size

Shell size: <b>16S</b>				
Arrangement	16S-1	16S-4	16S-5	16S-8
No. of contacts	7	2	3	5
Contact size	16	16	16	16

Shell size: <b>18</b>						
Arrangement	18-1	18-3	18-4	18-8	18-9	18-10
No. of contacts	10	2	4	8	7	4
Contact size	16	12	16	7/16 + 1/12	5/16 + 2/12	12
						
Arrangement	18-11	18-12	18-19	18-20		
No. of contacts	5	6	10	5		
Contact size	12	16	16	16		

Shell size: <b>20</b>					
Arrangement	20-3	20-4	20-7	20-11	20-15
No. of contacts	3	4	8	13	7
Contact size	12	12	16	16	12
					
Arrangement	20-18	20-24	20-27	20-29	20-33
No. of contacts	9	4	14	13	11
Contact size	6/16 + 3/12	2/16 + 2/8	16	16	16
					
Arrangement	20A48	20B8			
No. of contacts	19	8			
Contact size	16	4/16 + 4/12			

# Shells compatibility table



## Shells usage table

Standard execution								
Type	Enclosure application				Panel mount	Inline	Supplying terms	
	Ex-d	Ex-e	Ex-i	Ex-p			Standard	Optional
M-N	O	O	O	O			A	
4-9		O	O	O			B	A
3-7					O		B	A
1						O	B	A

Standard execution								
Type	Enclosure application				Panel mount	Inline	Supplying terms	
	Ex-d	Ex-e	Ex-i	Ex-p			Standard	Optional
2 (a)	O	O	O	O			A	
G-H-K-P (b)	O	O	O	O			A	

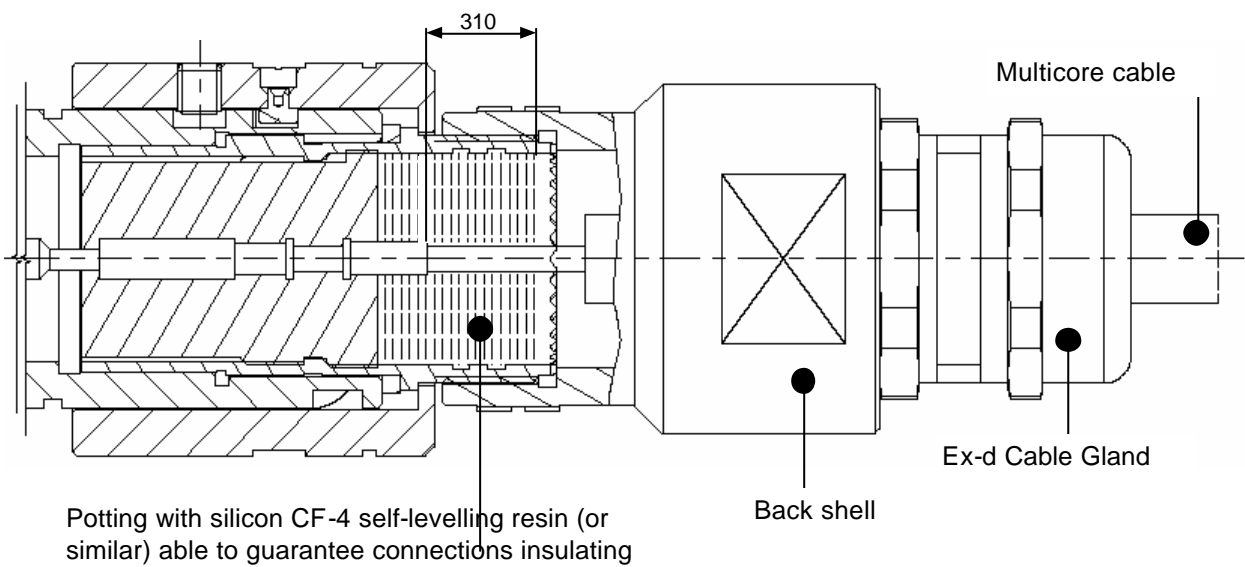
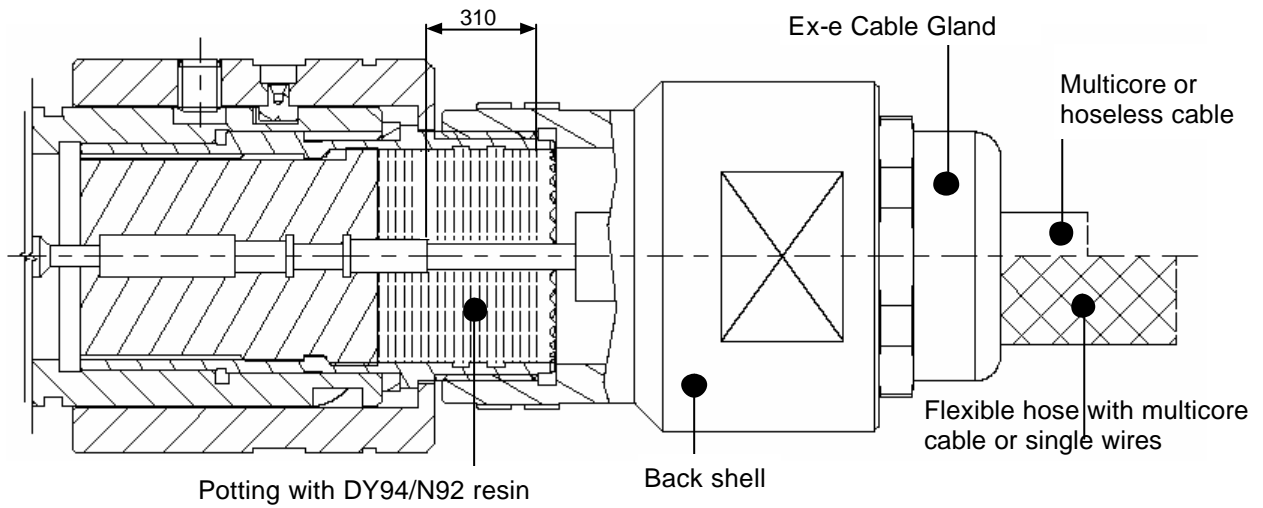
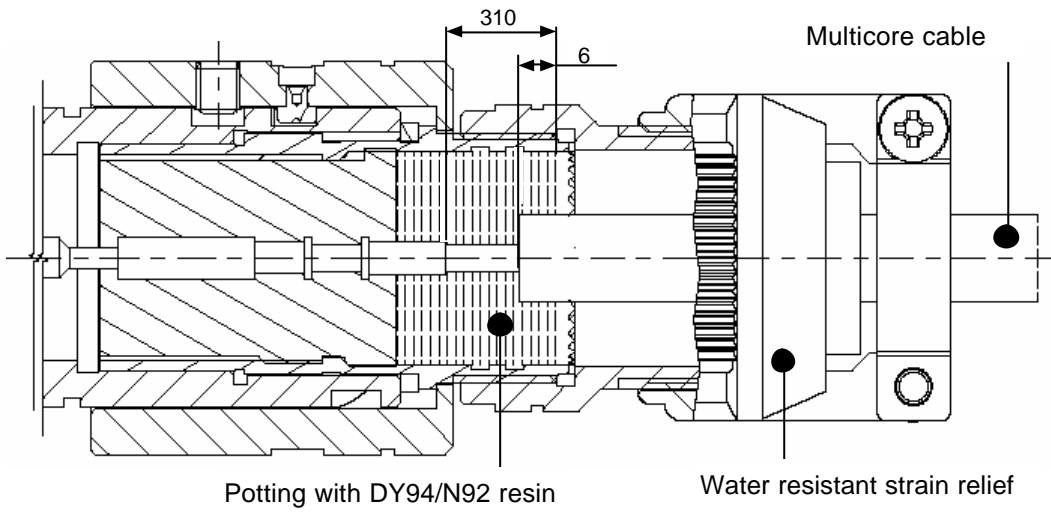
(a)	Subjected to special usage configuration
(b)	On request execution

Legend	
O	Suitable
	Not suitable

Supply terms legend	
A	Already with cable assembly and potted
B	Cable assembly and potting have to be performed by the customer



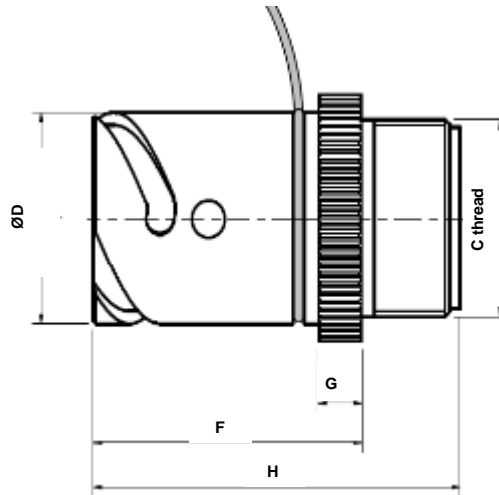
# Assembling instruction by cable retention version



## Connector shell - Receptacles

### CVB-EX G-H-K-M-N

CVB-EX G-H-K-M-N-P shells can be screwed indirectly to the equipment enclosure)  
(Equipment enclosure have to be **Ex d** type).



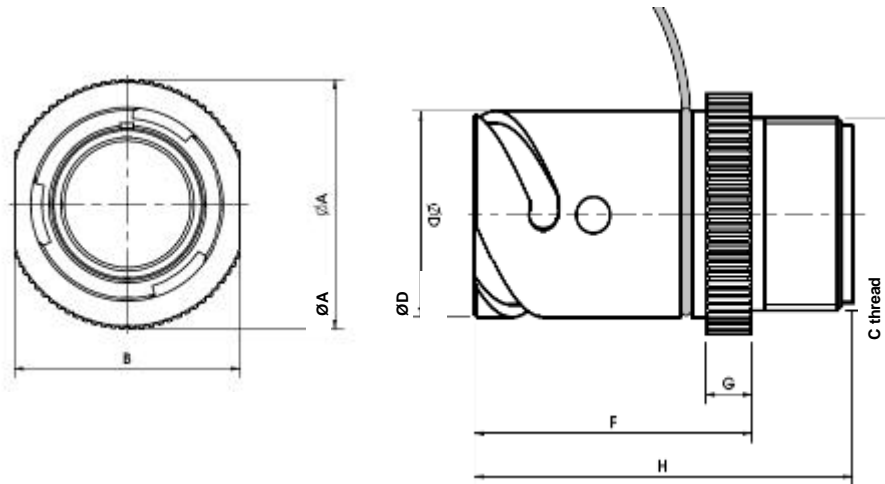
Size	A	B	L	D	F	G	H
16S	37	32	3.1	27.4	40.6	6.5	53.8
18	40	34	3.1	30.8	49.1	8	66.8
20	44	40	3.1	34.2	49.1	8	66.8

#### C Available threads

Size	G ISO 228	H R ISO 7/1	K Gk UNI 6125	M ISO 261	N NPT ASA B2.1
16S	G 3/4"	Rc 3/4"	Gk 3/4"	M 25	3/4"
18	G 3/4"	Rc 3/4"	Gk 3/4"	M 28	3/4"
20	G 1"	Rc 1"	Gk 1"	M 32	1"

## CVB-EX 1

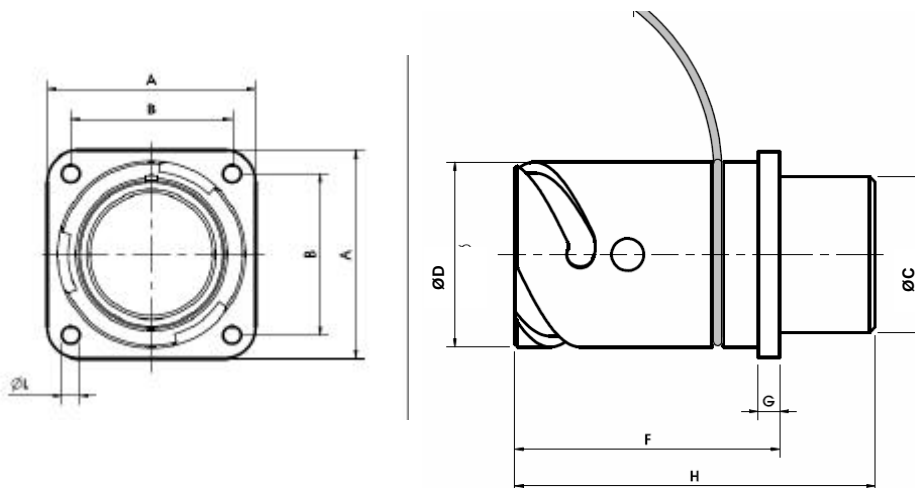
CVB-EX 1 - inline receptacle requires a back shell.  
 Provided UNEF thread



Size	A	B	C	L	D	F	G	H
16S	37	32	7/8"-20 UNEF-2A	3.1	27.4	40.6	6.5	53.8
18	40	34	1"-20 UNEF-2A	3.1	30.8	49.1	8	66.8
20	44	40	1/8-18 UNEF-2A	3.1	34.2	49.1	8	66.8

## CVB-EX 4

Flanged front mount receptacle, supplied with neoprene gasket.  
 Cylindrical terminal

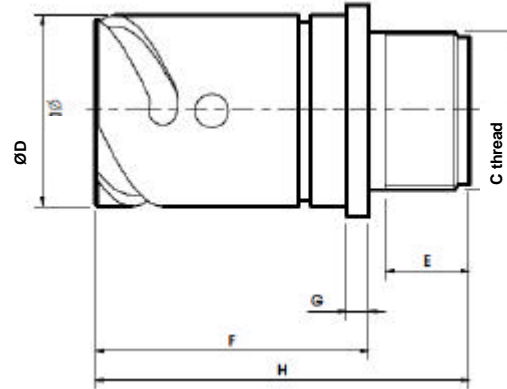
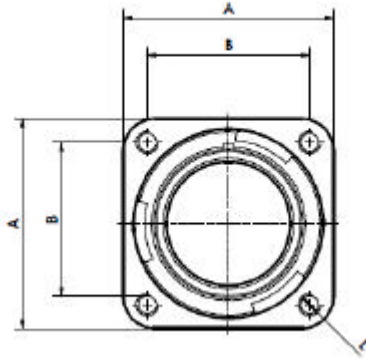


Size	A	B	C	L	D	F	G	H
16S	32.5	24.6	22.4	3.1	27.4	40.6	3	58,6
18	34.9	27	25.6	3.1	30.8	49.1	4	63.1
20	38.1	29.4	28.8	3.1	34.2	49.1	4	63.1

### CVB-EX 3

Flanged inline rear mount receptacle, supplied with neoprene gasket.  
 Always requires a backshell.  
 Threaded mounting holes.

Threaded post.

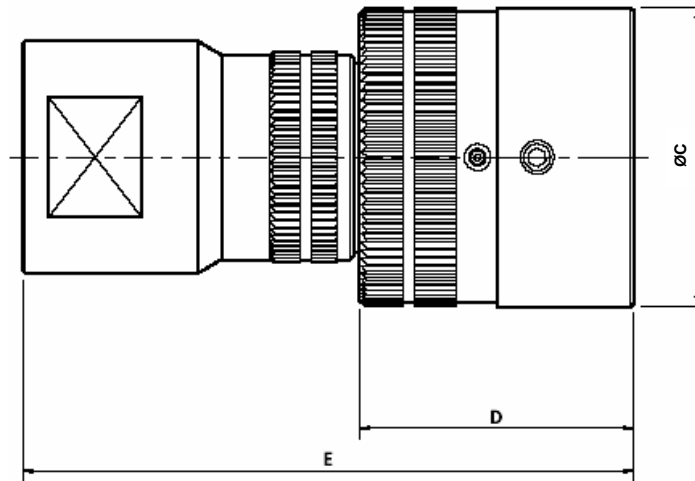


Size	A	B	C	L	D	F	G	H
16S	32.5	24.6	7/8"-20 UNEF-2A	M4	27.4	40.6	3	58,6
18	34.9	27	1"-20 UNEF-2A	M4	30.8	49.1	4	63.1
20	38.1	29.4	1/8-18 UNEF-2A	M4	34.2	49.1	4	63.1

## CVB-EX 6

Inline Plug

It always requires a back shell.



SIZE	C	D
16S	38	33.5
18	41.6	41.5
20	45	41.5

E dimension depends on back shell version

The table below reports thread conventions.

Add letter "E" after thread code for indicating external threads

G ISO 228	H R ISO 7/1	K Gk UNI 6125	L Rp ISO 7/1	M ISO 261	N NPT ASA B2.1	P Pg DIN 40430	U UNEF ASA 2A
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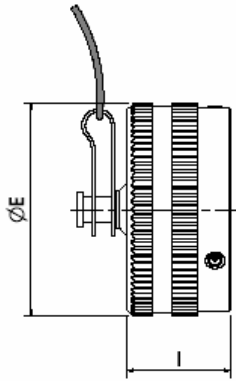
		Backshell accessory Thread conventional dimension (*)											
		12	16	20	25	28	32	36	40	44	50	56	63
Thread code	G	1/4"	3/8"	1/2"	3/4"	-	1"	-	1 1/4"	-	1 1/2"	2"	2 1/2"
	H	1/4"	3/8"	1/2"	3/4"	-	1"	-	1 1/4"	-	1 1/2"	2"	2 1/2"
	K	-	-	1/2"	3/4"	-	1"	-	1 1/4"	-	1 1/2"	2"	2 1/2"
	L	1/4"	3/8"	1/2"	3/4"	-	1"	-	1 1/4"	-	1 1/2"	2"	2 1/2"
	M	M12x1,5	M16x1,5	M20x1,5	M25x1,5	M28x1,5	M32x1,5	M36x1,5	M40x1,5	M44x1,5	M50x1,5	M56x1,5	M63x1,5
	N	1/4"	3/8"	1/2"	3/4"	-	1"	-	1 1/4"	-	1 1/2"	2"	2 1/2"
	P	Pg 9	Pg 11	Pg 13,5	Pg 16	Pg 21	Pg29	-	-	Pg 36	Pg 42	-	Pg 48
U	-	5/8"-24	3/4"-20	1"-20	1 1/2"-18	1 3/16"-18	1 7/16"-18	-	1 3/4"-18	2"-18	2 1/16"-16	2 5/16"-16	

(\*) Examples of thread code indication  
 N25: 3/4"NPT internal thread  
 M25E: M25x1,5 external metric thread

## Caps

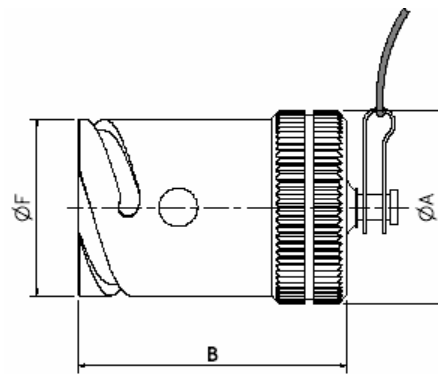
- TVB(M)-1 & TVB(M)-6: sealed caps
- TVB(M)-Ex 1 & TVB(M)-Ex-6 guarantee the presence of explosion proof junctions and allow restoring the power line when the cap is mounted over the connector.
- FVB(M)-EX -1 & FVB(M)-EX 6: end of line caps enclosure with specific pilot circuit.

### TVB-1



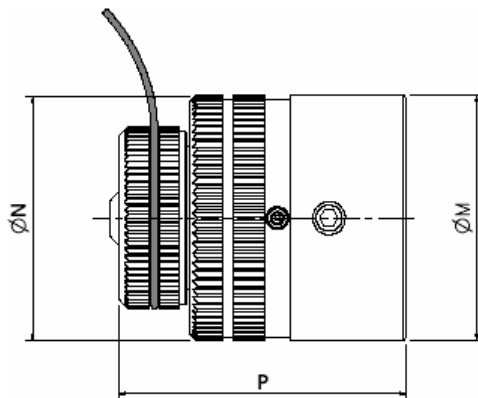
Size	E	I
16s	33	16
18	38	21.7
20	40.5	21.7

### TVB-6



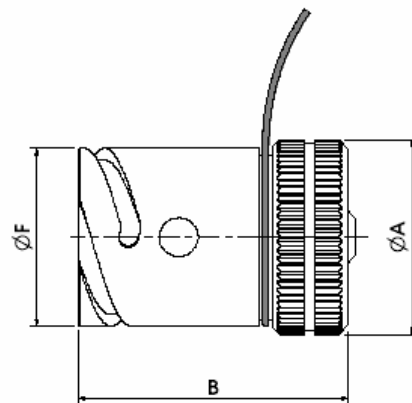
Size	A	B	F
16s	29.8	43.2	27.4
18	33	50.2	30.8
20	36.5	50.2	34.2

### TVB-Ex 1



Size	M	N	P
16s	38	38	48
18	41.6	41.6	58
20	45	45	58

### TVB-Ex-6



Size	A	B	F
16s	29.8	43.2	27.4
18	33	50.2	30.8
20	36.5	50.2	34.2

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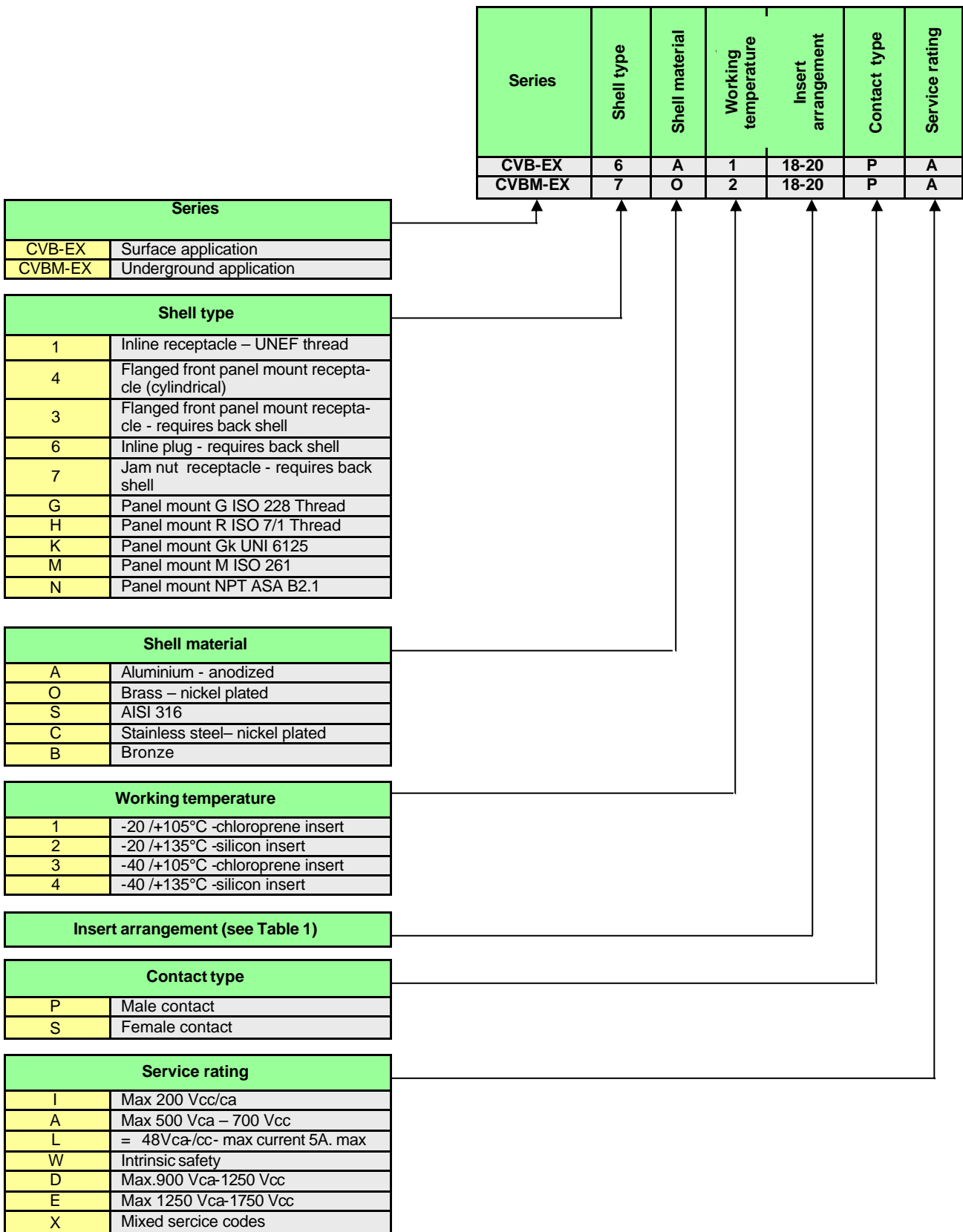
## Potting

Suggested material and accessories for CVB-EX connectors potting

- Potting Compound: DY9492
- Potting injector: DMA50

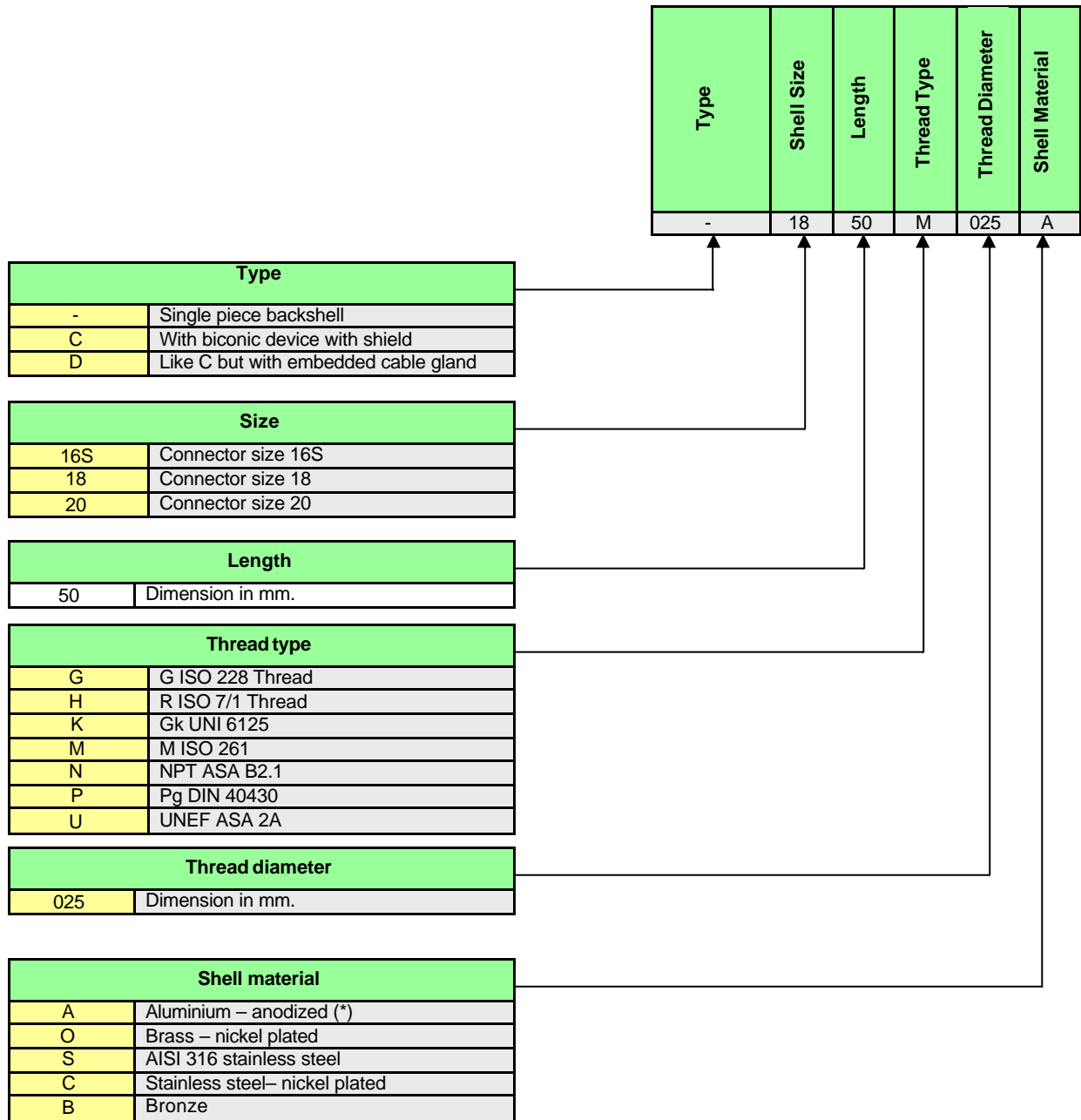


# Connectors P/N explanation





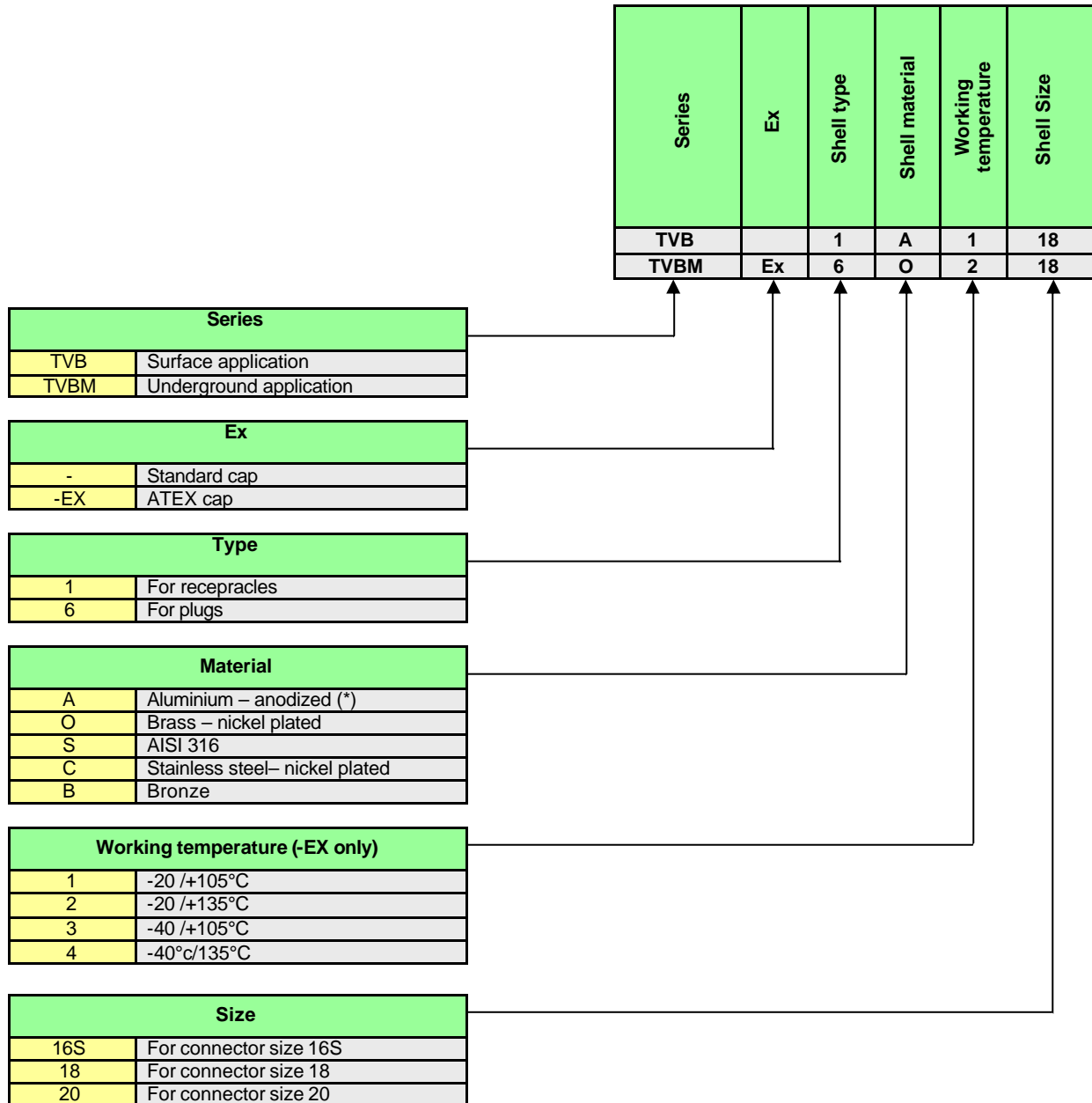
# Back shell P/N explanation



(\*) Not for CVBM

# Caps P/N explanation

CVB-EX normally requires caps.



# End of line caps P/N explanation

Special caps with integrated pilot circuit.

