SOURIAU

8D Series

MIL-DTL-38999 Series III

Esterline
Connection Technologies

8D Series
MIL-DTL-38999 Series III

Contents

8 Series

8D Series

Overview

8D Series
MIL-DTL-38999 Series III

A universal product platform: MIL-DTL-38999

38999 Series I: 8LT Series

- ▶ High density (#22D) MIL-spec circular (1980's)
- ▶ Scoop proof
- ▶ Coupling system: Bayonet
- ▶ Method of mounting: screws or jam nut
- ▶ Shell: Aluminum alloy
- ▶ Plating: olive green cadmium or nickel
- ▶ QPL approved
- ▶ Numerous layouts

38999 Series II: 8T Series

- ▶ Short version of MIL-DTL-38999 Series I
- ▶ Low profile = lightweight
- ▶ High density MIL-spec circular (1980's)
- ▶ Non-scoop proof, bayonet coupling
- ▶ Method of mounting: screws or jam nut
- ▶ Shell: Aluminum alloy
- ▶ Plating: cadmium, nickel, hard anodized
- ▶ QPL approved
- ▶ Numerous layouts

A universal product platform: VG96912 & JN1003

8ST Series

- ▶ High density - same layouts as 38999 Series I
- ▶ Lightweight version of Series I
- ▶ Scoop proof, bayonet coupling
- ▶ Method of mounting: screws or jam nut
- ▶ Shell: Aluminum alloy
- ▶ Plating: olive green cadmium or nickel
- ▶ VG 96912 German specification
- ▶ JN 1003 Typhoon specification

8D Series
MIL-DTL-38999 Series III

8D Series - Presentation

38999 Series III: 8D Series

Since the early 80's, Souriau is a major supplier of 38999 Series III, the screw-coupled version of MIL-C-38999. Present on the main international programs, Souriau has developed a range of products that meet the performance required in extreme environments:

- Civil and military aeronautics
- Ground military
- Industrial
- Marine and offshore

This evolution of MIL-C-38999 allows:

- A high contact density up to 128 contacts #22D
- A quick screw coupling with self locking mechanism
- High resistance to harsh environments (vibration, 200°C)

Always at the cutting edge of innovation, Souriau's teams have continuously improved this range of connectors:

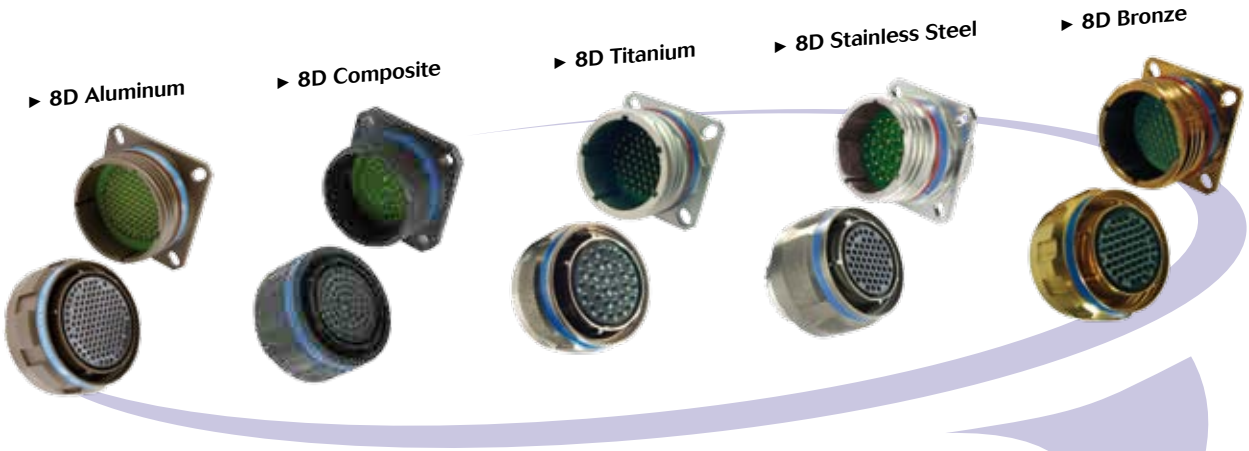
- Composite version in the 90's (Its choice is recommended wherever weight is critical)
- Titanium version for weight saving and very high and mechanical resistance
- Today Souriau remains innovative with cadmium free and RoHS solutions.
  In 2009 Souriau was the first to be QPL qualified for Zinc Nickel plating.

This product family is in accordance with MIL-DTL-38999 Series III, EN 3645, CECC (standard for bronze shell), ... and also meets many customers' standards (Rolls Royce, ABS, BACC, ...)

8D Series - Product overview

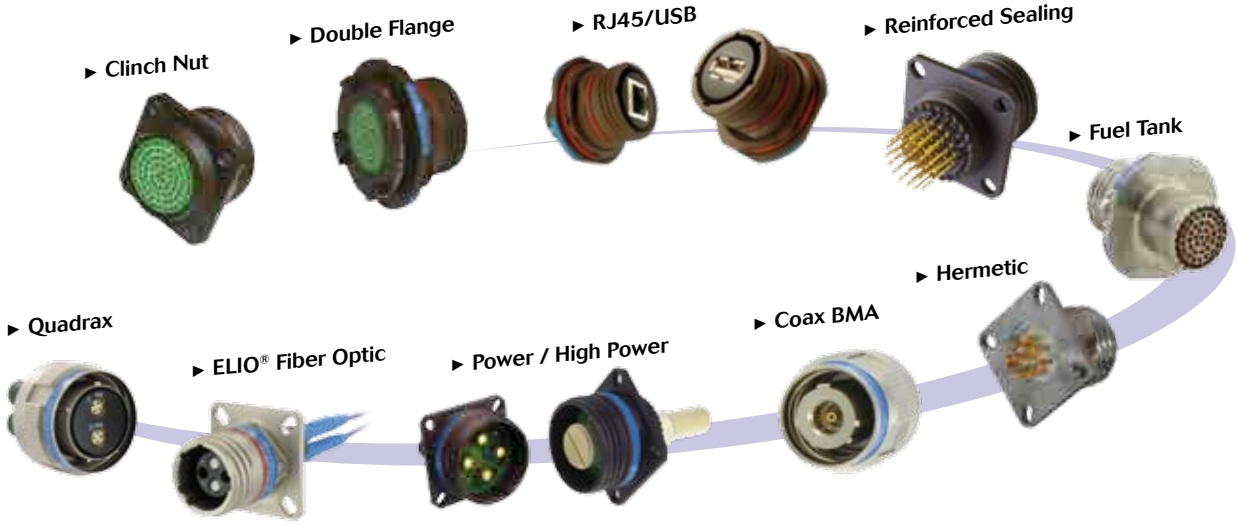
Standard Series

- **5 different materials**
- **A full platform that matches any environment**
- **Different platings** (including RoHS & Cadmium free platings)



Derived Series

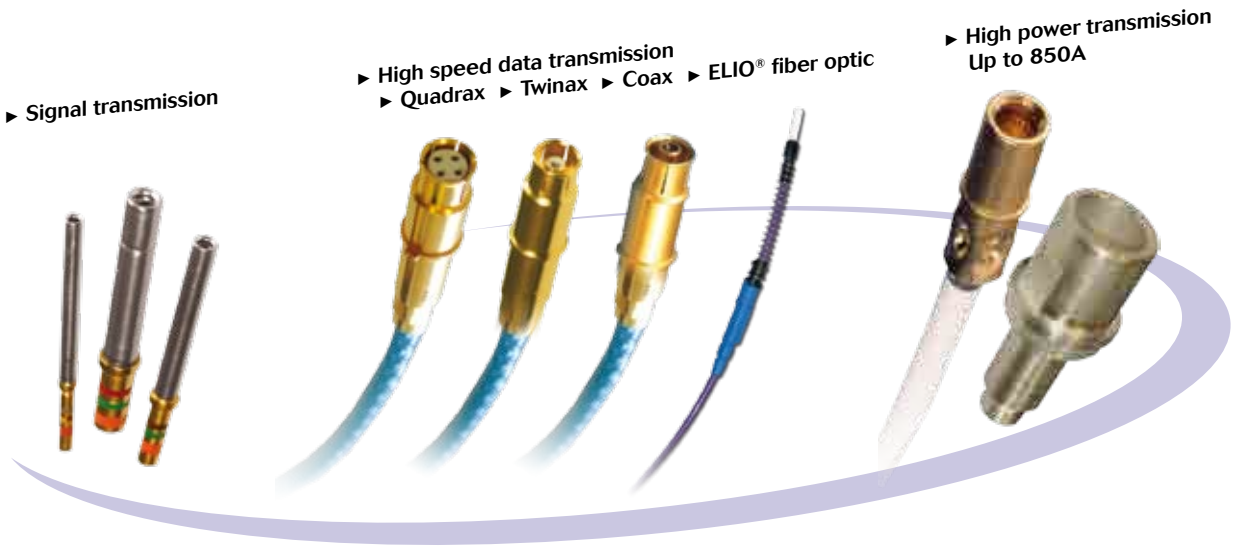
- **Various possibilities of range extension & shell variant from Standard Series**
- **The only limit is your imagination: Consult us !**



8D Series - A superior concept

A full range of contacts

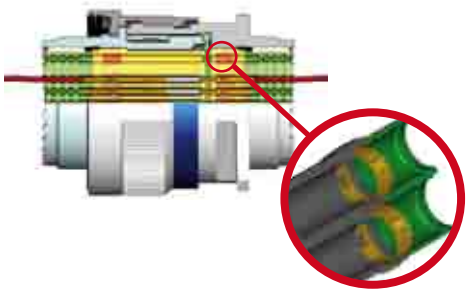
- Multi-contact technology provides versatile connectors



- Various contact styles
  - ▸ Crimp ▸ Solder cup ▸ PC tails ▸ Wire wrap ▸ PCB contacts without shoulder
- Common cavity for all #8 contacts

Metallic clips

- Unique clip retention technology
- High performance contact retention system:
  - ▸ Insure high temperature withstanding
  - ▸ Provides superior strength in vibrations
  - ▸ Better retention characteristics than plastic clips



High performance sealing (IP67)

- Each contact cavity is individually sealed

Accessories available

- Protective caps, backshells, tools, ...

8D Series
MIL-DTL-38999 Series III

A performing MIL standard connector design

Scoop proof connector

► No risk of damaging the contact during the coupling operation

Quick screw coupling

► 1 1/4 turn to mate

Unique self locking mechanism
Patented by Souriau

► Connector will never unscrew even under high vibration (44g)

Fully shielded connector

► 360° shielding

► Shell to shell bottoming = perfect shield continuity

Visual mating indication

► Red band visible = not correctly mated

► Red band hidden = correctly mated

8D Series
MIL-DTL-38999 Series III

Description

- High contact density layouts available HD
- Screw coupling, Shell size from 9 to 25
- Contact protection: 100% Scoop proof
- Protected by cadmium, nickel, green zinc cobalt or black zinc nickel plating
- RFI - EMI shielding and shell to shell continuity
- Accessories available (protective caps, backshells, etc…)
- Hermetic versions
- High power up to 850A
- Optical layouts
- 230V layouts available (ABS22-19, ABS22-20, ABS22-21 & ABS22-22 qualified)

Applications

- Civil and Military Aerospace
- Marine and Offshore Equipment
- Defense and Ground Military
- Industrial

Standards

- MIL-DTL-38999 Series III
- EN3645
- BACC63CT/CU; BACC63DB/DC

Technical features

Mechanical

- **Shell:**
  Aluminum, composite, stainless steel, bronze

- **Shell plating:**
  . Aluminum shell:
  Cadmium olive drab (W)
  Nickel (F)
  Black zinc nickel (Z)
  Green zinc cobalt (ZC)
  . Composite shell:
  Cadmium olive drab (J)
  Nickel (M)
  Without plating (X)
  . Stainless steel shell:
  Passivated (K)
  Nickel (S)
  . Titanium shell:
  Without plating (TT)
  Nickel (TF)
  . Bronze shell:
  Without plating

- **Insulator:** Thermoplastic

- **Grommet and interfacial seal:**
  Silicone elastomer

- **Contacts:** Copper alloy

- **Contacts plating:** Gold over nickel plated

- **Endurance:**
  . 500 mating cycles all materials
  . 1500 mating cycles with composite connectors with specifics contacts

- **Shock:**
  300g, 3 ms according EN 2591-D2 method A

- **Vibration:**
  . Sinus:
  . 10 à 2000 Hz, 3x12 hrs
  (60g, 140 - 2000 Hz) with T° cycling
  . Random:
  . 50 to 2000 Hz, 2x8 Hrs
  (1g2/ Hz, 100 - 2000Hz) at T° max.
  . 25 to 2000 Hz, 2x8 Hrs
  (5g2/ Hz, 100 - 300Hz) at ambiant T°
  Test with accessories in acc with EN2591-D3

- **Contact retention:**

Contacts size	22	20	16	12	8	4
Min force in N	44	67	111	111	111	200

Weight comparison

Example for a plug shell size 15

Materials	Weight	
Stainless steel	58.80 g	42% lighter
Titanium	33.90 g	40% lighter
Aluminum	20.35 g	30% lighter
Composite	14.30 g	

8D Series
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Electrical

• **Test voltage rating (Vrms)**

Service	sea level	at 21000 m
R	400	N/A
M	1 300	800
N	1 000	600
I	1 800	1 000
II	2 300	1 000

• **Contact resistance**

Contacts size	26	22	20	16	12	8	4
Resistance mΩ	16	14.6	7.3	3.8	3.5	3	2

• **Insulation resistance:**
≥ 5 000 MΩ (under 500 Vdc)

• **Contact rating:**

Contacts size	26	22	20	16	12	8	4
Rating (A)	3	5	7.5	13	23	45	80

• **Shell continuity**
. Aluminum shell:
Cadmium olive drab (W): 2.5 mΩ
Nickel (F): 1 mΩ
Black zinc nickel (Z): 2.5 mΩ
Green zinc cobalt (ZC): 2.5 mΩ
. Composite shell:
Cadmium olive drab (J): 3 mΩ
Nickel (M): 3 mΩ
. Stainless steel shell:
Passivated (K): 10 mΩ
Nickel (S): 1 mΩ
. Titanium shell:
Without plating (TT): 10 mΩ
Nickel (TF): 1 mΩ
. Bronze shell:
Without plating: 5 mΩ

• **Shielding:**
. Aluminum shell:
F: 65 db at 10 GHz
Z, F & W: 85 db at 1 GHz
Z & W: 50 db at 10 GHz
ZC: Consult us
. Composite shell:
J & M: 85 db at 1 GHz
. Stainless steel shell:
K: 45 db at 10 GHz
S: 65 db at 10 GHz
. Titanium shell:
TT: 45 db at 10 GHz
TF: 65 db at 10 GHz
. Bronze shell:
85 db at 10 GHz

Climatics

• **Temperature range:**
. Aluminum shell:
W: -65°C +175°C
F: -65°C +200°C
Z: -65°C +200°C
ZC: -65°C +175°C
. Composite shell:
J: -65°C +175°C
M: -65°C +200°C
Without plating (X): -65°C +175°
. Stainless steel shell:
K: -65°C +200°C
S: -65°C +200°C
. Titanium shell:
TT: -65°C +200°C
TF: -65°C +200°C
. Bronze shell:
Without plating: -65°C +175°C

• **Sealing:**
Mated connectors meet altitude immersion requirements of MIL-DTL-38999.

• **Salt spray:**
. Aluminum shell:
W: 500 Hrs
F: 48 Hrs
Z: 500 Hrs
ZC: 250 Hrs
. Composite shell:
J: 2000 Hrs
M: 2000 Hrs
Without plating (X): 2000 Hrs
. Stainless steel shell:
K: 500 Hrs
S: 500 Hrs
. Titanium shell:
TT: 500 Hrs
TF: 48 Hrs
. Bronze shell:
Without plating: 500 Hrs

Resistance to fluids

• **According to MIL-DTL-38999 standard**
. Gasoline: JP5 (OTAN F44)
. Mineral hydraulic fluid: MIL-H-5606 (OTAN H515)
. Synthetic hydraulic fluid: Skydrol 500 B4

• **LD4 (SAE AS 1241)**
. Mineral lubricating: MIL-L-7870A (OTAN 0142)
. Synthetic lubricating: MIL-L-23699 (OTAN 0156), MIL-L-7808
. Cleaning fluid: MIL-DTL-25769 diluted
. De-icing fluid: MIL-A-8243
. Extinguishing fluid: Chlorobrométhane
. Cooling fluid: Coolanol

8D Series
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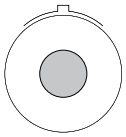
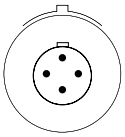
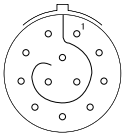
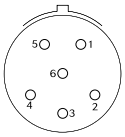
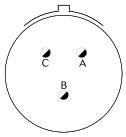
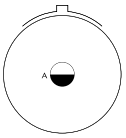
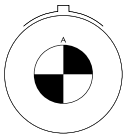
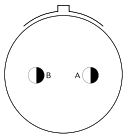
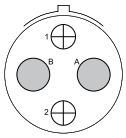
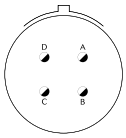
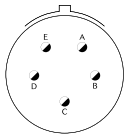
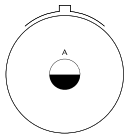
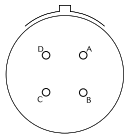
Contact layouts

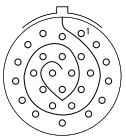
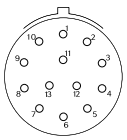
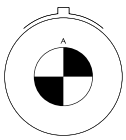
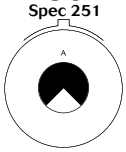
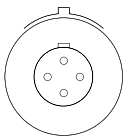
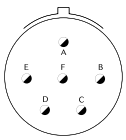
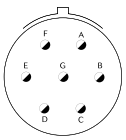
- Contact #26 & #22D
- Contact #20
- Contact #16
- Contact #12
- Contact #10
- Contact #8 Twinax or Coax - consult us
- Contact #8 Power
- Contact #8 Quadrax
- Contact ELIO® (fiber optic)
- Contact #4 Power

09 / A

01	05	12 HD	35	98
				
1 Optical position	1#8 Quadrax	12#26 Service R	6#22D Service M	3#20 Service I

11 / B

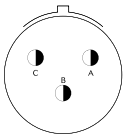
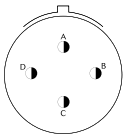
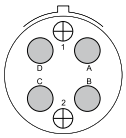
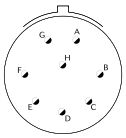
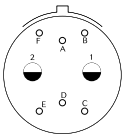
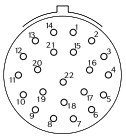
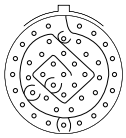
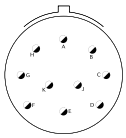
01	01	02	02	04	05	12	22
							
1#12 Service II all series excepted JVS	1#8 Coax Service I only for JVS	2#16 Service I	2 Optical positions	4#20 Service I	5#20 Service I	1#12 Service II only for JVS	4#22D Service M

26 HD	35	80	80 Spec 251	81	98	99
						
26#26 Service R	13#22D Service M	1#8 Twinax Service I	1#8 Power	1#8 Quadrax	6#20 Service I	7#20 Service I

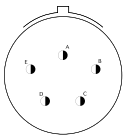
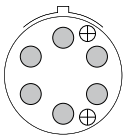
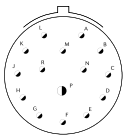
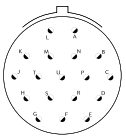
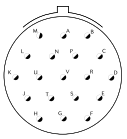
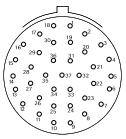
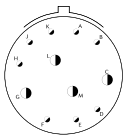
ELIO® fiber optic Ethernet Quadrax HD High Density layout

Contact layouts

13 / C

03	04	04	08	26	35	43 HD	98
							
3#16 Service I	4#16 Service I	4 Optical positions	8#20 Service I	2#12 6#22D Service M	22#22D Service M	43#26 Service R	10#20 Service I

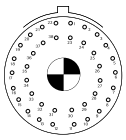
15 / D

05	06	15	18	19	35	97
						
5#16 Service II	6 Optical positions	1#16 14#20 Service I	18#20 Service I	19#20 Service I	37#22D Service M	4#16 8#20 Service I

ELIO® fiber optic Ethernet Quadrax HD High Density layout

Contact layouts

17 / E

02

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1#8 Twinax
Service M

02
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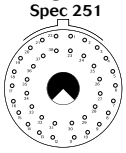
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1#8 Power

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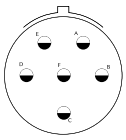
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Service I

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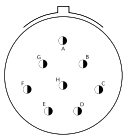
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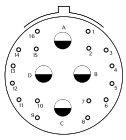
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16#22D
Service M

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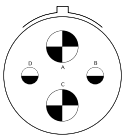
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2#8 Twinax
Service M

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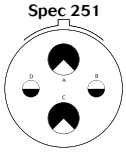
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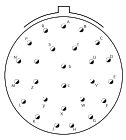
2#8 Power

26

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Service I

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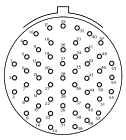
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Service M

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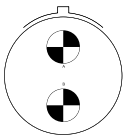
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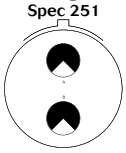
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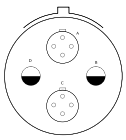
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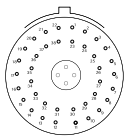
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1#8 Quadrax

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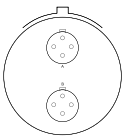
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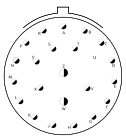
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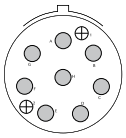
21#20
Service I

19 / F

08

8 Optical
positions

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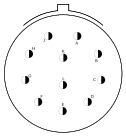
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Service II

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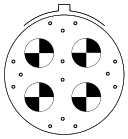
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4#8 Twinax
Service M

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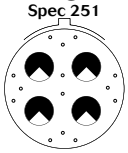
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4#8 Power

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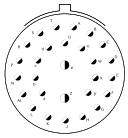
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2#16
Service I

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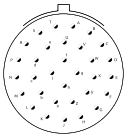
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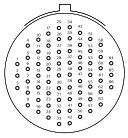
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Service M

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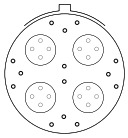
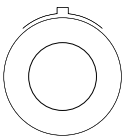

14#22D
4#8 Quadrax

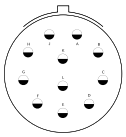
H1

1#00
High power

ELIO® fiber optic Ethernet Quadrax

8D Series
MIL-DTL-38999 Series III

Contact layouts

21 / G

11

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Service I

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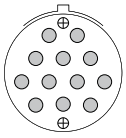
12 Optical positions

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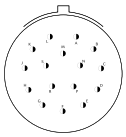
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Service II

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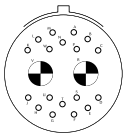
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2#8 Twinax
Service M

20 Spec 251

18#20
2#8 Power

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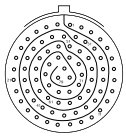
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Service M

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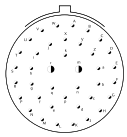
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37#20
Service I

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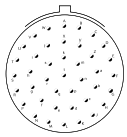
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Service I

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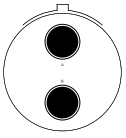
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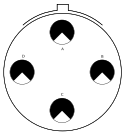
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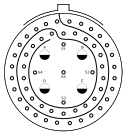
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4#12
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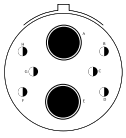
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2#4 Power
Service I

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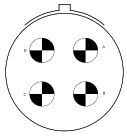
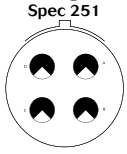

4#8 Twinax
Service M

75 Spec 251

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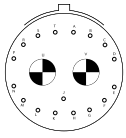
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Service M

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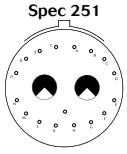
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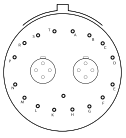
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2#8 Quadrax

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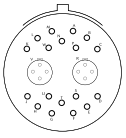
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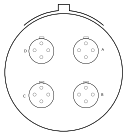
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23 / H

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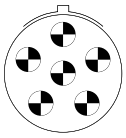
6#8 Twinax

06 Spec 251

6#8 Power

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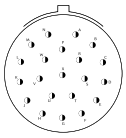
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Service II

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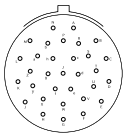
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Service I

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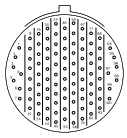
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Service M

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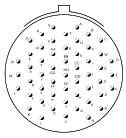
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Service I

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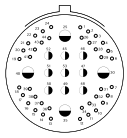
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40#22D
Service M

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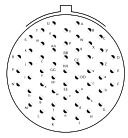
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Service I

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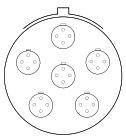
6#8 Quadrax

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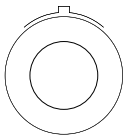
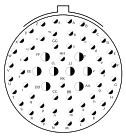
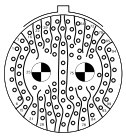

1#000
High power

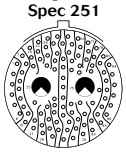
ELIO® fiber optic Ethernet Quadrax

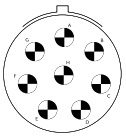
Contact layouts

25 / J

04

48#20
8#16
Service I

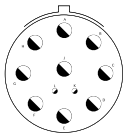
07

97#22D
2#8 Twinax
Service M

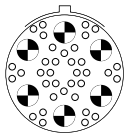
07
Spec 251

97#22D
2#8 Power

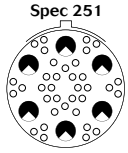
08

8#8 Twinax
Service M

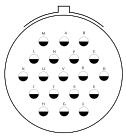
08
Spec 251

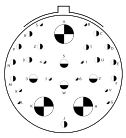
8#8 Power

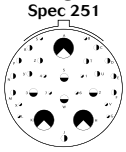
11

2#20
9#10
Service N

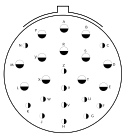
17

36#22D
6#8 Twinax

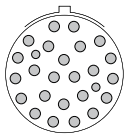
17
Spec 251

36#22D
6#8 Power

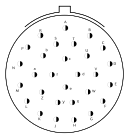
19

19#12
Service I

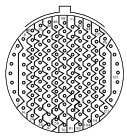
20*

10#20, 13#16
4#12 Coax
3#8 Twinax
Service N

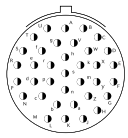
20*
Spec 251

10#20
13#16, 4#12
3#8 Power

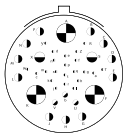
24

12#16
12#12
Service I

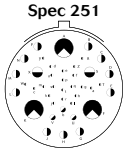
24

24 Optical
positions

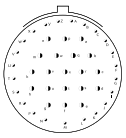
29

29#16
Service I

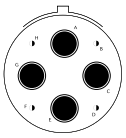
35

128#22D
Service M

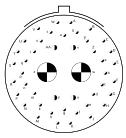
37

37#16
Service I

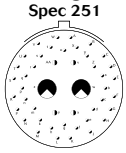
41

22#22D, 3#20
11#16, 2#12
3#8 Twinax
Service M

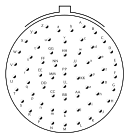
41
Spec 251

22#22D, 3#20
11#16, 2#12
3#8 Power

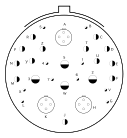
43

23#20
20#16
Service I

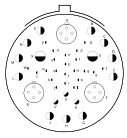
44

4#16
4#4 Power
Service I

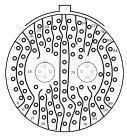
46

40#20, 4#16
2#8 Coax
Service I

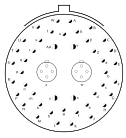
46
Spec 251

40#20, 4#16
2#8 Power
Service I

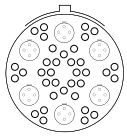
61

61#20
Service I

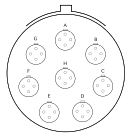
80

10#20
13#16
4#12 Coax
3#8 Quadrax

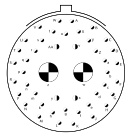
81

22#22D
3#20, 11#16
2#12
3#8 Quadrax

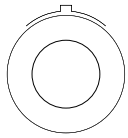
82

97#22D
2#8 Quadrax

86

40#20
4#16
2#8 Quadrax

87

36#22D
6#8 Quadrax

88

8#8 Quadrax

90

40#20, 4#16
2#8 Twinax
Service I

H1

1#0000
High power

ELIO® fiber optic Ethernet Quadrax * For classes F, W, K, S only

Contact layouts (matrix)

Shell size	Layout	MIL-DTL-38999 (QPL) Aluminum, Stainless steel & Composite	8D Titanium	JVS-CECC Bronze connector	Hermetics	EN3645	BACC63 CT/CU DB/DC	Number of contacts	#26	#22D	#20	#16	#12	#10	#8	#4	Fiber optic or High power
09 / A	09-01							1									1 Optic.
	09-05 (1)							1							1 Qdx		
	09-12							12	12								
	09-35	Q		Q		Q	Q	6		6							
	09-98	Q		Q		Q	Q	3			3						
11 / B	11-01							1					1				
	11-01							1							1 Coax		
	11-02	Q		Q		Q	Q	2				2					
	11-02							2									2 Optic.
	11-04	Q					Q	4			4						
	11-05	Q		Q		Q	Q	5			5						
	11-12							1					1				
	11-22							4		4							
	11-26							26	26								
	11-35	Q		Q		Q	Q	13		13							
	11-80							1							1 Twx		
	11-80 sp 251							1							1 Pow		
	11-81							1							1 Qdx		
	11-98	Q		Q		Q	Q	6			6						
	11-99	Q		Q		Q	Q	7			7						
13 / C	13-03							3									
	13-04	Q		Q		Q	Q	4				4					
	13-04							4									4 Optic.
	13-08	Q		Q		Q	Q	8			8						
	13-26			Q		Q		8		6			2				
	13-35	Q		Q		Q	Q	22		22							
	13-43							43	43								
	13-98	Q		Q		Q	Q	10			10						
15 / D	15-05	Q		Q		Q	Q	5				5					
	15-06							6									6 Optic
	15-15	Q		Q		Q	Q	15			14	1					
	15-18	Q		Q		Q	Q	18			18						
	15-19	Q		Q		Q	Q	19			19						
	15-35	Q		Q		Q	Q	37		37							
	15-97	Q		Q		Q	Q	12			8	4					
17 / E	17-02					Q	Q	39		38					1 Twx		
	17-02 sp 251							39		38					1 Pow		
	17-06	Q		Q		Q	Q	6					6				
	17-08	Q		Q		Q	Q	8				8					
	17-20							20		16			4				
	17-22							4					2		2 Twx		
	17-22 sp 251							4					2		2 Pow		
	17-26	Q		Q		Q	Q	26			26						
	17-35	Q		Q		Q	Q	55		55							
	17-75							2							2 Twx		
	17-75 sp 251							2							2 Pow		
	17-80							4					2		2 Qdx		
	17-81							39		38					1 Qdx		
	17-82						Q	2							2 Qdx		
	17-99	Q		Q		Q	Q	23			21	2					
19 / F	19-08							8									8 Optic.
	19-11	Q		Q		Q	Q	11				11					
	19-18	Q					Q	18		14					4 Twx		
	19-18 sp 251																
	19-28	Q		Q			Q	28			26	2					
	19-32	Q		Q		Q	Q	32			32						
	19-35	Q		Q		Q	Q	66		66							
	19-84							18		14					4 Qdx		
	19-H1							1									1 #00

Souriau's layout

Q Souriau's layout & Layout according to corresponding norm

(1) Grounded insert only - Please consult us

#8 **Pow:** Power; **Qdx:** Quadrax; **Twx:** Twinax

Contact layouts (matrix)

Shell size	Layout	MIL-DTL-38999 (QPL) Aluminum, Stainless steel & Composite	8D Titanium	JVS-CECC Bronze connector	Hermetics	EN3645	BACC63 CT/CU DB/DC	Number of contacts	#26	#22D	#20	#16	#12	#10	#8	#4	Fiber optic or High power
21 / G	21-11	Q		Q		Q	Q	11					11				
	21-12							12									12 Optic
	21-16	Q		Q		Q	Q	16				16					
	21-20					Q		20			18				2 Twx		
	21-20 sp 251							20			18				2 Pow		
	21-35	Q		Q		Q	Q	79		79							
	21-39	Q		Q		Q	Q	39			37	2					
	21-41	Q		Q		Q	Q	41			41						
	21-42							2								2 Pow	
	21-48			Q				4							4 Pow		
	21-59							59		55			4				
	21-72							8				6				2 Pow	
	21-75	Q				Q	Q	4							4 Twx		
	21-75 sp 251							4							4 Pow		
	21-77							19		17					2 Twx		
	21-77 sp 251							19		17					2 Pow		
	21-78						Q	19		17					2 Qdx		
	21-80							20			18				2 Qdx		
	21-84						Q	4							4 Qdx		
23 / H	23-06							6							6 Twx		
	23-06 sp 251							6							6 Pow		
	23-21	Q		Q		Q	Q	21				21					
	23-32	Q						32			32						
	23-35	Q		Q		Q	Q	100		100							
	23-53	Q		Q		Q	Q	53			53						
	23-54					Q		53		40		9	4				
	23-55	Q		Q		Q	Q	55			55						
	23-86							6							6 Qdx		
	23-H1							1									1 #000
25 / J	25-04	Q				Q	Q	56			48	8					
	25-07	Q				Q	Q	99		97					2 Twx		
	25-07 sp 251							99		97					2 Pow		
	25-08	Q		Q (2)		Q	Q	8							8 Twx		
	25-08 sp 251							8							8 Pow		
	25-11	Q				Q	Q	11			2			9			
	25-17							42		36					6 Twx		
	25-17 sp 251							42		36					6 Pow		
	25-19	Q		Q		Q	Q	19					19				
	25-20	Q (3)		(4)		Q (5)	Q (6)	30			10	13	4 (7)		3 Twx		
	25-20 sp 251							30			10	3	4		3 Pow		
	25-24	Q		Q		Q	Q	24				12	12				
	25-24							24									24 Optic.
	25-29	Q		Q		Q	Q	29				29					
	25-35	Q		Q		Q	Q	128		128							
	25-37	Q				Q	Q	37				37					
	25-41							41		22	3	11	2		3 Twx		
	25-41 sp 251							41		22	3	11	2		3 Pow		
	25-43	Q		Q		Q	Q	43			23	20					
	25-44							8				4				4 Pow	
	25-46	Q				Q	Q	46			40	4			2 Coax		
	25-46 sp 251							46			40	4			2 Pow		
	25-61	Q		Q		Q	Q	61			61						
	25-80							30			10	13	4		3 Qdx		
	25-81							41		22	3	11	2		3 Qdx		
	25-82							99		97					2 Qdx		
	25-86							46			40	4			2 Qdx		
	25-87							42		36					6 Qdx		
	25-88							8							8 Qdx		
	25-90							46			40	4			2 Twx		
	25-H1							1									1 #0000

Souriau's layout

Q Souriau's layout & Layout according to corresponding norm

(2) For CECC, layout 25-08 only delivered without contact

(3) For Aluminum & Stainless steel only

(4) For classes F, W, S, K only

(5) For classes F, W, K only

(6) Qualified BACC63DB/DC only

(7) 4 # 12 coax (2+2)

#8 **Pow:** Power; **Qdx:** Quadrax; **Twx:** Twinax

8D Series

Standard Series

Connector part numbers

Basic Series	8D	0	-	11	W	35	P	N			L

Shell style:
0: Square flange receptacle
1: In line receptacle
7: Jam nut receptacle
5: Plug with RFI shielding
Also available:
. *Square flange receptacle with clinch nuts (see page 95)*
. *Jam nut receptacle with double flange (see page 98)*

Type:
-: Connectors with standard crimp contacts.
L: Receptacle with long PC tail (male and female size #22D, #20).
C: Receptacle with short PC tail (male and female #22D, #20, #16).
S: Receptacle with specific PC tail (male et female #22D)
W: Receptacle with male contacts #22D for wire wrap (3 wraps)
T: Receptacle with male contacts #20 for wire wrap (2 wraps)
P: Receptacle with solder cup contacts - please consult us
. *see page 86 for Reinforced sealing Series with solder cup contacts*
. *see page 69 for solder cup contacts information*

Shell size: 09, 11, 13, 15, 17, 19, 21, 23, 25

Plating:
W: Olive drab cadmium
F: Nickel
ZC: Green zinc cobalt
Z: Black zinc nickel

Contact layout: See pages 13 to 19

Contact type:
P: Pin
A: Connector supplied less pin contact or with specific contacts (connector marking: A + orientation)
S: Socket
B: Connector supplied less socket contact or with specific contacts (connector marking: B + orientation)

Orientation: N, A, B, C, D, E (see page 75)

Specification:
046: Tinned straight PC tail
251: Connector provided with power contacts (layouts with contact #8)
022: Fuel tank

Special custom:
None: Standard plastic cap
M: Antistatic plastic cap

L: For P or S contact type only, connectors delivered without contacts, connectors marking P or S plus orientation

Note: PC tail contacts without shoulder also available. Please see page 102.

MIL-DTL-38999 part numbers*

Basic Series	D38999/	20	W	B	35	P	N	L

Shell style:
20: Square flange receptacle
24: Jam nut receptacle
26: Plug with RFI shielding.

Plating:
Z: Black zinc nickel
W: Olive drab cadmium
F: Nickel

Shell size: A, B, C, D, E, F, G, H, J

Contact layout: See page 18 for layout according to MIL-DTL-38999

Contact type:
P: Pin
A: Connector supplied less pin contact or with specific contacts (connector marking: A + orientation)
S: Socket
B: Connector supplied less socket contact or with specific contacts (connector marking: B + orientation)

Orientation: N, A, B, C, D, E (see page 75)

L: For P or S contact type only, connector delevired without contacts, connector marking P or S (without L)

* Note: To place an order of MIL connectors delivered without MIL removable crimp contacts and keep P or S plus orientation marking, it must be specify clearly on the order (by adding a suffix L at the end of the P/N or specified in comment).

EN3645 part numbers

Basic Series	EN3645	W	6	G	N	35	B	N

Plating:
W: Olive drab cadmium
F: Nickel

Shell style:
0: Square flange receptacle
6: Plug
7: Jam nut receptacle

Shell size:
09=**A**, 11=**B**, 13=**C**, 15=**D**, 17=**E**, 19=**F**, 21=**G**, 23=**H**, 25=**J**

Grounding:
N: Standard insert not grounded

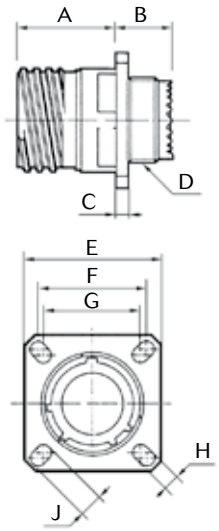
Contact layout:
See page 18 for layout according to EN3645

Contact type:
A: Connector supplied less pin contact
B: Connector supplied less socket contact
F: Socket
M: Pin

Orientation:
N, A, B, C, D, E (see page 75)

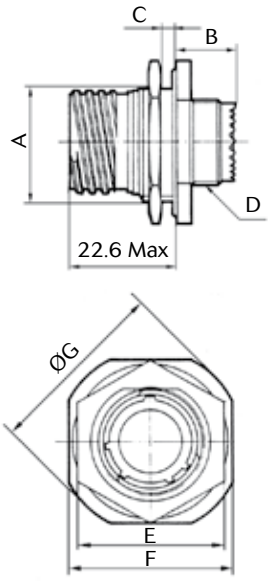
Dimensions

Receptacle type 0



Shell size	A Max	B Max	C Max	D Thread	E±0.3	F	G	H±0.2	J±0.2
09 (A)	20.9	10.72	2.5	M12 x 1-6g	23.8	18.26	15.09	3.25	5.49
11 (B)				M15 x 1-6g	26.2	20.62	18.26		4.93
13 (C)				M18 x 1-6g	28.6	23.01	20.62		
15 (D)				M22 x 1-6g	31	24.61	23.01		4.4
17 (E)				M25 x 1-6g	33.3	26.97	24.61		4.93
19 (F)				M28 x 1-6g	36.5	29.36	26.97		
21 (G)	20.07	11.54	3.2	M31 x 1-6g	39.7	31.75	29.36		
23 (H)				M34 x 1-6g	42.9	34.93	31.75	3.91	6.15
25 (J)				M37 x 1-6g	46	38.1	34.93		

Receptacle type 7



Shell size	A±0.15	B Max	C Max	D Thread	E Max	F±0.4	ØG Max
09 (A)	16.53	9.9	3.2	M12 x 1-6g	23	27	30.5
11 (B)	19.07			M15 x 1-6g	26	31.8	35.2
13 (C)	23.82			M18 x 1-6g	31	34.9	38.4
15 (D)	26.97			M22 x 1-6g	34	38.1	41.6
17 (E)	30.15			M25 x 1-6g	37	41.3	44.8
19 (F)	33.32			M28 x 1-6g	41	46	49.5
21 (G)	36.50			M31 x 1-6g	46	49.2	52.7
23 (H)	39.67			55.9	47	52.4	55.9
25 (J)	42.85			59	51.23	55.6	59

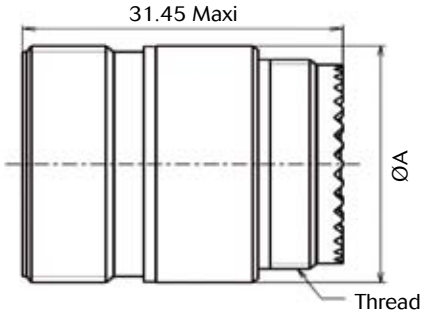
Recommended coupling torque on panel for jam nut receptacle (type 7)

Shell	09 (A)	11 (B)	13 (C)	15 (D)	17 (E)	19 (F)	21 (G)	23 (H)	25 (J)
Coupling torque (±0.5 N.m)	4	5	7	8	9	10	12	13	14

Note: All dimensions are in millimeters (mm)

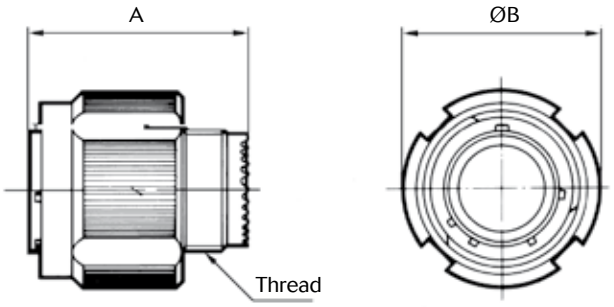
8D Series
D38999 Aluminum Series

In line receptacle type 1



Shell size	Thread	ØA
09 (A)	M12 x 1-6g	15.90
11 (B)	M15 x 1-6g	19.05
13 (C)	M18 x 1-6g	22.25
15 (D)	M22 x 1-6g	25.40
17 (E)	M25 x 1-6g	30.15
19 (F)	M28 x 1-6g	31.75
21 (G)	M31 x 1-6g	34.75
23 (H)	M34 x 1-6g	37.10
25 (J)	M37 x 1-6g	41.30

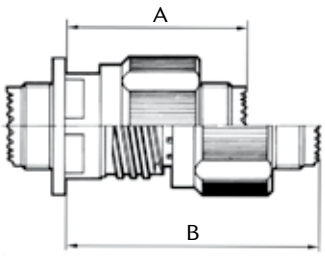
Plug type 5



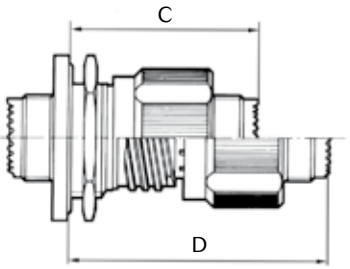
Shell size	A Max	Thread	ØB Max
09 (A)	31.00	M12 x 1-6g	21.80
11 (B)		M15 x 1-6g	25.00
13 (C)		M18 x 1-6g	29.40
15 (D)		M22 x 1-6g	32.50
17 (E)		M25 x 1-6g	35.70
19 (F)		M28 x 1-6g	38.50
21 (G)		M31 x 1-6g	41.70
23 (H)		M34 x 1-6g	44.90
25 (J)		M37 x 1-6g	48.00

Mated connectors dimensions

Type 0 with plug



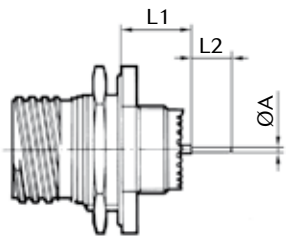
Type 7 with plug

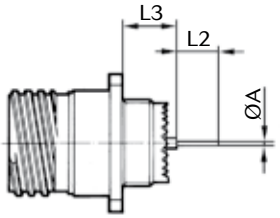


Shell size	A Max	B Max	C Max	D Max
09 (A)	37.00	52.30	38.30	53.60
11 (B)				
13 (C)			38.50	53.80
15 (D)				
17 (E)				
19 (F)				
21 (G)	36.00	51.30		
23 (H)				
25 (J)				

Note: All dimensions are in millimeters (mm)

Receptacle with straight PC tail contacts





		Shell size			09 (A)	11 (B)	13 (C)	15 (C)	17 (E)	19 (F)	21 (G)	23 (H)	25 (J)
		Contact size	Contact type	PC tail type									
A		#22D	M & F	L & C	0.70								
		#22D	M & F	S	0.50								
		#20	M & F	C	0.70								
		#16	M & F	C	$1.12^{\pm 0.03}$								
L1	Min	#22D	M	L & C	10.52		10.34						
	Max	#22D	M	L & C	11.46		11.28						
	Min	#22D	F	L & C	10.19		10.01						
	Max	#22D	F	L & C	11.46		11.28						
	Min	#22D	M	S	10.19		10.01						
	Max	#22D	M	S	11.46		11.28						
	Min	#22D	F	S	10.69		10.51						
	Max	#22D	F	S	11.63		11.45						
	Min	#20	M	C	10.36		10.18						
	Max	#20	M	C	11.63		11.45						
	Min	#20	F	C	10.69		10.51						
	Max	#20	F	C	11.63		11.45						
	Min	#16	M	C	10.69		10.51						
	Max	#16	M	C	11.63		11.45						
	Min	#16	F	C	10.69		10.51						
	Max	#16	F	C	11.63		11.45						
L2		#22D	M & F	L	8.50								
		#22D	M & F	C	4.00								
		#22D	M & F	S	5.10								
		#20	M & F	C	5.10								
		#16	M & F	C	$5^{\pm 0.1}$								
L3	Min	#22D	M	L & C	9.48						9.59		
	Max	#22D	M	L & C	10.58						10.69		
	Min	#22D	F	L & C	9.15						9.26		
	Max	#22D	F	L & C	10.58						10.69		
	Min	#22D	M	S	9.65						9.76		
	Max	#22D	M	S	10.75						10.86		
	Min	#22D	F	S	9.15						9.26		
	Max	#22D	F	S	10.75						10.86		
	Min	#20	M	C	9.65						9.76		
	Max	#20	M	C	10.75						10.86		
	Min	#20	F	C	9.65						9.76		
	Max	#20	F	C	10.75						10.86		
	Min	#16	M	C	9.64						9.75		
	Max	#16	M	C	10.75						10.86		
	Min	#16	F	C	9.64						9.75		
	Max	#16	F	C	10.75						10.86		

M: Male contact **F:** Female contact **L:** Long PC tail **C:** Short PC tail **S:** Specific PC tail *Dimensions in millimeters*

Souriau aluminum backshells

Ordering information

Basic Series	8D	AB	05	A	17	W	S	02	-

Accessories type

Type:
- **01:** Backnut
- **02:** Cable clamp
- **03:** Shrink boot
- **04:** Crimp ring
- **05:** Band lock

Angle:
- **A:** Straight
- **B:** 90° (Type 02 only)

Shell size:
- **09, 11, 13, 15, 17, 19, 21, 23, 25**

Finish:
- **Z:** Black zinc nickel
- **W:** Olive green cadmium
- **F:** Nickel
- **A:** Black anodized

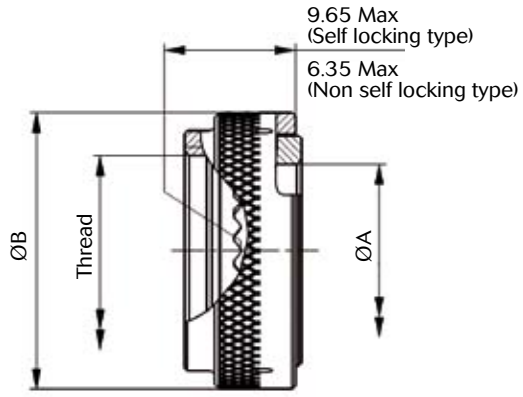
Self locking option:
- **None**
- **S:** Self locking (available for Types 01 & 02 - mandatory for Type 05)

Cable entry (Type 05 only):
- **02, 03** (03 mandatory for shell size 09 & 11)

Drain hole option:
- **None**
- **D:** Drain hole (Type 03 only)

Dimensions

Aluminum backshell Type 01 - Backnut



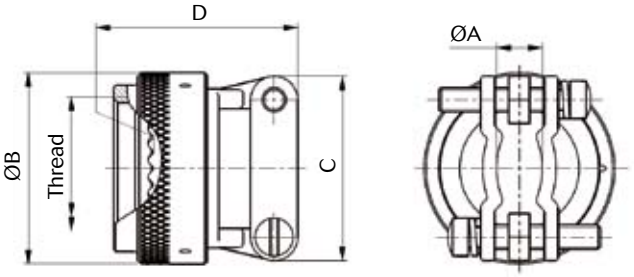
Shell size	ØA Min	ØB Max
09	6.7	17.9
11	9.95	20.9
13	12.85	24.3
15	17.0	27.9
17	19.25	31.3
19	21.7	35.3
21	24.7	38.1
23	27.8	41.5
25	32.0	44.5

Thread: See page 29 for information.

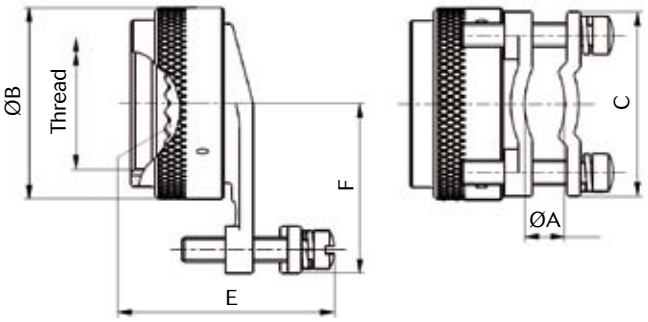
Note: All dimensions are in millimeters (mm)

Aluminum backshell Type 02 - Cable clamp

A Angle - straight



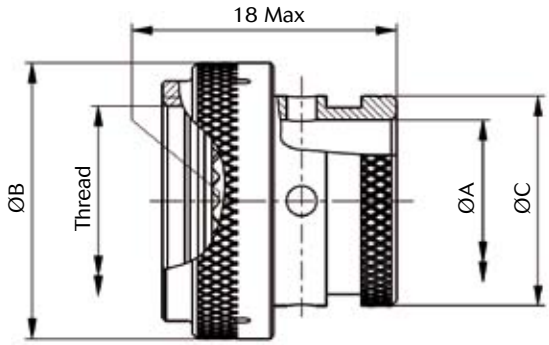
B Angle - 90°



Thread: See page 29 for information.

Shell size	ØA		ØB Max	C Max	D Max	E Max	F Max
	Min	Max					
09	2.49	5.94	17.9	21.5	23.1	29.5	20
11	3.89	5.94	20.9	21.5	23.1	29.5	21.5
13	4.83	8.33	24.3	24.5	25.6	31.5	23.5
15	6.60	11.61	27.9	27.5	26.9	35.8	25.5
17	7.19	15.6	31.3	31.5	29.4	40.1	27.5
19	8.26	16.1	35.3	35.5	35.8	40.6	30.5
21	8.71	17.73	38.1	37	38.3	42.7	31.5
23	9.68	20.9	41.5	40.5	42.1	46.2	34.5
25	10.62	21.67	44.5	45	44.7	49	36.5

Aluminum backshell Type 03 - Shrink boot

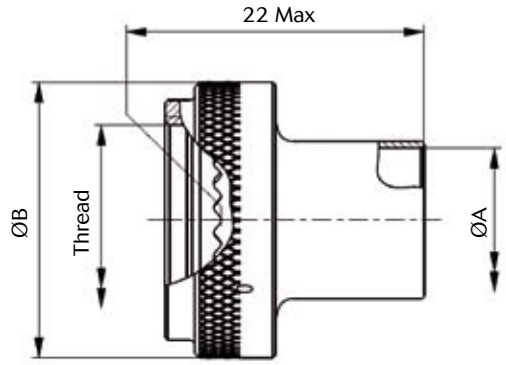


Shell size	ØA Min	ØB Max	C Max
09	6.7	19.0	11.3
11	9.95	21.5	14.9
13	12.85	25.3	17.8
15	16.05	29.1	21.27
17	19.2	31.7	24.3
19	21.5	35.5	26.4
21	24.7	39.3	30.8
23	27.8	41.8	34.1
25	31	46.9	36.6

Thread: See page 29 for information.

Note: All dimensions are in millimeters (mm)

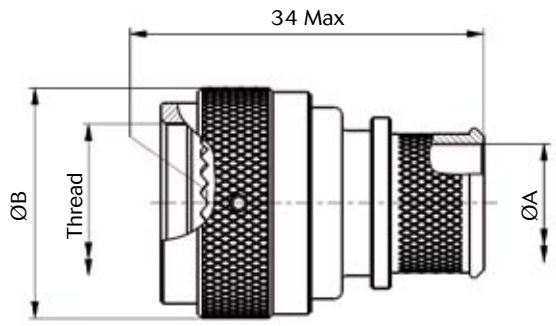
Aluminum backshell Type 04 - Crimp ring



Shell size	ØA Min	ØB Max
09	6	17.9
11	8.2	20.9
13	10.5	24.3
15	13.6	27.9
17	16.9	31.3
19	20	34.3
21	23.2	38.1
23	26.1	41.5
25	28.1	44.4

Thread: See below for information.

Aluminum backshell Type 05 - Band lock



Shell size	ØA Max - Entry size		ØB Max
	02	03	
09	-	6.6	17.9
11	-	8	24.9
13	8	11.2	29.3
15	11.2	14.4	32.4
17	12.8	16	35.6
19	16	19.1	38.4
21	16	20.7	41.6
23	17.6	23.9	44.8
25	19.1	25.5	47.9

Thread: See below for information.

Recommended installation torque

Shell Size	Installation Torque (Inch-Pounds)
09, 11, 13, 15, 17 & 19	40
21, 23 & 25	80

Note: Torque values are based on 80% of the coupling thread strength specified in SAE-AS85049 standard.

Thread information

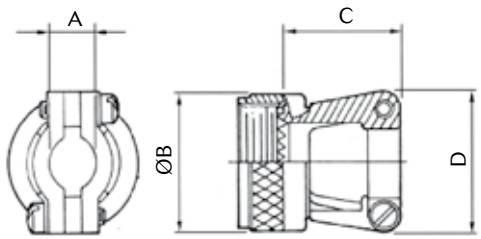
Shell size	UNEF Thread
09	M12x1.0-6H-0.10R
11	M15x1.0-6H-0.10R
13	M18x1.0-6H-0.10R
15	M22x1.0-6H-0.10R
17	M25x1.0-6H-0.10R
19	M28x1.0-6H-0.10R
21	M31x1.0-6H-0.10R
23	M34x1.0-6H-0.10R
25	M37x1.0-6H-0.10R

Note: All dimensions are in millimeters (mm)

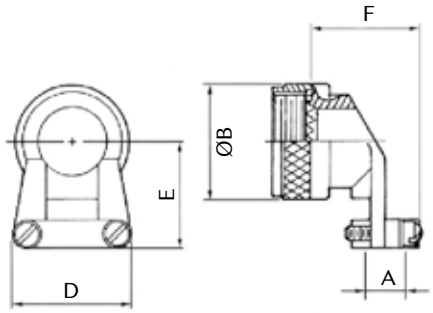
M85049 aluminum backshells

Backshells - Cable clamp

Straight cable clamp (Type 38)



90° cable clamp (Type 39)



Shell size	A		ØB Max	C Max	D Max	E	F
	Min	Max					
09	2.50	5.90	21.80	23.10	21.60	25.40	25.70
11	3.90	5.90	25.00	23.10	22.90	27.90	25.70
13	4.80	8.30	29.40	25.70	27.90	27.90	30.70
15	6.60	11.60	32.50	26.90	29.20	31.80	32.00
17	7.20	15.60	35.70	29.50	33.00	33.00	35.80
19	8.30	16.10	38.50	35.80	38.10	34.30	38.40
21	8.70	17.70	41.70	38.40	40.60	40.60	42.20
23	9.70	20.90	44.90	42.20	43.20	44.50	44.70
25	10.60	21.70	48.00	44.70	45.70	47.00	48.50

Basic Series	**M85049**	**38**	**-**	**11**	**W**

Backshell type:
38: Straight cable clamp
39: 90° cable clamp

Nut type:
-: Without self-locking
S: With self-locking

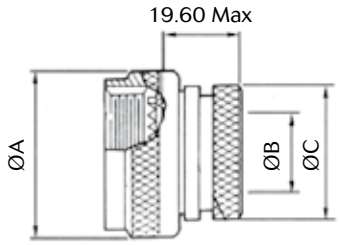
Shell size:
09, 11, 13, 15, 17, 19, 21, 23, 25

Plating:
Type 38 & 39:
A: Black anodized (500 hours salt spray)
W: Olive drab cadmium over nickel (500 hours salt spray)
Type 38S & 39S:
W: Olive drab cadmium over nickel (500 hours salt spray)
N: Nickel (48 hours salt spray)

Note: All dimensions are in millimeters (mm)

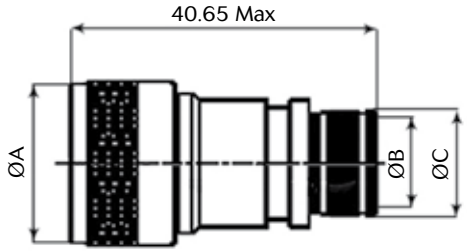
Backshells for heat shrink boots

Backshell for heat shrink boots (Type 69)



Shell size	ØA Max	ØB Max	ØC Max
09	19.10	6.35	13.55
11	21.60	9.50	15.40
13	25.40	12.70	19.70
15	29.20	15.90	21.30
17	31.80	19.00	24.50
19	35.60	20.60	26.50
21	39.40	23.80	30.90
23	41.90	27.00	34.40
25	47.00	30.20	36.65

Straight backshell for EMI/RFI heat shrink boots (Type 88)



Shell size	ØA Max	ØB$^{\pm 0.10}$ Entry size		ØC	
		02	03	02	03
09	21.79	-	6.35	-	10.03
11	24.99	-	7.92	-	11.61
13	29.39	7.92	11.13	11.61	14.81
15	32.49	11.13	14.27	14.81	17.96
17	35.71	12.70	15.88	16.38	19.56
19	38.51	15.88	19.05	19.56	22.73
21	41.71	15.88	20.62	19.56	24.30
23	44.91	17.47	23.83	21.06	27.51
25	47.98	19.05	25.40	22.73	29.08

Basic Series	M85049	69	11	A	D

Backshell type:
69: Backshell for heat shrink boots
88: Straight backshell for EMI/RFI heat shrink boots

Shell size:
09, 11, 13, 15, 17, 19, 21, 23, 25

Plating:
Type 69:
A: Black anodised (500 hours salt spray)
Type 88:
W: Olive drab cadmium
N: Nickel

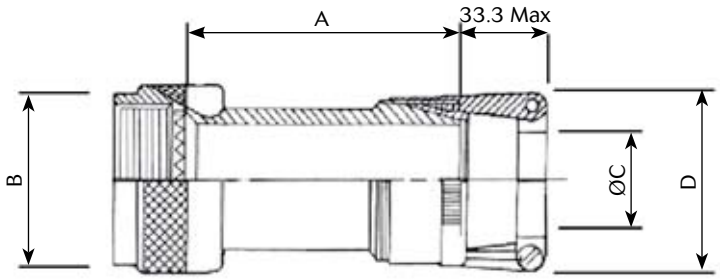
Option (Type 69 only):
Empty: Without drain hole
D: With drain hole

Entry size (Type 88 only):
02: See table above
03: See table above

Note: All dimensions are in millimeters (mm)

Backshell for screen termination and cable clamp

Backshell for screen termination and cable clamp (Type 19)



Shell size	A Max	B Max	Clamp indicator base on shell size
09	38.10	19.10	01 - 02
11		21.60	01 - 02 - 03
13		25.40	02 - 03 - 04
15		27.90	02 - 03 - 04 - 05
17		31.80	02 - 03 - 04 - 05 - 06
19		35.60	03 - 04 - 05 - 06 - 07
21		38.10	03 - 04 - 05 - 06 - 07 - 08
23		41.90	03 - 04 - 05 - 06 - 07 - 08
25		44.50	04 - 05 - 06 - 07 - 08 - 10

Clamp size indicator	C Min	C Max	D
01	1.60	3.20	20.30
02	3.20	6.35	25.40
03	6.35	9.50	27.90
04	7.90	12.70	30.50
05	11.10	15.90	31.80
06	14.30	19.00	35.60
07	17.45	22.20	38.10
08	20.60	24.40	41.90
09	23.80	28.60	44.50
10	27.00	31.75	48.30

Basic Series	M85049	19	11	W	03

Shell style:
19: Backshell for screen termination and cable clamp

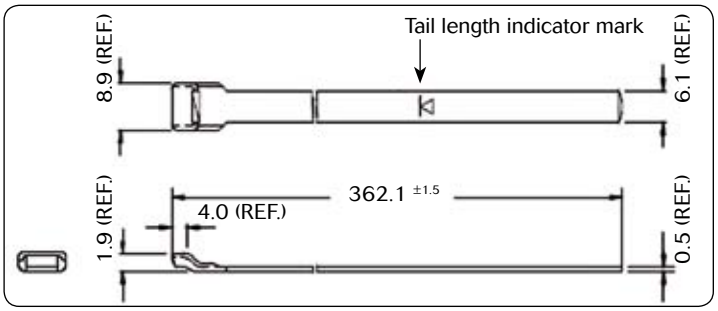
Shell size:
09, 11, 13, 15, 17, 19, 21, 23, 25

Plating:
W: Olive drab cadmium
N: Nickel

Clamp size indicator:
See tables above

Band-it

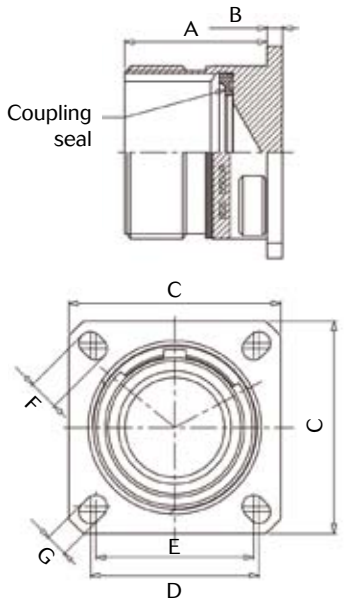
Designation	Flat stainless steel standard band	Pre-coiled stainless steel standard band	Hand banding tool
Part number	8599-9344	8599-9345	8599-9346



Note: All dimensions are in millimeters (mm)

Dummy receptacle

Dimensions



Shell size	Souriau Part number *	A Max	B Max	C±0.30	D	E	F±0.20	G±0.20
09	8D0-09GUR 8D0-09FUR	20.90	2.50	23.80	18.26	15.09	4.49	3.25
11	8D0-11GUR 8D0-11FUR	20.90	2.50	26.20	20.62	18.26	4.93	3.25
13	8D0-13GUR 8D0-13FUR	20.90	2.50	28.60	23.01	20.62	4.93	3.25
15	8D0-15GUR 8D0-15FUR	20.90	2.50	31.00	24.61	23.01	4.93	3.25
17	8D0-17GUR 8D0-17FUR	20.90	2.50	33.30	26.97	24.61	4.93	3.25
19	8D0-19GUR 8D0-19FUR	20.90	2.50	36.50	26.97	24.61	4.93	3.25
21	8D0-21GUR 8D0-21FUR	20.10	3.20	39.70	31.75	29.36	4.93	3.25
23	8D0-23GUR 8D0-23FUR	20.10	3.20	42.90	34.93	31.75	6.15	3.91
25	8D0-25GUR 8D0-25FUR	20.10	3.20	46.00	38.10	34.93	6.15	3.91

* G: Olive green cadmium
F: Nickel

Caps

Souriau part number

Basic Series	8D	AC	5	R	09	W
Accessories style: **AC:** Aluminum caps						
Caps style: **5:** Plug caps **0:** Receptacle caps						
Accessories: **N:** With stainless steel rope and ring **R:** With stainless steel rope and eyelet						
Shell size: **09, 11, 13, 15, 17, 19, 21, 23, 25**						
Finish: **W:** Olive drab cadmium **F:** Nickel **Z:** Black zinc nickel **A:** Black anodized						

Note: All dimensions are in millimeters (mm)

8D Series
D38999 Aluminum Series

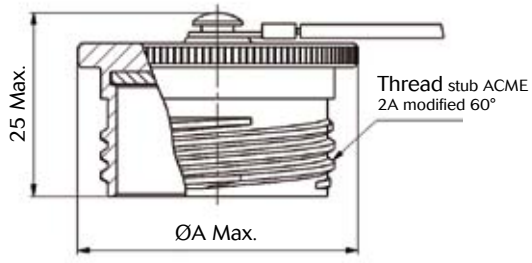
MIL-DTL-38999 part number

Basic Series	D38999/	32	W	09	R
Caps style: **32:** Plug caps **33:** Receptacle caps					
Finish: **W:** Olive drab cadmium **F:** Nickel **Z:** Black zinc nickel					
Shell size: **09, 11, 13, 15, 17, 19, 21, 23, 25**					
Accessories: **N:** With stainless steel rope and ring **R:** With stainless steel rope and eyelet					

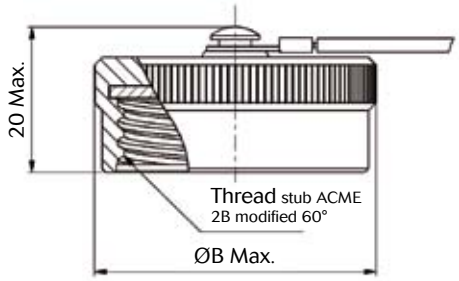
Dimensions

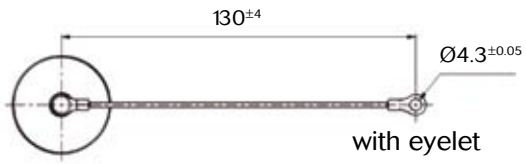
Aluminum caps with stainless steel rope

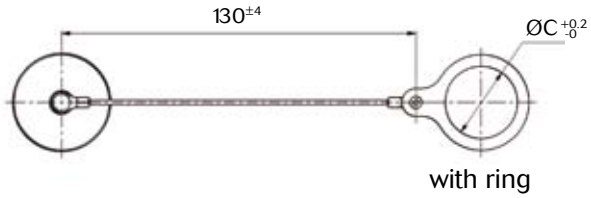
For plug



For receptacle







Size	ØA	ØB	ØC for plug	ØC for receptacle	Thread
09	22.6	22.8	15	18.4	0.6250-0.1P-0.3L-TS
11	25.8	26.5	18.4	23.2	0.7500-0.1P-0.3L-TS
13	30	30	23.2	26.5	0.8750-0.1P-0.3L-TS
15	33	31.8	23.2	30.3	1.0000-0.1P-0.3L-TS
17	36.5	36.8	26.5	32.6	1.1875-0.1P-0.3L-TS
19	39.2	38.8	30.3	36.5	1.2500-0.1P-0.3L-TS
21	42.5	41.8	32.6	39.3	1.3750-0.1P-0.3L-TS
23	45.8	44.8	36.5	42.9	1.5000-0.1P-0.3L-TS
25	48.9	48.8	39.3	45	1.6250-0.1P-0.3L-TS

Note: All dimensions are in millimeters (mm)

Connectors weight

	With contacts						Without contact					
	Plug (type 5)		Receptacle (type 0)		Receptacle (type 7)		Plug (type 5)		Receptacle (type 0)		Receptacle (type 7)	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
09 – 35	11.47	13.05	9.15	10.73	13.91	15.49	11.05	11.55	8.73	9.23	13.49	13.99
09 – 98	11.47	12.77	9.15	10.45	13.91	15.21	11.05	11.57	8.73	9.25	13.49	14.01
11 – 01	14.98	17.92	12.01	14.95	18.17	21.11	14.32	16.32	11.35	13.35	17.51	19.51
11 – 02	14.61	17.15	11.64	14.18	17.80	20.34	13.99	15.59	11.02	12.62	17.18	18.78
11 – 04	14.80	17.86	11.83	14.89	17.99	21.05	14.24	16.26	11.27	13.29	17.43	19.45
11 – 05	14.83	18.04	11.86	15.07	19.48	21.23	14.13	16.04	11.16	13.07	17.32	19.23
11 – 22	14.47	16.89	11.50	13.92	17.66	20.08	14.19	15.89	11.22	12.92	17.38	19.08
11 – 35	14.73	18.20	11.76	15.23	17.68	21.39	13.82	14.95	10.85	11.98	17.01	18.14
11 – 80	18.30	21.90	15.30	18.90	21.50	28.39	13.80	14.90	10.80	11.90	17.00	18.10
11 – 98	14.70	17.46	11.73	14.49	17.89	20.65	13.86	15.06	10.89	12.09	17.05	18.25
11 – 99	14.87	18.09	11.90	15.12	18.06	21.28	13.89	15.29	10.92	12.32	17.08	18.48
13 – 04	21.04	24.82	15.71	19.49	24.14	27.92	19.80	21.70	14.47	16.37	22.90	24.80
13 – 08	21.42	26.60	16.09	21.27	24.52	29.70	20.30	23.40	14.97	18.07	23.40	26.50
13 – 26	21.79	27.44	16.46	22.11	24.89	30.54	20.05	22.74	14.72	17.41	23.15	25.84
13 – 35	21.22	26.99	15.89	21.66	24.32	30.09	19.68	21.49	14.35	16.16	22.78	24.59
13 – 98	21.08	25.70	15.75	20.37	24.18	28.80	19.68	21.70	14.35	16.37	22.78	24.80
15 – 05	26.04	31.38	19.54	24.88	29.62	34.96	24.49	27.48	17.99	20.98	28.07	31.06
15 – 15	26.84	34.00	20.34	27.50	30.42	37.58	24.57	27.62	18.07	21.12	28.15	31.20
15 – 18	27.05	35.93	20.55	29.43	30.63	39.51	24.53	28.73	18.03	22.23	28.11	32.31
15 – 19	26.58	34.31	20.08	27.81	30.16	37.89	23.92	26.71	17.42	20.21	27.50	30.29
15 – 35	26.68	35.92	20.18	29.42	30.26	39.50	24.09	26.67	17.59	20.17	27.67	30.25
15 – 97	26.51	33.56	20.01	27.06	30.09	37.14	24.15	27.24	17.65	20.74	27.73	30.82
17 – 02	32.96	46.30	31.26	44.60	42.06	55.40	25.80	29.80	24.10	28.10	34.90	38.90
17 – 06	29.90	39.50	28.21	37.81	39.00	48.60	25.94	29.90	24.25	28.21	35.04	39.00
17 – 08	28.89	37.62	27.20	35.93	37.99	46.72	26.41	31.38	24.72	29.69	35.51	40.48
17 – 26	29.47	40.26	27.78	38.57	38.57	49.36	25.83	29.86	24.14	28.17	34.93	38.96
17 – 35	29.71	43.26	28.02	41.57	38.81	52.36	25.86	29.51	24.17	27.82	34.96	38.61
17 – 75	35.31	46.60	33.62	44.91	44.41	55.70	26.31	32.60	24.62	30.91	35.41	41.70
17 – 99	29.52	40.08	27.83	38.39	38.62	49.18	25.96	30.12	24.27	28.43	35.06	39.22
19 – 11	37.77	51.36	31.07	44.66	44.62	58.21	34.36	42.78	27.66	46.43	30.86	49.63
19 – 32	36.98	50.38	30.28	43.68	43.83	57.23	32.50	37.58	25.80	41.23	29.00	44.43
19 – 35	37.29	53.74	30.59	47.04	44.14	44.09	32.67	37.24	25.97	40.89	29.17	44.09
21 – 11	45.51	65.35	39.31	59.15	53.19	73.03	38.25	47.75	32.05	51.93	35.55	55.43
21 – 16	42.61	57.89	36.41	51.69	50.29	65.57	37.65	45.41	31.45	49.59	34.95	53.09
21 – 35	42.89	63.55	36.69	57.35	50.57	71.23	37.36	43.80	31.16	47.98	34.66	51.48
21 – 39	44.27	64.60	38.07	58.40	51.95	72.28	38.47	48.24	32.27	52.42	35.77	55.92
21 – 41	42.81	60.18	36.61	64.36	50.49	67.86	37.07	43.78	30.87	47.96	34.37	51.46
21 – 48	49.59	49.93	43.39	43.73	55.27	57.61	36.48	43.38	30.28	37.18	44.16	51.06
21 – 75	54.48	71.38	48.28	65.18	62.16	79.06	36.48	43.38	30.28	37.18	44.16	51.06
23 – 21	50.49	73.74	44.19	67.44	59.23	82.48	43.98	57.36	37.68	62.20	41.58	66.10
23 – 35	48.85	75.00	42.55	68.70	57.59	83.74	41.85	50.00	35.55	54.84	39.45	58.74
23 – 53	48.91	71.10	42.61	64.80	57.65	79.84	41.49	49.90	35.19	54.74	39.09	58.64
23 – 55	49.66	72.73	43.36	66.43	58.40	81.47	41.96	50.73	35.66	55.57	39.56	59.47
25 – 07	61.89	90.70	55.73	85.10	71.15	99.10	46.41	56.20	40.25	61.26	44.45	65.46
25 – 11	54.48	71.38	48.28	65.18	62.16	79.06	36.48	43.38	42.94	55.94	58.36	71.36
25 – 19	59.76	91.77	53.60	85.61	69.02	101.03	47.22	61.37	41.06	66.43	45.26	70.63
25 – 24	59.26	90.62	53.10	84.46	68.52	99.88	47.62	62.06	41.46	67.12	45.66	71.32
25 – 29	57.58	86.55	51.42	80.39	66.84	95.81	48.59	63.93	42.43	68.99	46.63	73.19
25 – 35	55.37	88.20	49.21	82.04	64.63	97.46	46.41	56.20	40.25	61.26	44.45	65.46
25 – 37	57.57	89.86	51.41	59.36	66.83	90.06	46.10	61.00	39.94	60.50	55.36	61.20
25 – 44	52.80	67.61	46.53	65.39	62.05	83.39	44.40	59.22	38.14	57.00	53.66	75.00
25 – 43	57.62	88.30	51.46	82.14	66.88	97.56	48.20	63.50	42.04	68.56	46.24	72.76
25 – 46	59.92	83.76	53.76	77.60	69.18	93.02	45.28	55.44	39.12	60.50	43.32	64.70
25 – 61	54.67	81.42	48.51	75.26	63.93	90.68	46.13	57.02	39.97	62.08	44.17	66.28
25 – 08	81.00	112.83	74.84	106.67	90.26	122.09	45.00	56.83	38.84	61.69	43.04	66.09
25 – 20	66.02	96.24	59.86	90.08	75.28	105.50	44.45	54.70	38.29	59.76	42.49	63.96
25 – 04	58.42	88.27	52.26	82.11	67.68	97.53	49.22	62.83	43.06	67.89	47.26	72.09

Weight in gram (+/- 15%)

Connector part numbers

Basic Series	8D	0	-	11	J	35	P	N			L
Shell style: **0:** Square flange receptacle **5:** Plug with RFI shielding											
Type: **-:** Connectors with standard crimp contacts. **L:** Receptacle with long PC tail (male and female size #22D, #20). **C:** Receptacle with short PC tail (male and female #22D, #20, #16). **S:** Receptacle with specific PC tail (male et female #22D) **W:** Receptacle with male contacts #22D for wire wrap (3 wraps) **T:** Receptacle with male contacts #20 for wire wrap (2 wraps) **P:** Receptacle with solder cup contacts - see page 69, please consult us											
Shell size: 09, 11, 13, 15, 17, 19, 21, 23, 25											
Plating: **J:** Olive drab cadmium **M:** Nickel **X:** Without plating											
Contact layout: See pages 13 to 19											
Contact type: **P:** Pin (500 mating/unmating) **H:** Pin (1500 mating/unmating) **A:** Connector supplied less pin contact or with specific contacts (connector marking: A + orientation) **S:** Socket (500 mating/unmating) **J:** Socket (1500 mating/unmating) **B:** Connector supplied less socket contact or with specific contacts (connector marking: B + orientation)											
Orientation: N, A, B, C, D, E, T, V (see page 75)											
Specification: **046:** Tinned straight PC tail **251:** Connector provided with power contacts (layouts with contact #8) **022:** Fuel tank **600:** 230V qualified connector (T or V orientation mandatory - Consult us for available layouts)											
Special custom: **None:** Standard plastic cap **M:** Antistatic plastic cap											
L: For P or S contact type only, connectors delivered without contacts, connectors marking P or S plus orientation.											

Note: PC tail contacts without shoulder also available. Please see page 102.

MIL-DTL-38999 part numbers*

Basic Series	D38999/	20	M	B	35	P	N	L
Shell style: **20:** Square flange receptacle **26:** Plug with RFI shielding.								
Plating: **J:** Olive drab cadmium **M:** Nickel								
Shell size: 09=**A**, 11=**B**, 13=**C**, 15=**D**, 17=**E**, 19=**F**, 21=**G**, 23=**H**, 25=**J**								
Contact layout: See page 18 for layout according to MIL-DTL-38999								
Contact type: **P:** Pin (500 mating/unmating) **H:** Pin (1500 mating/unmating) **A:** Connector supplied less pin contact or with specific contacts (connector marking: A + orientation) **S:** Socket (500 mating/unmating) **J:** Socket (1500 mating/unmating) **B:** Connector supplied less socket contact or with specific contacts (connector marking: B + orientation)								
Orientation: N, A, B, C, D, E (see page 75)								
L: For P or S contact type only, connector delevired without contacts, connector marking P or S (without L)								

* Note: To place an order of MIL connectors delivered without MIL removable crimp contacts and keep P or S plus orientation marking, it must be specify clearly on the order (by adding a suffix L at the end of the P/N or specified in comment).

BACC part numbers

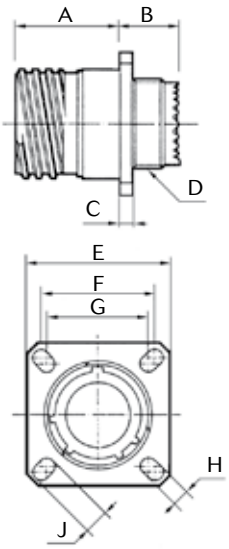
Basic Series: **BACC63CT** **BACC63CT:** 8D5*M (composite plug) **BACC63CU:** 8D0*M (composite square flange receptacle)	**BACC63CT**	**13**	**-**	**98**	**P**	**N**	**H**
Shell size: **09**=A, **11**=B, **13**=C, **15**=D, **17**=E, **19**=F, **21**=G, **23**=H, **25**=J							
Plating & grounding: **-:** Nickel plated, ungrounded **G:** Nickel plated, grounded **D:** Cadmium plated, ungrounded **C:** Cadmium plated, grounded							
Contact layout: See page 18 for layout according to BACC							
Contact type: **P:** Pin **S:** Socket							
Orientation: **N, A, B, C, D, E** (see page 75)							
Specification: **None:** With contacts **H:** Without contact & without filler plug							

EN3645 part numbers

Basic Series **EN3645**	**EN3645**	**J**	**6**	**G**	**N**	**35**	**B**	**N**
Plating: **J:** Olive drab cadmium **M:** Nickel								
Shell style: **0:** Square flange receptacle **6:** Plug								
Shell size: 09=**A**, 11=**B**, 13=**C**, 15=**D**, 17=**E**, 19=**F**, 21=**G**, 23=**H**, 25=**J**								
Grounding: **N:** Standard insert not grounded								
Contact layout: See page 18 for layout according to EN3645								
Contact type: **A:** Connector supplied less pin contact **B:** Connector supplied less socket contact **F:** Socket **M:** Pin								
Orientation: **N, A, B, C, D, E** (see page 75)								

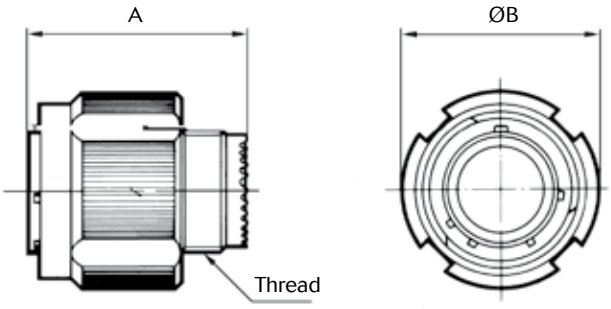
Dimensions

Receptacle type 0



Shell size	A Max	B Max	C Max	D Thread	E±0.3	F	G	H±0.2	J±0.2
09 (A)	19.65	11.96	3.65	M12 x 1-6g	23.8	18.26	15.09	3.25	5.49
11 (B)				M15 x 1-6g	26.2	20.62	18.26		4.93
13 (C)				M18 x 1-6g	28.6	23.01	20.62		
15 (D)				M22 x 1-6g	31	24.61	23.01		4.39
17 (E)				M25 x 1-6g	33.3	26.97	24.61		4.93
19 (F)			3.7	M28 x 1-6g	36.5	29.36	26.97		
21 (G)	18.85	12.76	4.35	M31 x 1-6g	39.7	31.75	29.36		
23 (H)			4.4	M34 x 1-6g	42.9	34.93	31.75	3.91	6.15
25 (J)				M37 x 1-6g	46	38.1	34.93		

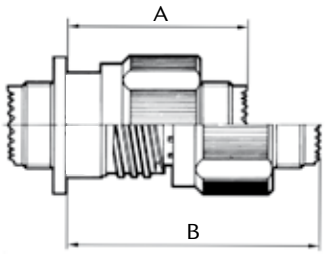
Plug type 5



Shell size	A Max	Thread	ØB Max
09 (A)	31.00	M12 x 1-6g	21.80
11 (B)		M15 x 1-6g	25.00
13 (C)		M18 x 1-6g	29.40
15 (D)		M22 x 1-6g	32.50
17 (E)		M25 x 1-6g	35.70
19 (F)		M28 x 1-6g	38.50
21 (G)		M31 x 1-6g	41.70
23 (H)		M34 x 1-6g	44.90
25 (J)		M37 x 1-6g	48.00

Mated connectors

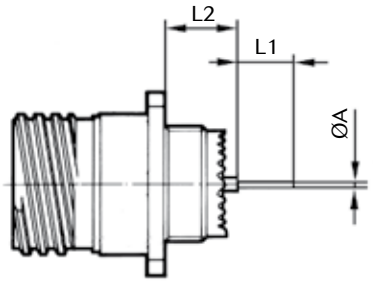
Type 0 with plug



Shell size	A Max	B Max
09 (A)	37.00	52.30
11 (B)		
13 (C)		
15 (D)		
17 (E)		
19 (F)		
21 (G)	36.00	51.30
23 (H)		
25 (J)		

Note: All dimensions are in millimeters (mm)

Receptacle with straight PC tail contacts



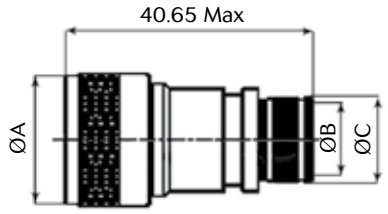
		Shell size			09 (A)	11 (B)	13 (C)	15 (C)	17 (E)	19 (F)	21 (G)	23 (H)	25 (J)
		Contact size	Contact type	PC tail type									
A		#22D	M & F	L & C	0.70								
		#22D	M & F	S	0.50								
		#20	M & F	C	0.70								
		#16	M & F	C	1.15								
L1		#22D	M & F	L	8.50								
		#22D	M & F	C	4.00								
		#22D	M & F	S	5.00								
		#20	M & F	C	5.00								
		#16	M & F	C	5.00								
L2	Min	#22D	M	L & C	9.48						9.59		
	Max	#22D	M	L & C	10.38						10.48		
	Min	#22D	F	L & C	9.15						9.26		
	Max	#22D	F	L & C	10.38						10.48		
	Min	#22D	M	S	9.65						9.76		
	Max	#22D	M	S	10.55						10.65		
	Min	#22D	F	S	9.32						9.42		
	Max	#22D	F	S	10.55						10.65		
	Min	#20	M	C	9.65						9.76		
	Max	#20	M	C	10.55						10.65		
	Min	#20	F	C	9.65						9.76		
	Max	#20	F	C	10.55						10.65		
	Min	#16	M	C	9.65						9.76		
	Max	#16	M	C	10.55						10.65		
	Min	#16	F	C	9.65						9.76		
	Max	#16	F	C	10.55						10.65		

M: Male contact **F:** Female contact **L:** Long PC tail **C:** Short PC tail **S:** Specific PC tail

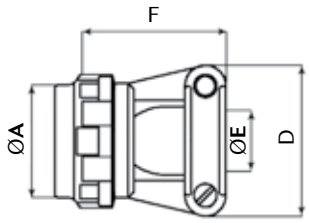
Note: All dimensions are in millimeters (mm)

Backshells

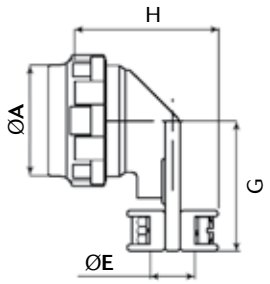
Straight backshell for EMI/RFI heat shrink boots (Type 88)



Straight cable clamp (Type 91)



90° cable clamp (Type 92)



Shell size	ØA Max	ØB±0.10 Entry size		ØC Entry size		D Max	E Max	F Max	G	H
		02	03	02	03					
09	21.80	N/A	6.35	N/A	10.03	24.90	5.55	21.25	22.20	26.95
11	25.00	N/A	7.92	N/A	11.61	26.00	6.70	24.30	23.80	27.95
13	29.40	7.92	11.13	11.61	14.81	30.50	8.75	27.95	26.20	30.00
15	32.50	11.13	14.27	14.81	17.96	33.00	11.70	27.95	28.60	33.00
17	35.70	12.70	15.88	16.38	19.56	36.10	13.85	31.25	33.30	35.05
19	38.50	15.88	19.05	19.56	22.73	38.60	15.60	35.80	34.95	36.85
21	41.70	15.88	20.62	19.56	24.30	41.65	17.75	38.35	38.10	39.15
23	44.90	17.47	23.83	21.06	27.51	45.00	19.80	42.15	41.30	41.15
25	48.00	19.05	25.40	22.73	29.08	48.00	21.60	44.70	44.45	42.95

Basic Series	M85049	91	11	M
Backshell type: **91:** Straight cable clamp **92:** 90° cable clamp				
Shell size: **09, 11, 13, 15, 17, 19, 21, 23, 25**				
Plating: **J:** Olive drab cadmium over electroless nickel **M:** Electroless nickel **T:** Without plating (Type 91 & 92 only)				
Entry size (Type 88 only): **02:** See table above **03:** See table above				

Note: All dimensions are in millimeters (mm)

Connectors weight

	With contacts				Without contact			
	Plug (type 5)		Receptacle (type 0)		Plug (type 5)		Receptacle (type 0)	
	Male	Female	Male	Female	Male	Female	Male	Female
09 35	8.5	10.1	7.8	9.4	8.1	8.6	7.4	7.9
09 98	8.5	9.8	7.8	9.1	8.1	8.6	7.4	7.9
11 01	12.8	15.7	10.4	13.3	12.1	14.1	9.7	11.7
11 02	11.5	14.1	09.3	11.8	10.9	12.5	08.7	10.3
11 04	12.6	15.7	10.2	13.3	12.0	14.1	9.7	11.7
11 05	12.6	15.8	10.2	13.4	11.9	13.8	9.5	11.5
11 22	11.4	13.8	09.1	11.6	11.1	12.8	08.8	10.6
11 35	12.5	16.0	10.1	13.6	11.6	12.8	9.2	10.4
11 80	15.25	18.6	13.40	10.4	10.75	11.63	08.90	09.4
11 98	12.5	15.3	10.1	12.9	11.7	12.8	9.3	10.5
11 99	11.8	15.0	09.6	12.8	10.8	12.2	08.6	10.0
13 04	17.2	20.9	13.7	17.5	15.6	17.9	12.4	14.3
13 08	17.6	22.8	14.1	19.2	16.5	19.6	12.9	16.1
13 26	17.9	23.6	14.4	20.1	16.2	18.9	12.7	15.4
13 35	17.4	23.1	13.8	19.6	15.8	17.6	12.3	14.1
13 98	17.2	21.8	13.7	18.3	15.8	17.9	12.3	14.3
15 05	21.4	26.7	16.6	21.9	19.8	22.8	15.0	18.0
15 15	22.2	29.3	17.4	24.5	19.9	23.0	15.1	18.1
15 18	22.4	31.3	17.6	26.5	19.9	24.0	15.0	19.2
15 19	22.0	29.6	17.1	24.8	19.2	22.0	14.5	17.2
15 35	22.0	31.3	17.2	26.5	19.4	22.0	14.6	17.2
15 97	21.8	28.9	17.1	24.1	19.4	22.6	14.7	17.8
17 02	26.51	38.85	25.23	37.57	19.35	22.35	18.07	21.07
17 06	25.9	35.5	23.2	32.8	21.9	25.9	19.2	23.2
17 08	24.9	33.6	22.2	30.1	22.4	27.4	19.7	24.7
17 26	25.5	36.3	22.8	33.6	21.8	25.9	19.2	23.1
17 35	25.7	39.3	23.0	36.6	21.9	25.5	19.2	22.8
17 75	31.3	42.6	28.6	39.9	22.3	28.6	19.6	25.9
17 99	25.5	36.1	22.8	33.4	22.0	26.1	19.3	23.4
19 11	32.1	45.7	26.1	39.7	28.7	37.1	22.7	31.1
19 32	31.3	44.7	25.3	38.7	26.8	31.9	20.8	25.9
19 35	31.6	48.1	25.6	42.0	27.1	31.6	21.0	25.6
21 11	38.0	57.9	32.8	52.6	30.8	40.3	25.5	35.1
21 16	35.1	50.4	29.9	45.2	30.2	37.9	24.9	32.7
21 35	35.4	56.1	30.1	50.8	29.9	36.3	24.6	31.1
21 39	36.8	57.1	31.5	51.9	31.0	40.8	25.7	35.5
21 41	35.3	52.7	30.1	47.5	29.6	36.3	24.3	31.0
21 48	42.41	62.40	37.71	57.70	29.3	36.2	24.6	31.5
21 75	47.3	64.2	42.6	59.50	29.3	36.2	24.6	31.5
23 21	43.1	66.3	38.0	61.2	36.5	49.9	31.5	44.8
23 35	41.4	67.5	36.3	62.5	34.4	42.5	29.3	37.5
23 53	41.5	63.6	36.4	58.6	34.1	42.4	29.0	37.4
23 55	42.2	65.3	42.2	60.2	34.5	43.3	29.4	38.2
25 07	53.6	90.05	49.0	84.85	37.8	51.8	33.2	46.6
25 11	59.08	81.60	54.48	77.00	40.8	53.8	36.2	49.2
25 19	51.7	83.7	46.6	78.6	39.2	53.3	34.0	48.2
25 24	51.2	82.5	46.1	77.4	39.6	54.0	34.4	48.9
25 29	49.5	78.5	44.4	73.4	40.5	55.9	35.4	50.7
25 35	47.3	80.1	42.2	75.0	38.4	48.1	33.2	43.0
25 37	49.27	80.36	45.47	76.16	37.8	51.50	34.0	47.30
25 44	69.64	93.70	65.04	94.65	36.1	45.80	31.5	46.75
25 43	49.6	80.2	44.4	75.1	40.1	55.4	35.0	50.3
25 46	51.9	75.7	46.7	70.1	37.2	47.4	32.1	42.2
25 61	46.6	73.4	41.5	68.2	38.1	48.9	32.9	43.8
25 08	72.9	104.8	67.8	99.6	36.9	48.8	31.8	43.6
25 20	57.9	88.2	52.8	83.0	36.4	46.6	31.3	41.5
25 04	50.4	80.2	45.3	75.0	41.2	54.8	36.1	49.6

Weight in gram (+/- 15%)

Connector part numbers

Basic Series	8D	0	-	11	K	35	P	N			L
Shell style: **0:** Square flange receptacle **7:** Jam nut receptacle **5:** Plug with RFI shielding											
Type: **-:** Connectors with standard crimp contacts. **L:** Receptacle with long PC tail (male and female size #22D, #20). **C:** Receptacle with short PC tail (male and female #22D, #20, #16). **S:** Receptacle with specific PC tail (male et female #22D) **W:** Receptacle with male contacts #22D for wire wrap (3 wraps) **T:** Receptacle with male contacts #20 for wire wrap (2 wraps) **P:** Receptacle with solder cup contacts - see page 69, please consult us											
Shell size: 09, 11, 13, 15, 17, 19, 21, 23, 25											
Plating: **K:** Passivated **S:** Nickel											
Contact layout: See pages 13 to 19											
Contact type: **P:** Pin **A:** Connector supplied less pin contact or with specific contacts (connector marking: A + orientation) **S:** Socket **B:** Connector supplied less socket contact or with specific contacts (connector marking: B + orientation)											
Orientation: N, A, B, C, D, E, T, V (see page 75)											
Specification: **046:** Tinned straight PC tail **251:** Connector provided with power contacts (layouts with contact #8) **022:** Fuel tank **600:** 230V qualified connector (T or V orientation mandatory - Consult us for available layouts)											
Special custom **None:** Standard plastic cap **M:** Antistatic plastic cap											
L: For P or S contact type only, connectors delivered without contacts, connectors marking P or S plus orientation.											

Note: PC tail contacts without shoulder also available. Please see page 102.

MIL-DTL-38999 part numbers*

Basic Series	D38999/	20	K	B	35	P	N	L
Shell style: **20:** Square flange receptacle **24:** Jam nut receptacle **26:** Plug with RFI shielding.								
Plating: **K:** Passivated **S:** Nickel								
Shell size: 09=**A**, 11=**B**, 13=**C**, 15=**D**, 17=**E**, 19=**F**, 21=**G**, 23=**H**, 25=**J**								
Contact layout: See page 18 for layout according to MIL-DTL-38999								
Contact type: **P:** Pin **A:** Connector supplied less pin contact or with specific contacts (connector marking: A + orientation) **S:** Socket **B:** Connector supplied less socket contact or with specific contacts (connector marking: B + orientation)								
Orientation: N, A, B, C, D, E (see page 75)								
L: For P or S contact type only, connector delivered without contacts, connector marking P or S (without L)								

* Note: To place an order of MIL connectors delivered without MIL removable crimp contacts and keep P or S plus orientation marking, it must be specify clearly on the order (by adding a suffix L at the end of the P/N or specified in comment).

BACC part numbers

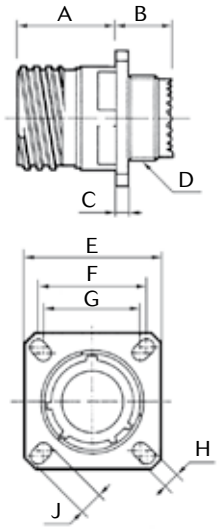
Basic Series:	**BACC63DB**	**13**	**-**	**98**	**P**	**N**	**H**
BACC63DB: 8D5*K (stainless steel plug) **BACC63DC:** 8D0*K (stainless steel square flange receptacle)							
Shell size: **09**=A, **11**=B, **13**=C, **15**=D, **17**=E, **19**=F, **21**=G, **23**=H, **25**=J							
Plating & grounding: **-:** Nickel plated, ungrounded **G:** Nickel plated, grounded **D:** Cadmium plated, ungrounded **C:** Cadmium plated, grounded							
Contact layout: See page 18 for layout according to BACC							
Contact type: **P:** Pin **S:** Socket							
Orientation: **N, A, B, C, D, E** (see page 75)							
Specification: **None:** With contacts **H:** Without contact & without filler plug							

EN3645 part numbers

Basic Series	**EN3645**	**K**	**6**	**G**	**N**	**35**	**B**	**N**
Plating: **K:** Stainless steel passivated								
Shell style: **0:** Square flange receptacle **6:** Plug **7:** Jam nut receptacle								
Shell size: 09=**A**, 11=**B**, 13=**C**, 15=**D**, 17=**E**, 19=**F**, 21=**G**, 23=**H**, 25=**J**								
Grounding: **N:** Standard insert not grounded								
Contact layout: See page 18 for layout according to EN3645								
Contact type: **A:** Connector supplied less pin contact **B:** Connector supplied less socket contact **F:** Socket **M:** Pin								
Orientation: **N, A, B, C, D, E** (see page 75)								

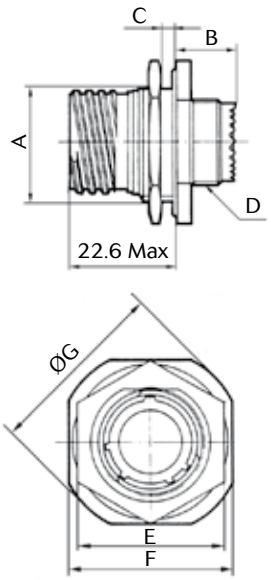
Dimensions

Receptacle type 0 (8D) or type 20 (D38999)



Shell size	A Max	B Max	C Max	D Thread	E±0.3	F	G	H±0.2	J±0.2
09 (A)	20.2	11.4	2.5	M12 x 1-6g	23.8	18.26	15.09	3.25	5.49
11 (B)				M15 x 1-6g	26.2	20.62	18.26		4.93
13 (C)				M18 x 1-6g	28.6	23.01	20.62		
15 (D)				M22 x 1-6g	31	24.61	23.01		4.4
17 (E)				M25 x 1-6g	33.3	26.97	24.61		4.93
19 (F)				M28 x 1-6g	36.5	29.36	26.97		
21 (G)	19.8	11.8	3.2	M31 x 1-6g	39.7	31.75	29.36	3.91	6.15
23 (H)		11.4		M34 x 1-6g	42.9	34.93	31.75		
25 (J)				M37 x 1-6g	46	38.1	34.93		

Receptacle type 7 (8D) or type 24 (D38999)



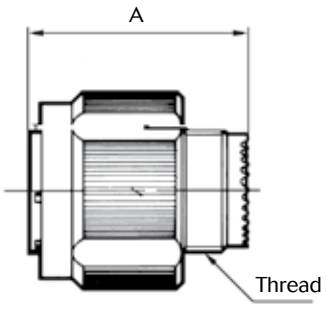
Shell size	A±0.15	B Max	C Max	D Thread	E Max	F±0.4	ØG Max
09 (A)	16.53	9.9	3.2	M12 x 1-6g	23	27	30.5
11 (B)	19.07			M15 x 1-6g	26	31.8	35.2
13 (C)	23.82			M18 x 1-6g	31	34.9	38.4
15 (D)	26.97			M22 x 1-6g	34	38.1	41.6
17 (E)	30.15			M25 x 1-6g	37	41.3	44.8
19 (F)	33.32			M28 x 1-6g	41	46	49.5
21 (G)	36.50			M31 x 1-6g	46	49.2	52.7
23 (H)	39.67			55.9	47	52.4	55.9
25 (J)	42.85			59	51.23	55.6	59

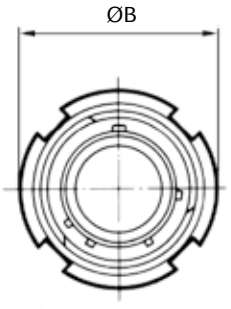
Recommended coupling torque on panel for jam nut receptacle (type 7)

Shell	09 (A)	11 (B)	13 (C)	15 (D)	17 (E)	19 (F)	21 (G)	23 (H)	25 (J)
Coupling torque (±0.5 N.m)	4	5	7	8	9	10	12	13	14

Note: All dimensions are in millimeters (mm)

Plug type 5 (8D) or type 26 (D38999)

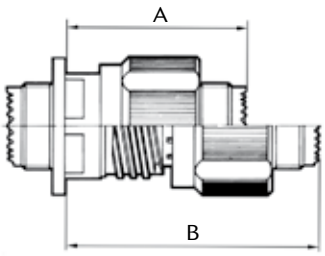




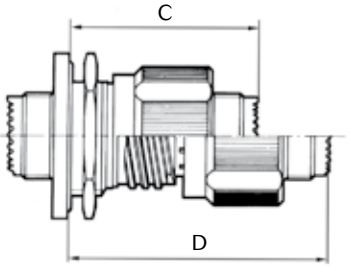
Shell size	A Max	Thread	ØB Max
09 (A)	31.00	M12 x 1-6g	21.80
11 (B)		M15 x 1-6g	25.00
13 (C)		M18 x 1-6g	29.40
15 (D)		M22 x 1-6g	32.50
17 (E)		M25 x 1-6g	35.70
19 (F)		M28 x 1-6g	38.50
21 (G)		M31 x 1-6g	41.70
23 (H)		M34 x 1-6g	44.90
25 (J)		M37 x 1-6g	48.00

Mated connectors dimensions

Type 0 with plug



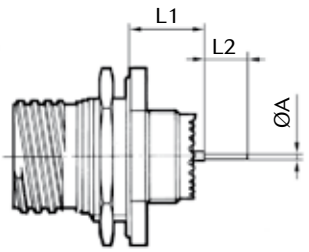
Type 7 with plug

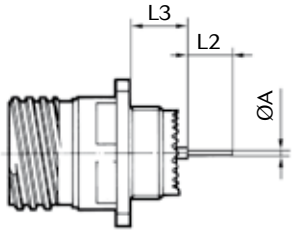


Shell size	A Max	B Max	C Max	D Max
09 (A)	37.00	52.30	38.30	53.60
11 (B)				
13 (C)			38.50	53.80
15 (D)				
17 (E)				
19 (F)				
21 (G)	36.00	51.30		
23 (H)				
25 (J)				

Note: All dimensions are in millimeters (mm)

Receptacle with straight PC tail contacts





		Shell size			09 (A)	11 (B)	13 (C)	15 (C)	17 (E)	19 (F)	21 (G)	23 (H)	25 (J)
		Contact size	Contact type	PC tail type									
A		#22D	M & F	L & C	0.70								
		#22D	M & F	S	0.50								
		#20	M & F	C	0.70								
		#16	M & F	C	$1.12^{\pm 0.03}$								
L1	Min	#22D	M	L & C	10.52		10.34						
	Max	#22D	M	L & C	11.46		11.28						
	Min	#22D	F	L & C	10.19		10.01						
	Max	#22D	F	L & C	11.46		11.28						
	Min	#22D	M	S	10.19		10.01						
	Max	#22D	M	S	11.46		11.28						
	Min	#22D	F	S	10.69		10.51						
	Max	#22D	F	S	11.63		11.45						
	Min	#20	M	C	10.36		10.18						
	Max	#20	M	C	11.63		11.45						
	Min	#20	F	C	10.69		10.51						
	Max	#20	F	C	11.63		11.45						
	Min	#16	M	C	10.69		10.51						
	Max	#16	M	C	11.63		11.45						
	Min	#16	F	C	10.69		10.51						
	Max	#16	F	C	11.63		11.45						
L2		#22D	M & F	L	8.50								
		#22D	M & F	C	4.00								
		#22D	M & F	S	5.10								
		#20	M & F	C	5.10								
		#16	M & F	C	$5^{\pm 0.1}$								
L3	Min	#22D	M	L & C	9.48						9.59		
	Max	#22D	M	L & C	10.58						10.69		
	Min	#22D	F	L & C	9.15						9.26		
	Max	#22D	F	L & C	10.58						10.69		
	Min	#22D	M	S	9.65						9.76		
	Max	#22D	M	S	10.75						10.86		
	Min	#22D	F	S	9.15						9.26		
	Max	#22D	F	S	10.75						10.86		
	Min	#20	M	C	9.65						9.76		
	Max	#20	M	C	10.75						10.86		
	Min	#20	F	C	9.65						9.76		
	Max	#20	F	C	10.75						10.86		
	Min	#16	M	C	9.64						9.75		
	Max	#16	M	C	10.75						10.86		
	Min	#16	F	C	9.64						9.75		
	Max	#16	F	C	10.75						10.86		

M: Male contact **F:** Female contact **L:** Long PC tail **C:** Short PC tail **S:** Specific PC tail *Dimensions in millimeters*

Connectors weight

	With contacts						Without contact					
	Plug (type 5)		Receptacle (type 0)		Receptacle (type 7)		Plug (type 5)		Receptacle (type 0)		Receptacle (type 7)	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
09-35	30.63	32.21	23.93	25.51	33.93	35.51	30.21	30.71	23.51	24.01	33.51	34.01
09-98	30.63	31.93	23.93	25.23	33.93	35.23	30.21	30.73	23.51	24.03	33.51	34.03
11-01	38.13	41.07	29.53	32.47	42.43	45.37	37.47	39.47	28.87	30.87	41.77	43.77
11-02	37.76	40.30	39.36	30.12	46.98	49.52	37.14	38.74	28.56	30.16	46.36	47.96
11-04	37.95	41.01	29.35	32.41	42.25	45.31	37.39	39.41	28.79	30.81	41.69	43.71
11-05	37.98	41.19	29.38	32.59	42.04	45.49	37.28	39.19	28.68	30.59	41.58	43.49
11-22	37.48	39.54	28.90	130.86	46.70	48.76	37.34	39.04	28.76	30.36	46.56	48.26
11-35	37.88	41.35	29.28	32.75	41.94	45.65	36.97	38.10	28.37	29.50	41.27	42.40
11-80	38.12	44.84	29.73	36.26	47.78	54.06	34.86	37.84	26.45	29.26	44.51	47.06
11-98	37.85	40.61	29.25	32.01	42.15	44.91	37.01	38.21	28.41	29.61	41.31	42.51
11-99	38.02	41.24	29.44	32.66	47.24	50.46	37.04	38.44	28.46	29.86	46.26	47.66
13-04	53.34	57.12	37.94	41.72	56.24	60.02	52.10	54.00	36.70	38.60	55.00	56.90
13-08	53.72	58.90	38.32	43.50	56.62	61.80	52.60	55.70	37.20	40.30	55.50	58.60
13-26	54.09	59.74	38.69	44.34	56.99	62.64	52.35	55.04	36.95	39.64	55.25	57.94
13-35	53.52	59.29	38.12	43.89	56.42	62.19	51.98	53.79	36.58	38.39	54.88	56.69
13-98	53.38	58.00	37.98	42.60	56.28	60.90	51.98	54.00	36.58	38.60	54.88	56.90
15-05	64.49	69.83	45.69	51.03	67.59	72.93	62.94	65.93	44.14	47.13	66.04	69.03
15-15	65.29	72.45	46.49	53.65	68.39	75.55	63.02	66.07	44.22	47.27	66.12	69.17
15-18	65.50	74.38	46.70	55.58	68.60	77.48	62.98	67.18	44.18	48.38	66.08	70.28
15-19	65.03	72.76	46.23	53.96	68.13	75.86	62.37	65.16	43.57	46.36	65.47	68.26
15-35	65.13	74.37	46.33	55.57	68.23	77.47	62.54	65.12	43.74	46.32	65.64	68.22
15-97	64.96	72.01	46.16	53.21	68.06	75.11	62.60	65.69	43.80	46.89	65.70	68.79
17-02	77.80	92.64	72.89	87.73	104.09	118.95	74.53	86.09	69.62	81.18	100.82	112.38
17-06	69.07	78.67	64.17	73.77	87.27	96.87	65.11	69.07	60.21	64.17	83.31	87.27
17-08	68.06	76.79	63.16	71.89	86.26	94.99	65.58	70.55	60.68	65.65	83.78	88.75
17-26	68.64	79.43	63.74	74.53	86.84	97.63	65.00	69.03	60.10	64.13	83.20	87.23
17-35	68.88	82.43	63.98	77.53	87.08	100.63	65.03	68.68	60.13	63.78	83.23	86.88
17-75	74.48	85.77	69.58	80.87	92.68	103.97	65.48	71.77	60.58	66.87	83.68	89.97
17-99	68.69	79.25	63.79	74.35	86.89	97.45	65.13	69.29	60.23	64.39	83.33	87.49
19-11	87.04	100.63	67.69	81.28	97.59	111.18	83.63	92.05	64.28	73.45	94.18	103.35
19-32	86.25	99.65	66.90	80.30	96.80	110.20	81.77	86.85	62.42	67.50	92.32	97.40
19-35	86.56	103.01	67.21	83.66	97.11	113.56	81.94	86.51	62.59	67.16	92.49	97.06
21-11	99.71	119.55	81.81	101.65	111.81	131.65	92.45	101.95	74.55	84.05	104.55	114.05
21-16	96.81	112.09	78.91	94.19	108.91	124.19	91.85	99.61	73.95	81.71	103.95	111.71
21-35	97.09	117.75	79.19	99.85	109.19	129.85	91.56	98.00	73.66	80.10	103.66	110.10
21-39	98.47	118.80	80.57	100.90	110.57	130.90	92.67	102.44	74.77	84.54	104.77	114.54
21-41	97.01	114.38	79.11	126.48	109.11	126.48	91.27	97.98	73.37	80.08	103.37	80.08
21-48	103.84	123.82	85.93	105.91	126.02	146.02	90.72	97.62	72.81	79.71	112.92	119.82
21-75	108.72	125.62	90.81	107.71	130.92	147.82	90.72	97.62	72.81	79.71	112.92	119.82
23-21	108.81	132.06	90.61	113.86	122.81	146.06	102.30	115.68	84.10	97.48	116.30	129.68
23-35	107.17	133.32	88.97	115.12	121.17	147.32	100.17	108.32	81.97	90.12	114.17	122.32
23-53	107.23	129.42	89.03	111.22	121.23	143.42	99.81	108.22	81.61	90.02	113.81	122.22
23-55	107.98	131.05	89.78	112.85	121.98	145.05	100.28	109.05	82.08	90.85	114.28	123.05
25-07	133.3	157.7	115.5	172.25	160.06	172.25	108.51	119.45	90.71	101.65	135.27	101.65
25-11	132.31	152.31	114.51	134.51	159.71	179.07	111.51	124.51	93.71	106.71	138.91	151.27
25-19	122.14	154.15	104.34	136.35	136.74	168.75	109.60	123.75	91.80	105.95	124.20	138.35
25-24	121.64	153.00	103.84	135.20	136.24	167.60	110.00	124.44	92.20	106.64	124.60	139.04
25-29	119.96	148.93	102.16	131.13	134.56	163.53	110.97	126.31	93.17	108.51	125.57	140.91
25-35	117.75	150.58	99.95	132.78	132.35	165.18	108.79	118.58	90.99	100.78	123.39	133.18
25-37	119.98	148.26	102.18	162.67	146.74	162.67	108.51	119.40	90.71	101.60	135.27	101.60
25-44	140.35	164.98	122.55	179.58	167.11	179.71	106.81	117.08	89.01	99.28	133.57	99.41
25-43	120.00	150.68	102.20	132.88	134.60	165.28	110.58	125.88	92.78	108.08	125.18	140.48
25-46	122.30	146.14	104.50	128.34	136.90	160.74	107.66	117.82	89.86	100.02	122.26	132.42
25-61	117.05	143.80	99.25	126.00	131.65	158.40	108.51	119.40	90.71	101.60	123.11	155.51
25-08	143.38	175.21	125.58	157.41	157.98	189.81	107.38	119.21	89.58	101.41	121.98	133.81
25-20	128.40	158.62	110.60	140.82	143.00	173.22	106.83	117.08	89.03	99.28	121.43	131.68
25-04	120.80	150.65	103.00	132.85	135.40	165.25	111.60	125.21	93.80	107.41	126.20	139.81

Weight in gram (+/- 15%)

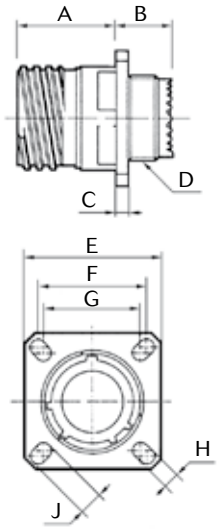
Connector part numbers

Basic Series	8D	0	-	11	TT	35	P	N			L
Shell style: **0:** Square flange receptacle **7:** Jam nut receptacle **5:** Plug with RFI shielding											
Type: **-:** Connectors with standard crimp contacts. **L:** Receptacle with long PC tail (male and female size #22D, #20). **C:** Receptacle with short PC tail (male and female #22D, #20, #16). **S:** Receptacle with specific PC tail (male et female #22D) **W:** Receptacle with male contacts #22D for wire wrap (3 wraps) **T:** Receptacle with male contacts #20 for wire wrap (2 wraps) **P:** Receptacle with solder cup contacts - see page 69, please consult us											
Shell size: **09, 11, 13, 15, 17, 19, 21, 23, 25**											
Plating: **TT:** Without plating **TF:** Nickel											
Contact layout: See pages 13 to 19											
Contact type: **P:** Pin **A:** Connector supplied less pin contact or with specific contacts (connector marking: A + orientation) **S:** Socket **B:** Connector supplied less socket contact or with specific contacts (connector marking: B + orientation)											
Orientation: **N, A, B, C, D, E** (see page 75)											
Specification: **046:** Tinned straight PC tail **251:** Connector provided with power contacts (layouts with contact #8) **022:** Fuel tank											
Special custom **None:** Standard plastic cap **M:** Antistatic plastic cap											
L: For P or S contact type only, connectors delivered without contacts, connectors marking P or S plus orientation.											

Note: PC tail contacts without shoulder also available. Please see page 102.

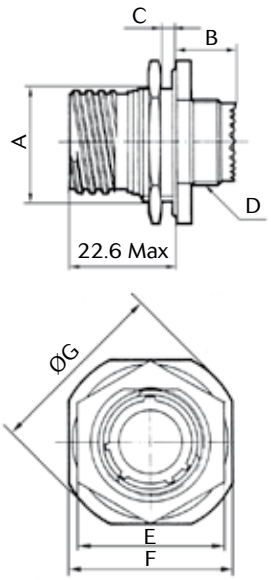
Dimensions

Receptacle type 0



Shell size	A Max	B Max	C Max	D Thread	E±0.3	F	G	H±0.2	J±0.2
09 (A)	20.2	11.4	2.5	M12 x 1-6g	23.8	18.26	15.09	3.25	5.49
11 (B)				M15 x 1-6g	26.2	20.62	18.26		4.93
13 (C)				M18 x 1-6g	28.6	23.01	20.62		
15 (D)				M22 x 1-6g	31	24.61	23.01		4.4
17 (E)				M25 x 1-6g	33.3	26.97	24.61		4.93
19 (F)				M28 x 1-6g	36.5	29.36	26.97		
21 (G)	19.8	11.8	3.2	M31 x 1-6g	39.7	31.75	29.36		
23 (H)		11.4		M34 x 1-6g	42.9	34.93	31.75	3.91	6.15
25 (J)				M37 x 1-6g	46	38.1	34.93		

Receptacle type 7



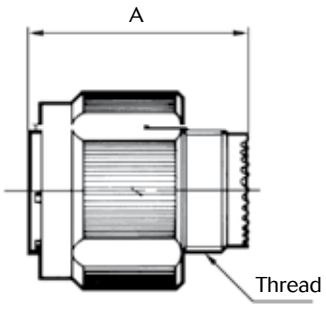
Shell size	A±0.15	B Max	C Max	D Thread	E Max	F±0.4	ØG Max
09 (A)	16.53	9.9	3.2	M12 x 1-6g	23	27	30.5
11 (B)	19.07			M15 x 1-6g	26	31.8	35.2
13 (C)	23.82			M18 x 1-6g	31	34.9	38.4
15 (D)	26.97			M22 x 1-6g	34	38.1	41.6
17 (E)	30.15			M25 x 1-6g	37	41.3	44.8
19 (F)	33.32			M28 x 1-6g	41	46	49.5
21 (G)	36.50			M31 x 1-6g	46	49.2	52.7
23 (H)	39.67			55.9	47	52.4	55.9
25 (J)	42.85			59	51.23	55.6	59

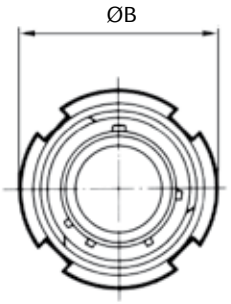
Recommended coupling torque on panel for jam nut receptacle (type 7)

Shell	09 (A)	11 (B)	13 (C)	15 (D)	17 (E)	19 (F)	21 (G)	23 (H)	25 (J)
Coupling torque (±0.5 N.m)	4	5	7	8	9	10	12	13	14

Note: All dimensions are in millimeters (mm)

Plug type 5

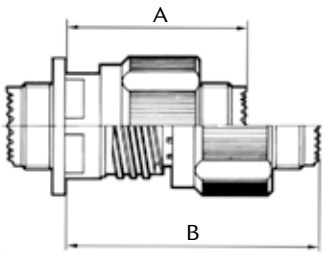




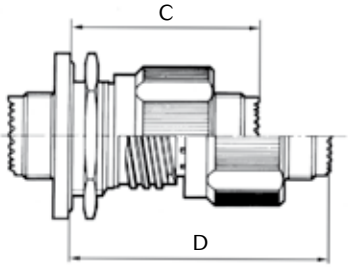
Shell size	A Max	Thread	ØB Max
09 (A)	31.00	M12 x 1-6g	21.80
11 (B)		M15 x 1-6g	25.00
13 (C)		M18 x 1-6g	29.40
15 (D)		M22 x 1-6g	32.50
17 (E)		M25 x 1-6g	35.70
19 (F)		M28 x 1-6g	38.50
21 (G)		M31 x 1-6g	41.70
23 (H)		M34 x 1-6g	44.90
25 (J)		M37 x 1-6g	48.00

Mated connectors dimensions

Type 0 with plug



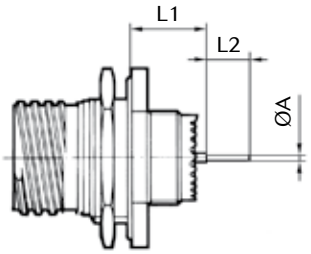
Type 7 with plug

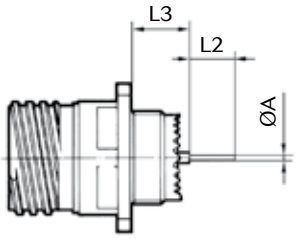


Shell size	A Max	B Max	C Max	D Max
09 (A)	37.00	52.30	38.30	53.60
11 (B)				
13 (C)			38.50	53.80
15 (D)				
17 (E)				
19 (F)				
21 (G)	36.00	51.30		
23 (H)				
25 (J)				

Note: All dimensions are in millimeters (mm)

Receptacle with straight PC tail contacts





		Shell size			09 (A)	11 (B)	13 (C)	15 (C)	17 (E)	19 (F)	21 (G)	23 (H)	25 (J)
		Contact size	Contact type	PC tail type									
A		#22D	M & F	L & C	0.70								
		#22D	M & F	S	0.50								
		#20	M & F	C	0.70								
		#16	M & F	C	$1.12^{\pm 0.03}$								
L1	Min	#22D	M	L & C	10.52		10.34						
	Max	#22D	M	L & C	11.46		11.28						
	Min	#22D	F	L & C	10.19		10.01						
	Max	#22D	F	L & C	11.46		11.28						
	Min	#22D	M	S	10.19		10.01						
	Max	#22D	M	S	11.46		11.28						
	Min	#22D	F	S	10.69		10.51						
	Max	#22D	F	S	11.63		11.45						
	Min	#20	M	C	10.36		10.18						
	Max	#20	M	C	11.63		11.45						
	Min	#20	F	C	10.69		10.51						
	Max	#20	F	C	11.63		11.45						
	Min	#16	M	C	10.69		10.51						
	Max	#16	M	C	11.63		11.45						
	Min	#16	F	C	10.69		10.51						
	Max	#16	F	C	11.63		11.45						
L2		#22D	M & F	L	8.50								
		#22D	M & F	C	4.00								
		#22D	M & F	S	5.10								
		#20	M & F	C	5.10								
		#16	M & F	C	$5^{\pm 0.1}$								
L3	Min	#22D	M	L & C	9.48						9.59		
	Max	#22D	M	L & C	10.58						10.69		
	Min	#22D	F	L & C	9.15						9.26		
	Max	#22D	F	L & C	10.58						10.69		
	Min	#22D	M	S	9.65						9.76		
	Max	#22D	M	S	10.75						10.86		
	Min	#22D	F	S	9.15						9.26		
	Max	#22D	F	S	10.75						10.86		
	Min	#20	M	C	9.65						9.76		
	Max	#20	M	C	10.75						10.86		
	Min	#20	F	C	9.65						9.76		
	Max	#20	F	C	10.75						10.86		
	Min	#16	M	C	9.64						9.75		
	Max	#16	M	C	10.75						10.86		
	Min	#16	F	C	9.64						9.75		
	Max	#16	F	C	10.75						10.86		

M: Male contact **F:** Female contact **L:** Long PC tail **C:** Short PC tail **S:** Specific PC tail *Dimensions in millimeters*

Connectors weight

	With contacts						Without contact					
	Plug (type 5)		Receptacle (type 0)		Receptacle (type 7)		Plug (type 5)		Receptacle (type 0)		Receptacle (type 7)	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
09 35	18.23	19.81	14.37	15.95	20.14	21.72	17.81	18.31	13.95	14.45	19.72	20.22
09 98	18.23	19.53	14.37	15.67	20.14	21.44	17.81	18.33	13.95	14.47	19.72	20.24
11 01	23.15	26.09	18.19	21.13	25.63	28.57	22.49	24.49	17.53	19.53	24.97	26.97
11 02	22.78	25.32	17.82	20.36	28.1	30.64	22.16	23.76	17.2	18.8	27.48	29.08
11 04	22.97	26.03	18.01	21.07	25.45	28.51	22.41	24.43	17.45	19.47	24.89	26.91
11 05	23.00	26.21	18.04	21.25	25.24	28.69	22.30	24.21	17.34	19.25	24.78	26.69
11 22	22.64	25.06	17.68	20.10	27.96	30.38	22.36	24.06	17.40	19.10	27.68	29.38
11 35	22.90	26.37	17.94	21.41	25.14	28.85	21.99	23.12	17.03	18.16	24.47	25.60
11 80	25.38	29.86	20.08	24.88	30.66	35.78	22.10	22.86	16.80	17.88	27.38	28.78
11 98	22.87	25.63	17.91	20.67	25.35	28.11	22.03	23.23	17.07	18.27	24.51	25.71
11 99	23.04	26.26	18.06	21.28	25.53	28.75	22.06	23.46	17.08	18.48	24.55	25.95
13 04	32.44	36.22	23.56	27.34	34.11	37.89	31.20	33.10	22.32	24.22	32.87	34.77
13 08	32.82	38.00	23.94	29.12	34.49	39.67	31.70	34.80	22.82	25.92	33.37	36.47
13 26	33.19	38.84	24.31	29.96	34.86	40.51	31.45	34.14	22.57	25.26	33.12	35.81
13 35	32.62	38.39	23.74	29.51	34.29	40.06	31.08	32.89	22.20	24.01	32.75	34.56
13 98	32.48	37.10	23.60	28.22	34.15	38.77	31.08	33.10	22.20	24.22	32.75	34.77
15 05	39.61	44.95	28.77	34.11	41.40	46.74	38.06	41.05	27.22	30.21	39.85	42.84
15 15	40.41	47.57	29.57	36.73	42.20	49.36	38.14	41.19	27.30	30.35	39.93	42.98
15 18	40.62	49.50	29.78	38.66	42.41	51.29	38.10	42.30	27.26	31.46	39.89	44.09
15 19	40.15	47.88	29.31	37.04	41.94	49.67	37.49	40.28	26.65	29.44	39.28	42.07
15 35	40.25	49.49	29.41	38.65	42.04	51.28	37.66	40.24	26.82	29.40	39.45	42.03
15 97	40.08	47.13	29.24	36.29	41.87	48.92	37.72	40.81	26.88	29.97	39.51	42.60
17 02	48.16	58.40	45.20	55.44	63.99	74.23	44.89	51.85	41.93	48.89	60.72	67.68
17 06	43.73	53.33	40.90	50.50	54.23	63.83	39.77	43.73	36.94	40.90	50.27	54.23
17 08	42.72	51.45	39.89	48.62	53.22	61.95	40.24	45.21	37.41	42.38	50.74	55.71
17 26	43.30	54.09	40.47	51.26	53.80	64.59	39.66	43.69	36.83	40.86	50.16	54.19
17 35	43.54	57.09	40.71	54.26	54.04	67.59	39.69	43.34	36.86	40.51	50.19	53.84
17 75	49.14	60.43	46.31	57.60	59.64	70.93	40.14	46.43	37.31	43.60	50.64	56.93
17 99	43.35	53.91	40.52	51.08	53.85	64.41	39.79	43.95	36.96	41.12	50.29	54.45
19 11	55.16	68.75	44.00	57.59	61.25	74.84	51.75	60.17	40.59	66.26	40.59	66.26
19 32	54.37	67.77	43.21	56.61	60.46	73.86	49.89	54.97	38.73	61.06	38.73	61.06
19 35	54.68	71.13	43.52	59.97	60.77	77.22	50.06	54.63	38.90	60.72	38.90	60.72
21 11	64.64	84.48	54.31	74.15	71.62	91.46	57.38	66.88	47.05	73.86	47.05	73.86
21 16	61.74	77.02	51.41	66.69	68.72	84.00	56.78	64.54	46.45	71.52	46.45	71.52
21 35	62.02	82.68	51.69	72.35	69.00	89.66	56.49	62.93	46.16	69.91	46.16	69.91
21 39	63.40	83.73	53.07	73.40	70.38	90.71	57.60	67.37	47.27	74.35	47.27	74.35
21 41	61.94	79.31	51.61	86.29	68.92	86.29	56.20	62.91	45.87	69.89	45.87	69.89
21 48	68.73	88.71	58.4	78.38	81.56	101.54	55.61	62.51	45.28	52.18	68.44	75.34
21 75	73.61	90.51	63.28	80.18	86.44	103.34	55.61	62.51	45.28	52.18	68.44	75.34
23 21	71.07	94.32	60.57	83.82	79.15	102.40	64.56	77.94	54.06	86.02	54.06	86.02
23 35	69.43	95.58	58.93	85.08	77.51	103.66	62.43	70.58	51.93	78.66	51.93	78.66
23 53	69.49	91.68	58.99	81.18	77.57	99.76	62.07	70.48	51.57	78.56	51.57	78.56
23 55	70.24	93.31	59.74	82.81	78.32	101.39	62.54	71.31	52.04	79.39	52.04	79.39
25 07	83.91	117.09	73.64	123.58	99.34	121.8	68.12	78.84	57.85	85.33	83.55	83.55
25 11	91.92	111.92	81.65	101.65	94.65	127.35	71.12	84.12	60.85	73.85	86.55	99.55
25 19	81.78	113.79	71.51	103.52	90.20	122.21	69.24	83.39	58.97	91.81	58.97	91.81
25 24	81.28	112.64	71.01	102.37	89.70	121.06	69.64	84.08	59.37	92.50	59.37	92.50
25 29	79.60	108.57	69.33	98.30	88.02	116.99	70.61	85.95	60.34	94.37	60.34	94.37
25 35	77.39	110.22	67.12	99.95	85.81	118.64	68.43	78.22	58.16	86.64	58.16	86.64
25 37	79.59	107.09	69.32	116.12	95.02	113.36	68.12	79.04	57.85	87.26	83.55	84.50
25 44	99.96	127.50	89.69	134.23	115.39	134.44	66.42	77.85	56.15	86.33	81.85	84.54
25 43	79.64	110.32	69.37	100.05	88.06	118.74	70.22	85.52	59.95	93.94	59.95	93.94
25 46	81.94	105.78	71.67	95.51	90.36	114.20	67.30	77.46	57.03	85.88	57.03	85.88
25 61	76.69	103.44	66.42	93.17	85.11	111.86	68.15	79.04	57.88	87.46	57.88	87.46
25 08	103.02	134.85	92.75	124.58	111.44	143.27	67.02	78.85	56.75	87.27	56.75	87.27
25 20	88.04	118.26	77.77	107.99	96.46	126.68	66.47	76.72	56.20	85.14	56.20	85.14
25 04	80.44	110.29	70.17	100.02	88.86	118.71	71.24	84.85	60.97	93.27	60.97	93.27

Weight in gram (+/- 15%)
* Please, consult us for weight of receptacles type 77.

Connector part numbers

Basic Series	JVS	16	A	11	35	P	N

Shell style:
00: Square flange receptacle
07: Jam nut receptacle
16: Plug with RFI shielding

Material:
A: Bronze housing material

Shell size:
09, 11, 13, 15, 17, 19, 21, 23, 25

Contact layout:
See pages 13 to 19

Contact type:
P: Pin
S: Socket
A: Connector supplied less pin contact or with specific contacts (connector marking: A + orientation)
B: Connector supplied less socket contact or with specific contacts (connector marking: B + orientation)

Orientation:
N, A, B, C, D, E (see page 75)

Specification:
251: Connector provides with power contacts (layouts with contacts #8)
CI: Printed board mounting contacts
LI: Receptacle with long PC tail (pin or socket #22D)
L: For P or S contact type only, connectors delivered without contacts, connectors marking P or S plus orientation

CECC part numbers

Basic Series	C 752 002	B	B	98	M	C	N	A	0	1	G

Shell style:
A: Plug
B: Square flange receptacle
C: Jam nut receptacle

Shell size:
09=**A**, 11=**B**, 13=**C**, 15=**D**, 17=**E**, 19=**F**, 21=**G**, 23=**H**, 25=**J**

Contact layout:
See pages 13 to 19

Contact type:
M: Pin
F: Socket

Type of contact termination:
C: Crimp contact

Orientation:
N, A, B, C, D, E (see page 75)

Shell material:
A: Aluminum bronze

Supply code:
0: Connectors supplied with contacts
1: Connectors supplied without contacts

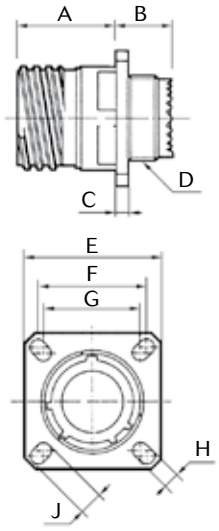
Assessment level:
1: Level 1

Performance level:
G: Level G

Note: C 752 002 refers to the abbreviated form of the CECC 75 201-002 type designation.

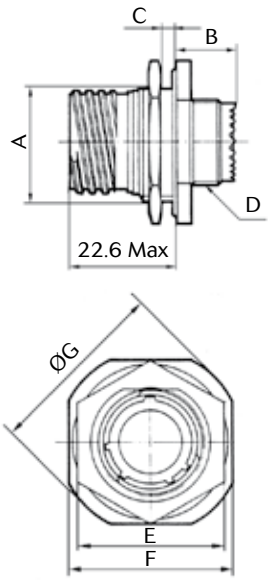
Dimensions

Receptacle type 00 (JVS) or type B (CECC)



Shell size	A Max	B Max	C Max	D Thread	E ±0.3	F	G	H ±0.2	J ±0.2
09 (A)	20.2	11.4	2.5	M12 x 1-6g	23.8	18.26	15.09	3.25	5.49
11 (B)				M15 x 1-6g	26.2	20.62	18.26		4.93
13 (C)				M18 x 1-6g	28.6	23.01	20.62		
15 (D)				M22 x 1-6g	31	24.61	23.01		4.4
17 (E)				M25 x 1-6g	33.3	26.97	24.61		4.93
19 (F)				M28 x 1-6g	36.5	29.36	26.97		
21 (G)	19.8	11.8	3.2	M31 x 1-6g	39.7	31.75	29.36		
23 (H)		11.4		M34 x 1-6g	42.9	34.93	31.75	3.91	6.15
25 (J)				M37 x 1-6g	46	38.1	34.93		

Receptacle type 07 (JVS) or type C (CECC)



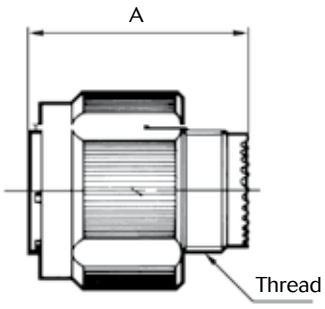
Shell size	A ±0.15	B Max	C Max	D Thread	E Max	F ±0.4	ØG Max
09 (A)	16.53	9.9	3.2	M12 x 1-6g	23	27	30.5
11 (B)	19.07			M15 x 1-6g	26	31.8	35.2
13 (C)	23.82			M18 x 1-6g	31	34.9	38.4
15 (D)	26.97			M22 x 1-6g	34	38.1	41.6
17 (E)	30.15			M25 x 1-6g	37	41.3	44.8
19 (F)	33.32			M28 x 1-6g	41	46	49.5
21 (G)	36.50			M31 x 1-6g	46	49.2	52.7
23 (H)	39.67			55.9	47	52.4	55.9
25 (J)	42.85			59	51.23	55.6	59

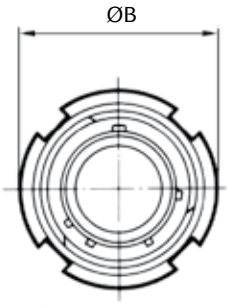
Recommended coupling torque on panel for jam nut receptacle (type 7)

Shell	09 (A)	11 (B)	13 (C)	15 (D)	17 (E)	19 (F)	21 (G)	23 (H)	25 (J)
Coupling torque (±0.5 N.m)	4	5	7	8	9	10	12	13	14

Note: All dimensions are in millimeters (mm)

Plug type 16 (JVS) or type A (CECC)

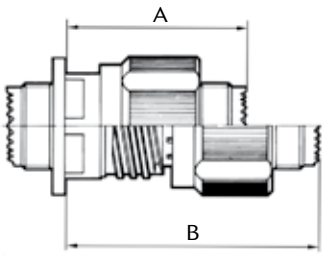




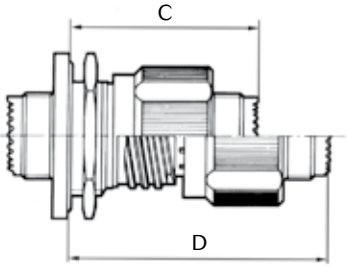
Shell size	A Max	Thread	ØB Max
09 (A)	31.00	M12 x 1-6g	21.10
11 (B)		M15 x 1-6g	23.80
13 (C)		M18 x 1-6g	28.20
15 (D)		M22 x 1-6g	31.40
17 (E)		M25 x 1-6g	36.50
19 (F)		M28 x 1-6g	39.30
21 (G)		M31 x 1-6g	42.50
23 (H)		M34 x 1-6g	45.30
25 (J)		M37 x 1-6g	48.40

Mated connectors dimensions

Type 0 with plug



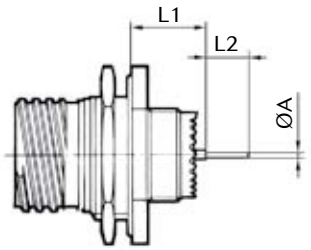
Type 7 with plug

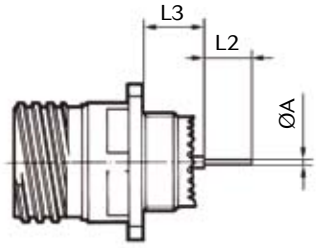


Shell size	A Max	B Max	C Max	D Max
09 (A)	37.00	52.30	38.30	53.60
11 (B)				
13 (C)				
15 (D)				
17 (E)				
19 (F)				
21 (G)	36.00	51.30		
23 (H)				
25 (J)				

Note: All dimensions are in millimeters (mm)

Receptacle with straight PC tail contacts (CI & LI specification)





		Shell size			09 (A)	11 (B)	13 (C)	15 (C)	17 (E)	19 (F)	21 (G)	23 (H)	25 (J)
		Contact size	Contact type	PC tail type									
A		#22D	M & F	L	0.70								
		#22D	M & F	C	0.50								
		#20	M & F	C	0.70								
		#16	M & F	C	$1.12^{\pm 0.03}$								
L1	Min	#22D	M	L	10.52		10.34						
	Max	#22D	M	L	11.46		11.28						
	Min	#22D	F	L	10.19		10.01						
	Max	#22D	F	L	11.46		11.28						
	Min	#22D	M	C	10.19		10.01						
	Max	#22D	M	C	11.46		11.28						
	Min	#22D	F	C	10.69		10.51						
	Max	#22D	F	C	11.63		11.45						
	Min	#20	M	C	10.36		10.18						
	Max	#20	M	C	11.63		11.45						
	Min	#20	F	C	10.69		10.51						
	Max	#20	F	C	11.63		11.45						
	Min	#16	M	C	10.69		10.51						
	Max	#16	M	C	11.63		11.45						
	Min	#16	F	C	10.69		10.51						
	Max	#16	F	C	11.63		11.45						
L2		#22D	M & F	L	8.50								
		#22D	M & F	C	5.10								
		#20	M & F	C	5.10								
		#16	M & F	C	$5^{\pm 0.1}$								
L3	Min	#22D	M	L	9.48						9.59		
	Max	#22D	M	L	10.58						10.69		
	Min	#22D	F	L	9.15						9.26		
	Max	#22D	F	L	10.58						10.69		
	Min	#22D	M	C	9.65						9.76		
	Max	#22D	M	C	10.75						10.86		
	Min	#22D	F	C	9.15						9.26		
	Max	#22D	F	C	10.75						10.86		
	Min	#20	M	C	9.65						9.76		
	Max	#20	M	C	10.75						10.86		
	Min	#20	F	C	9.65						9.76		
	Max	#20	F	C	10.75						10.86		
	Min	#16	M	C	9.64						9.75		
	Max	#16	M	C	10.75						10.86		
	Min	#16	F	C	9.64						9.75		
	Max	#16	F	C	10.75						10.86		

M: Male contact **F:** Female contact **L:** Long PC tail **C:** Short PC tail *Dimensions in millimeters*

Backshell part numbers

Basic Series	JVS	A	11	E	00	C	CC

Accessory style
A : Rear accesssory (backshell)

Shell size:
09, 11, 13, 15, 17, 19, 21, 23, 25

Accessory type:
A: Screened adaptor for use with compression spring or band strap
B: Adaptor with strain relief cable clamp
E: Screened adaptor with braid trap
G: Environmental cone clamp screened adaptor
P: Adaptor for heat shrink boot
X: Cone clamp screened adaptor

Cable entry codification (see table below):
For B type:
00: Standard, by default choice
For other types:
00: Standard, by default choice
03 to **32:** Depending on backshell type, please refer to corresponding table

Angle:
A: Straight backshell (orientation by default)
B: 45° backshell (except for «B Type» accessory)
C: 90° right angle backshell

Variant:
For all types:
None: Supplied without any other accessory
For E and X type:
CC: Cable clamp variant

How to built a backshell reference for types A, E or G

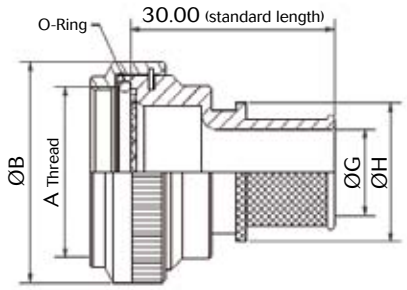
Backshell type	Shell size	Standard correspondance		Specific
		Entry codification	Entry size backshell	Other entry cofication
Type A & E	09	00	04	03
	11	00	06	05 to 03
	13	00	08	07 to 04
	15	00	10	09 to 06
	17	00	12	11 to 08
	19	00	13	12 to 09
	21	00	16	15 to 12
	23	00	18	17 to 14
	25	00	20	19 to 16

Backshell type	Shell size	Standard correspondance		Specific
		Entry codification	Entry size backshell	Other entry cofication
Type G	09	00		
	11	00	04	
	13	00	06	04
	15	00	10	08 to 04
	17	00	12	11 to 04
	19	00	12	10 to 04
	21	00	16	12 to 04
	23	00	16	12 to 04
	25	00	16	12 to 04

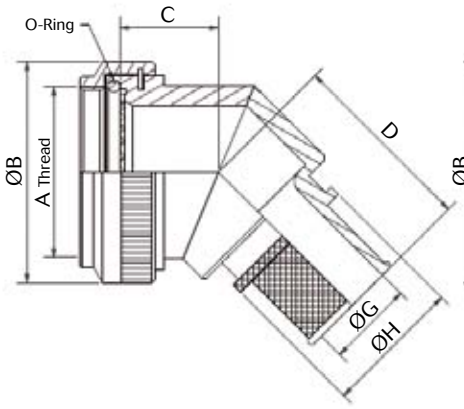
Examples:
To order a right angle backshell type"A" size 15 with entry size 10 ➔ placed your order with: JVSA15G00C
To order a right angle backshell type "A" size 15 with entry size 06 ➔ placed your order with: JVSA15G06C

Type A - Screened adaptor for use with compression spring or band strap

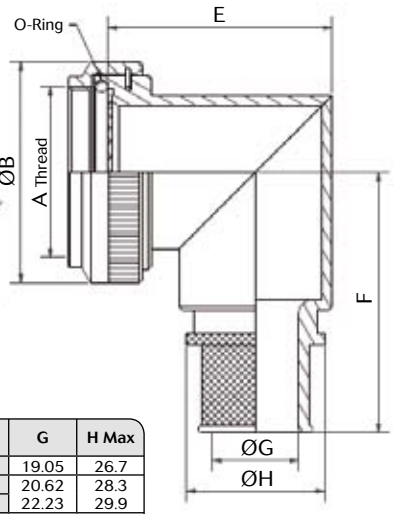
Angle A - straight



Angle B - 45°



Angle C - 90°



Example: JVSA09A00A (straight)

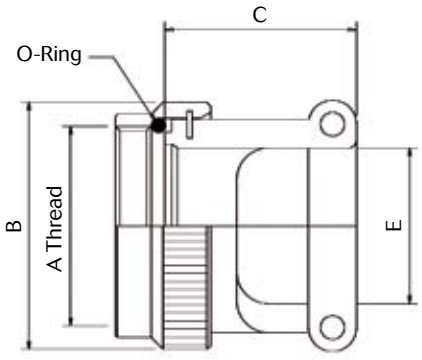
Shell Size	A Thread	B Max	C Max	D Max	E Max	F Max	Max Entry*
09	M12 x 1.0	18.0	13.1	24.7	25.5	30.5	04
11	M15 x 1.0	21.0	13.9	25.9	26.5	32.2	06
13	M18 x 1.0	24.5	14.5	26.3	31.0	33.7	08
15	M22 x 1.0	29.0	15.5	27.2	37.0	35.2	10
17	M25 x 1.0	32.5	16.1	28.0	40.0	36.9	12
19	M28 x 1.0	35.5	16.8	28.3	44.5	38.5	13
21	M31 x 1.0	37.0	17.1	29.1	49.0	40.1	16
23	M34 x 1.0	40.0	17.7	29.5	51.5	41.6	18
25	M37 x 1.0	43.5	18.4	30.4	53.0	43.1	20

Entry Size	G	H Max	Entry Size	G	H Max
03	4.77	13.9	12	19.05	26.7
04	6.35	13.9	13	20.62	28.3
05	7.92	15.5	14	22.23	29.9
06	9.52	17.2	15	23.82	31.5
07	11.10	18.7	16	25.40	33.1
08	12.70	20.3	17	27.00	34.7
09	14.27	21.9	18	28.60	36.3
10	15.88	23.5	19	30.20	37.9
11	17.47	25.1	20	31.80	39.5

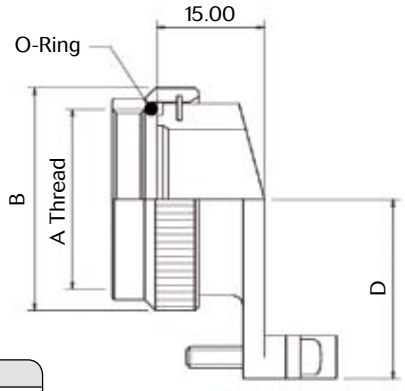
* Recommendation only, please consult us for outside entry size

Type B - Adaptor with strain relief cable clamp

Angle A - straight



Angle C - 90°



Shell Size	A Thread	B Max	C Max	D Max	E Max
09	M12 x 1.0	18.0	21.5	20.0	7.0
11	M15 x 1.0	21.0	21.5	21.0	10.5
13	M18 x 1.0	24.5	23.5	22.0	13.4
15	M22 x 1.0	29	23.5	23.0	16.5
17	M25 x 1.0	32.5	24.5	25.0	19.7
19	M28 x 1.0	35.5	27.5	27.5	22.2
21	M31 x 1.0	37.0	34.5	30.0	25.6
23	M34 x 1.0	40.0	37.5	31.5	28.5
25	M37 x 1.0	43.5	37.5	34.5	31.7

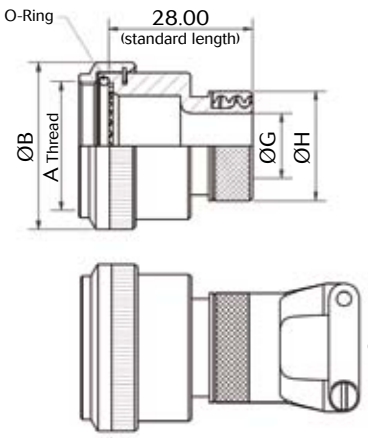
Example: JVSA09B00A (straight)

Note: All dimensions are in millimeters (mm)

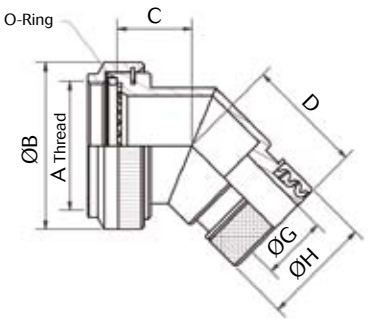
8D Series
D38999 Bronze Series

Type E - Screened adaptor with braid trap

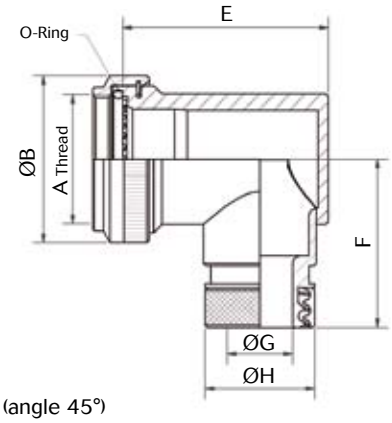
Angle A - straight



Angle B - 45°



Angle C - 90°



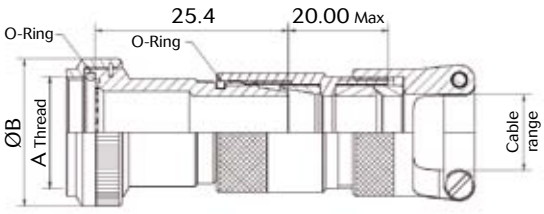
Example: JVSA09E00B (angle 45°)

Shell Size	A Thread	B Max	C Max	D Max	E Max	F Max	Max Entry
09	M12 x 1.0	18.0	13.1	23.6	25.7	30.5	04
11	M15 x 1.0	21.0	13.9	24.4	26.7	32.2	06
13	M18 x 1.0	24.5	14.5	24.8	31.2	33.7	08
15	M22 x 1.0	29.0	15.5	25.6	37.2	35.2	10
17	M25 x 1.0	32.5	16.1	26.4	40.2	36.9	12
19	M28 x 1.0	35.5	16.8	26.8	44.7	38.5	13
21	M31 x 1.0	37.0	17.1	27.6	49.2	40.1	16
23	M34 x 1.0	40.0	17.7	28.0	51.7	41.6	18
25	M37 x 1.0	43.5	18.4	29.0	53.2	43.1	20

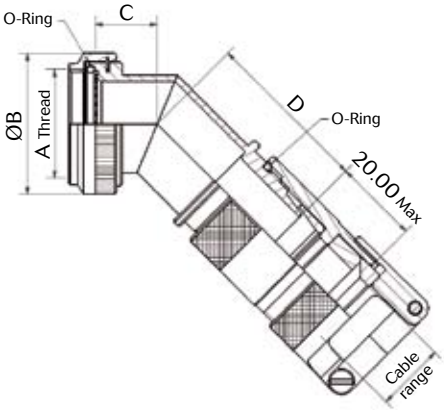
Entry Size	G	H Max	Entry Size	G	H Max
03	4.77	15.0	12	19.05	27.7
04	6.35	15.0	13	20.62	29.3
05	7.92	16.6	14	22.23	30.9
06	9.52	18.2	15	23.82	32.5
07	11.10	19.8	16	25.40	34.1
08	12.70	21.4	17	27.00	35.7
09	14.27	23.0	18	28.60	37.3
10	15.88	24.6	19	30.20	39.1
11	17.47	26.2	20	31.80	40.4

Type G - Environmental cone clamp screened adaptor

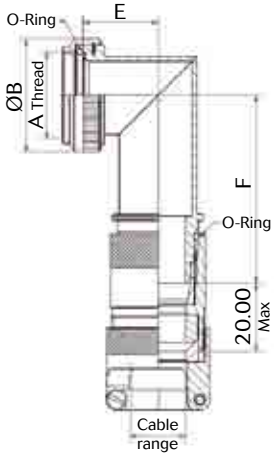
Angle A - straight



Angle B - 45°



Angle C - 90°



Example: JVSA09G00A (straight)

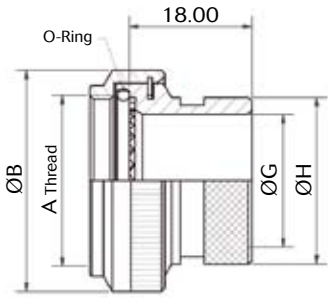
Shell Size	A Thread	B Max	C Max	D Max	E Max	F Max	Max Entry
09	M12 x 1.0	18.0	13.1	30.5	15.8	39.2	-
11	M15 x 1.0	21.0	13.9	30.5	17.6	42.3	04
13	M18 x 1.0	24.5	14.5	32.5	19.0	42.8	06
15	M22 x 1.0	29.0	15.5	40.3	21.5	50.5	10
17	M25 x 1.0	32.5	16.1	43.1	23.1	52.8	12
19	M28 x 1.0	35.5	16.8	47.9	24.5	57.1	12
21	M31 x 1.0	37.0	17.1	47.9	25.3	57.1	16
23	M34 x 1.0	40.0	17.7	56.5	27.5	64.7	16
25	M37 x 1.0	43.5	18.4	56.5	28.3	64.7	16

Entry Size	Cable Range
04	3.2 - 7.9
06	6.4 - 11.1
08	9.8 - 14.3
10	8.9 - 15.9
12	12.7 - 19.1
16	15.9 - 23.8

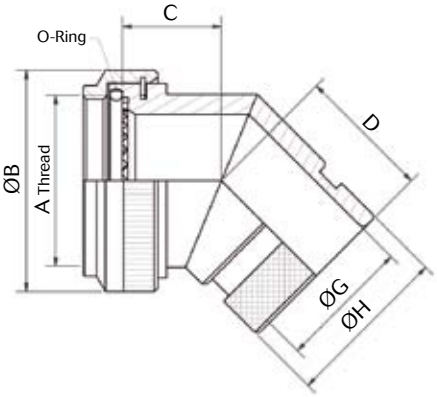
Note: All dimensions are in millimeters (mm)

Type P - Adaptor for heat shrink boot

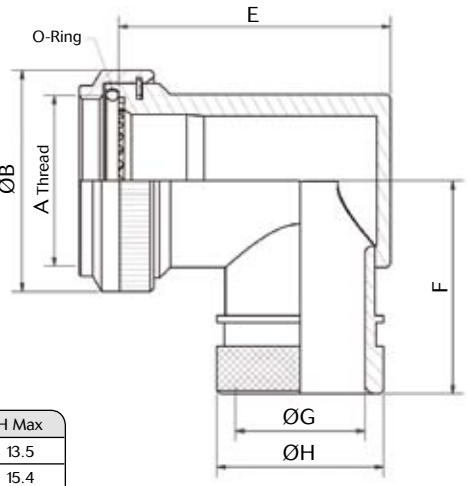
Angle A - straight



Angle B - 45°



Angle C - 90°

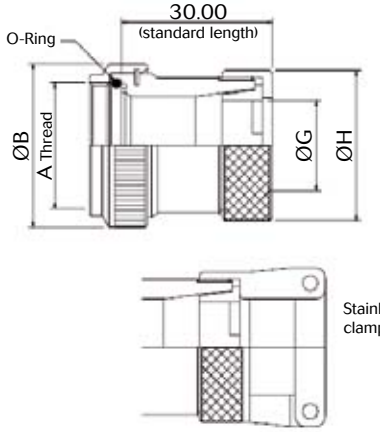


Shell Size	A Thread	B Max	C Max	D Max	E Max	F Max	G Max	H Max
09	M12 x 1.0	18.0	13.1	17.6	25.7	25.0	6.6	13.5
11	M15 x 1.0	21.0	13.9	18.4	26.7	26.7	10.1	15.4
13	M18 x 1.0	24.5	14.5	19.3	31.2	28.2	13.4	19.7
15	M22 x 1.0	29	15.5	19.6	37.2	29.7	16.1	21.3
17	M25 x 1.0	32.5	16.1	20.4	40.2	31.4	19.3	24.5
19	M28 x 1.0	35.5	16.8	20.8	44.7	33.0	21.7	26.5
21	M31 x 1.0	37.0	17.1	21.6	49.2	34.6	25	31.0
23	M34 x 1.0	40.0	17.7	22.5	51.7	36.1	28.1	34.4
25	M37 x 1.0	43.5	18.4	22.9	53.2	37.6	31.3	36.6

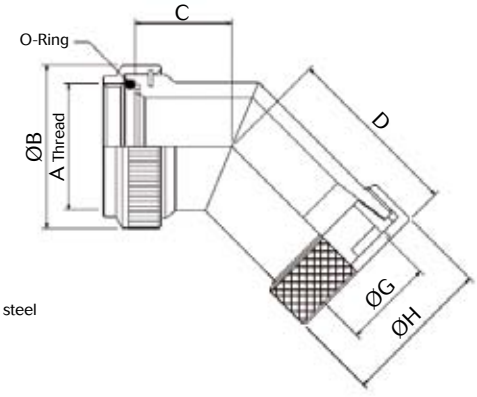
Example: JVSA09P00C (angle 90°)

Type X - Cone clamp screened adaptor

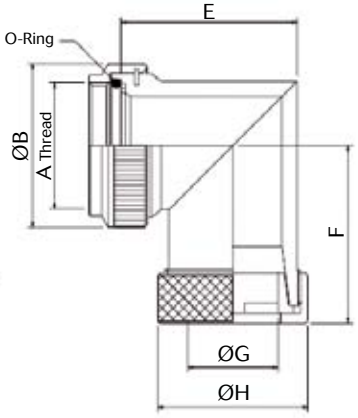
Angle A - straight



Angle B - 45°



Angle C - 90°



Shell Size	A Thread	B Max	C Max	D Max	E Max	F Max	G	H Max
09	M12 x 1.0	18.0	13.1	24.6	22.7	26.5	6.8	16.0
11	M15 x 1.0	21.0	13.9	25.4	26.2	28.2	9.5	19.0
13	M18 x 1.0	24.5	14.5	26.3	29.2	29.7	12.8	22.0
15	M22 x 1.0	27.5	15.5	26.7	32.2	31.2	14.8	25.4
17	M25 x 1.0	31.0	16.1	27.5	35.7	32.9	17.9	28.5
19	M28 x 1.0	34.0	16.8	27.8	39.7	34.5	20.0	32.0
21	M31 x 1.0	37.0	17.1	28.6	42.2	36.1	23.0	35.0
23	M34 x 1.0	40.0	17.7	29.5	45.2	37.6	26.4	38.0
25	M37 x 1.0	43.5	18.4	29.9	48.2	39.1	29.3	41.0

Example:
JVSA09X00B
(angle 45°)

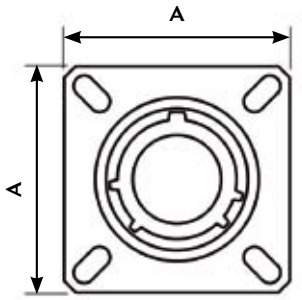
Note: All dimensions are in millimeters (mm)

Dummy receptacle

Orientations & dimensions

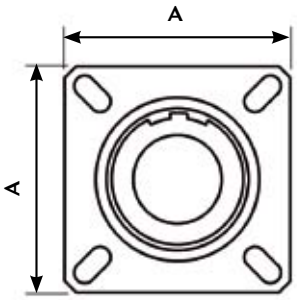
Orientations:

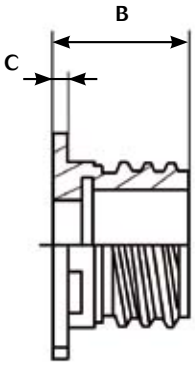
N, A, B, C, D, E



or

DU
(= all orientations)





Shell size	9	11	13	15	17	19	21	23	25
A $^{+0.3}_{-0.3}$	23.8	26.2	28.6	31	33.3	36.5	39.7	42.9	46
B maxi	24.2	24.2	24.2	24.2	24.2	24.2	24.1	24.1	24.1
C maxi	2.5	2.5	2.5	2.5	2.5	2.5	3.2	3.2	3.2

Examples of Part Number:

. JVS BN 02 A 17 N
. JVS BN 02 A 17 DU

- N, DU: Orientation
- 17: Shell size
- A: Bronze

Equivalent to CECC blind hole. For information only: CECC75201002AxA00A (x = shell size A, B, C, D, ...)
CECC75201002EA00A (blind hole) = JVSBN02A17DU (through hole)
(no correspondance CECC with N, A, B, C, D, E oriantations)

Note: All dimensions are in millimeters (mm)

Caps

Basic Series	JVS	B	09	B	00	A

Accessory style:
B: Protective cap

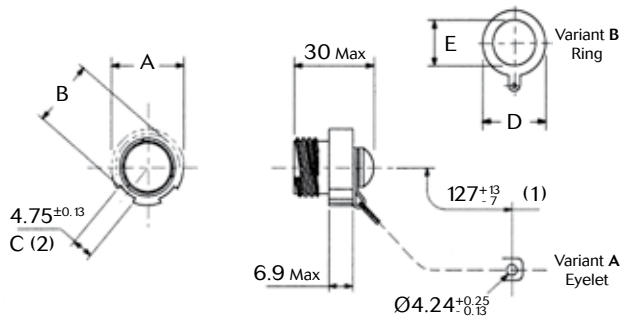
Shell size:
09, 11, 13, 15, 17, 19, 21, 23, 25

Variant:
A: Cap for plug with eyelet (see drawing below)
B: Cap for plug with ring (see drawing below)
C: Cap for receptacle with eyelet (see drawing below)
D: Cap for receptacle with ring (see drawing below)

Sub variant:
Not applicable

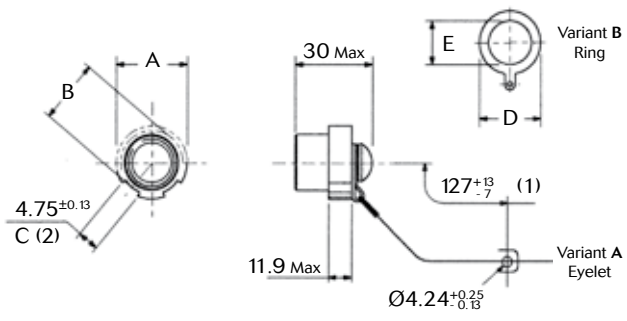
Material:
A: Bronze

Cap for plug



(1) Flexible metal link - (2) Number of notch on A diameter

Cap for receptacle



(1) Flexible metal link - (2) Number of notch on A diameter

Shell size	A Max	B Max	C	Cap for Plug		Cap for Receptacle	
				D Max	E Min	D Max	E Min
09 (A)	21.1	19.20	8	24.20	13.50	26.80	18.40
11 (B)	23.8	21.80		26.80	18.40	31.60	23.00
13 (C)	28.2	26.10	10	30.50	19.80	36.90	26.20
15 (D)	31.4	29.30		31.60	23.00	40.10	29.40
17 (E)	36.5	34.40	12	36.90	26.20	43.20	32.50
19 (F)	39.3	37.20		40.10	29.40	46.40	35.70
21 (G)	42.5	40.50	16	43.20	32.50	49.20	39.10
23 (H)	45.3	43.10		46.40	35.70	52.80	42.10
25 (J)	48.4	46.10	18	49.20	39.10	55.50	45.30

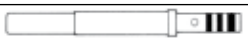
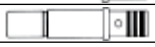
Equivalent to CECC, for information CECC75201002Bxy00A (x = shell size, y = variant)
Example: CECC75201002BAC00A = JVSB09C00A

Note: All dimensions are in millimeters (mm)

8D Series

Common Section

Crimp contacts

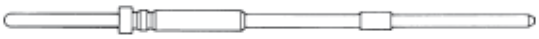
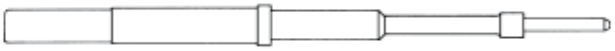
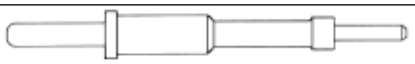
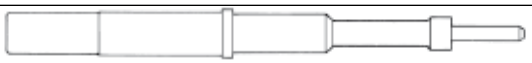
Contact size	Contact type	Souriau Part number (without color code)	MIL-DTL-38999 contacts	
			Part number	Profile and color code
#26	Pin	8599-0297	-	
	Socket	8599-0298	-	
#22D	Pin	8599-0702 JJ	M39029/58 360	 Black / Blue / Orange
	Socket	8599-0706 900	M39029/56 348	 Grey / Yellow / Orange
#20	Pin	8599-0703 SA	M39029/58 363	 Orange / Blue / Orange
	Socket	8599-0707 900	M39029/56 351	 Brown / Green / Orange
#16	Pin	8599-0704 MJ	M39029/58 364	 Yellow / Blue / Orange
	Socket	8599-0708 900	M39029/56 352	 Red / Green / Orange
#16 Coaxial	Pin	-	M39029/76 424	 Yellow / Red / Yellow
	Socket	-	M39029/77 428	 Grey / Red / Yellow
#12	Pin	8599-0705 MJ	M39029/58 365	 Green / Blue / Orange
	Socket	8599-0709 900	M39029/56 353	 Orange / Green / Orange
#12 Coaxial	Pin	-	M39029/102 558	
	Socket	-	M39029/103 559	
	Pin	-	M39029/28 211	
	Socket	-	M39029/75 416	
#10 Power	Pin	-	M39029/58 528	
	Socket	-	M39029/56 527	
#8 Power	Pin	8599-7544 *	-	
	Socket	8599-7541 *	-	
	Pin	8599-7580	-	
	Socket	8599-7581	-	
	Boot	8599-4542	-	For wire #8
		8599-4547	-	For wire #10
	Reductor	8599-7645	-	
#8 Coaxial	Pin	-	M39029/60 367	
	Socket	-	M39029/59 366	
	Boot	8590-4571	-	
#8 Concentric Twinax	Pin	-	M39029/90 529	
	Socket	-	M39029/91 530	
	Boot	8590-4571	-	
#4 Power	Pin	8599-7598 900 **	-	For wire 25 mm²
	Socket	8599-7599 900 **	-	
	Pin	8599-7534	-	For wire 21.15 mm²
	Socket	8599-7535	-	
	Boot for cable 16 mm²	8599-4594	-	
	Boot for cable 10 mm²	8599-4593	-	
	Reductor cable 10 mm²	8400-2351A	-	
#4 Power with reduced barrel	Pin	8599-7528 900	-	Mating part #4 / Barrel #6
	Socket	8599-7529 900	-	
	Boot	8599-4593	-	

* JVS only. ** Not included in connector Part number. Must be ordered separately.

Crimp contacts

Contact size	Contact type	Contact Ø	Conductor section AWG		Conductor section mm²		External Ø over insulator	
			Min	Max	Min	Max	Min	Max
#26	Pin	0.50	30	24	0.055	0.215	0.60	0.83
	Socket							
#22D	Pin	0.76	28	22	0.095	0.34	0.76	1.37
	Socket							
#20	Pin	1.00	24	20	0.21	0.60	1.02	2.11
	Socket							
#16	Pin	1.60	20	16	0.60	1.34	1.65	2.77
	Socket							
#16 Coaxial	Pin		RG 174 RG 179 RG 316				1.65	2.60
	Socket							
#12	Pin	2.40	14	12	1.91	3.18	2.46	3.61
	Socket							
#12 Coaxial	Pin		RG 174 RG 179 RG 316				2.40	2.60
	Socket							
	Pin							
	Socket							
#10 Power	Pin	3.20	Please consult us				-	2.95
	Socket							
#8 Power	Pin	3.64	-	8	-	8.98	-	-
	Socket							
	Boot		-	-	-	-	4.50	6.50
			-	-	-	-	2.50	4
	Reductor		-	-	-	-	-	-
#8 Coaxial	Pin		RG 180 A/U				-	2.80
	Socket							
	Boot							
#8 Concentric Twinax	Pin	5.50	0,76MIL-C 17/176 00002 FILECA F.2703/14 RAYCHEM CHEMINAX 10612 FILOTEX M 17/176 00002				3.15	3.40
	Socket							
	Boot							
#4 Power	Pin	5.74	-	3	-	25	-	-
	Socket							
	Pin		5	4	16	21.15	-	-
	Socket							
	Boot (Available for 8599-7534 and 7535 contacts)		-	-	-	-	6.35	7.50
			-	-	-	-	4	5.80
	Reductor cable 10 mm²		-	-	-	-	-	-
#4 Power with reduced barrel	Pin		6		13.3		-	-
	Socket							
	Boot		-	-	-	-	4	5.80

Straight PC tail contacts

Contact size	Contact type	PC tail type	Part number	Profile
#26	Pin		F1P1P3E0020ALY	-
	Socket		F1P1ES32001A00	-
#22D	Pin	L	8599-0720 900	
	Pin	M	8599-8028 900	-
	Pin	C	8599-0730 900	
	Pin	S	8599-0796 900	
	Socket	L	8599-0721 900	
	Socket	C	8599-0731 900	
	Socket	S	8599-0797 900	
#20	Pin	M	8599-0658 JJ	-
	Socket	M	8599-0759 900	-
	Pin	C	8599-0724 900	
	Socket	C	8599-0725 900	
	Pin	L	8599-0771 900	-
	Socket	L	8599-0772 900	-
#16	Pin	C	8599-0726 900	
	Socket	C	8599-0727 900	
Coaxial #16	Pin	C	8599-1000 900	
#12	Pin	C	8599-7929 900	-
	Socket	C	8599-7932 900	-

S: Specific PC tail
L: Long PC tail
M: Medium PC tail
C: Short PC tail

Note: PC tail contacts without shoulder also available. Please see page 102.

Coaxial contacts #12

Designation	Part number
Coaxial socket solder #12	THA1-0151A
Coaxial pin solder #12	THA1-0152A
Coaxial pin crimp contact #12	THA1-0155A
Coaxial crimp contact #12	THA1-0156A

Solder cup

Contact size	Contact type	Part number
#22D	Pin	8599-0750 900
#20	Pin	8599-0077A 900
#16	Pin	8599-7482A 900
#12	Socket	8599-7485A 900

For other contacts type please consult us.

Crimp contacts: 1500 mating

Contact size	MIL-DTL-38999 contacts		
	Contact type	Part number	Color code
#22D	Pin (H)	M39029/107 620	Blue / Red / Black
	Socket (J)	M39029/106 614	Blue / Brown / Yellow
#20	Pin (H)	M39029/107 621	Blue / Red / Brown
	Socket (J)	M39029/106 615	Blue / Brown / Green
#16	Pin (H)	M39029/107 622	Blue / Red / Red
	Socket (J)	M39029/106 616	Blue / Brown / Blue
#12	Pin (H)	M39029/107 623	Blue / Red / Orange
	Socket (J)	M39029/106 617	Blue / Brown / Gray

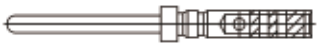
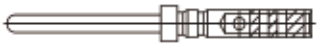
Wire wrap contacts

Contact size	Contact type	Part number	Contact Ø (mm)	Profile	(mm)
#22D	Pin	8599-0790 JJ	0.76		0.86
#20	Pin	8599-0791 900	1		0.86

Quadrax #8 contacts

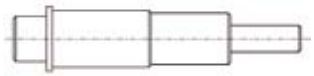
Contact type	Version	Souriau Part Number	Cross Norm	T°	Impedance	Sealing	Release
Pin	PCB mount	ETH1-1237A	-	125°C	100Ω	Sealed	Rear
		ETH1-1501A	-		150Ω		
	Crimp	ETH1-1345A	EN3155-074	200°C	100Ω		
		ETH1-1503A	-		150Ω		
Socket	PCB mount	ETH1-1238A	-	125°C	100Ω		
		ETH1-1502A	-		150Ω		
	Crimp	ETH1-1346A	EN3155-075	200°C	100Ω		
		ETH1-1504A	-		150Ω		

Thermocouple contacts

Contact size	Contact type	Souriau part numbers (without color code)	MIL-DTL-38999 contacts		Ø Contact (mm)	Wire section				Ø Over insulation (mm)	
			Part numbers	Profile and color code		Awg		mm²			
						min	max	min	max	min	max
#22D Chromel	Pin	-	M39029/87-472	 Red / Violet / Yellow	0.75	28	22	0.095	0.34	0.76	1.37
	Socket	-	M39029/88-484	 Yellow / Grey / Yellow							
#22D Alumel	Pin	-	M39029/87-471	 Brown / Violet / Yellow							
	Socket	-	M39029/88-483	 Orange / Grey / Yellow							
#20 Chromel	Pin	8599-0749 900	8599-0949 900	 Blue / Violet / Yellow	1	24	20	0.21	0.6	1.02	2.11
	Socket	8599-0753 900	8599-0953 900	 Grey / Grey / Yellow							
#20 Alumel	Pin	8599-0761 900	8599-0961 900	 Green / Violet / Yellow							
	Socket	8599-0765 900	8599-0965 900	 Violet / Grey / Yellow							

Dummy contacts

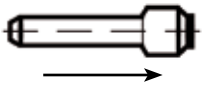
Size	Part number
#16	8599-6A016001A
#8	8599-0308
#4	8599-0310



8599-0308

Filler plugs

Contact size	Filler plugs		
	MS Part number (Rev. N)	Souriau Part number	Color
#22D	MS27488-22-2	8660-212	Black
#20	MS27488-20-2	8522-389A	Red
#16	MS27488-16-2	8522-390A	Blue
#12	MS27488-12-2	8522-391A	Yellow



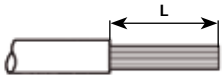
Direction of introduction in grommet

These filler plugs are installed at the rear of unwired contact to maintain connector sealing.

Wiring instruction

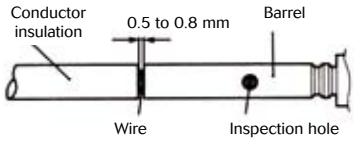
Cable preparation and wire stripping

Contact size	#26	#22D	#20	#16	#12	#8	#4
L	4		6			12	



L = length of wire stripping

Insertion of wire in contact barrel

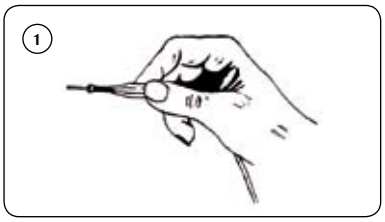


When inserting the stripped wire into the contact barrel check that no strands are left outside and that the wire is visible through the wire inspection hole in the barrel.

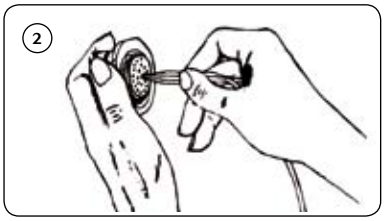
Important:
- Slide any accessories over wire strands before carrying out the following operations.
- Contacts are inserted and extracted from the rear of the connector.

Insertion of the contacts

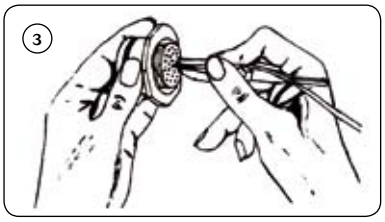
1 - Engage the crimp cable / contact asembly into the longitudinal slot of the plastic tool (coloured tip).
Slide the tool down the cable until the tip of the tool abuts the contact retention shoulder.



2 - Introduce the contact into the required contact cavity in the insulator, pushing tool axialy, until the contact snaps into position in clip.

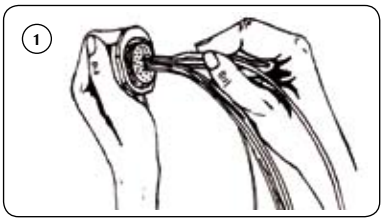


3 - Withdraw the tool (from rear). Check that contact is firmly locked by pulling wire gently.
When connector is fully loaded, check the position of contact tips. They should all be in the same plane.
Nota: For larger sizes of cable which are stiff enough manual insertion without tool is preferable.

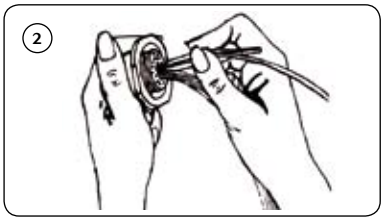


Extraction of the contacts

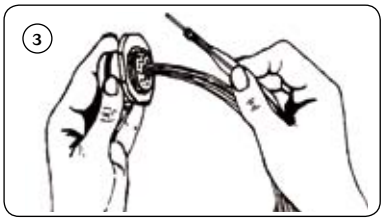
1 - Engage the appropriate cable into the longitudinal slot of the tool with the white tip towards connector.



2 - Slide the tool down towards the contact. Insert the tool in the insulator until it abuts the contact shoulder.



3 - Holding the tool-contact and cable assembly together, remove them simultaneously.



Tooling

Crimping tools

Contact size	Contact type	Plier M22520/1-01		Plier M22520/2-01 (Souriau 8476-01)		Plier M300BT	Plier * M22520/23-01	
		Turret Part number		Locator Part number		Locator Part number	Turret Part number	Locator Part number
		Norm	Souriau	Norm	Souriau			
#26	Pin	-	-	-	8599-0397	-	-	-
	Socket	-	-	-	8599-0398	-	-	-
#22D	Pin	-	-	M22520/2-09	8476-09	-	-	-
	Socket	-	-	M22520/2-07	8476-07	-	-	-
#20	Pin	M22520/1-04	8365-04	M22520/2-10	8476-10	-	-	-
	Socket					-	-	-
#16	Pin	M22520/1-04	8365-04	-	-	-	-	-
	Socket			-	-	-	-	-
#12	Pin	M22520/1-04	8365-04	-	-	-	-	-
	Socket			-	-	-	-	-
#8 Power	Pin	-	-	-	-	SP 593	M22520/23-02	8599-9601
	Socket	-	-	-	-			
#4 Power	pin	-	-	-	-	-	M22520/23-04	M22520/23-11
	Socket	-	-	-	-	-		

Contact size	Contact type	Plier M22520/2-01 (Souriau 8476-01)	Plier M22520/31-01	Plier M22520/4-01	Plier M22520/5-01
		Locator Part Number	Locator Part number	Locator Part Number	Die set Part Number
#12 Coaxial M39029/102-558 M39029/103-559	Inner	-	-	-	M22520/5-03
	Outer	-	-	-	
#12 Coaxial M39029/28-211 M39029/75-416	Inner	M22520/2-34	-		
	Outer	-	M22520/31-02	-	-
#16 Coaxial	Inner	M22520/2-35	-	-	-
	Outer	-	-	M22520/4-02	-
#8 Coaxial	Inner	M22520/2-31	-	-	-
	Outer	-	-	-	M22520/5-05 closure B
#8 Triaxial	Inner	K709	-	-	-
	Middle	-	-	-	Y631 closure B
	Ferrule	-	-	-	Y631 closure A

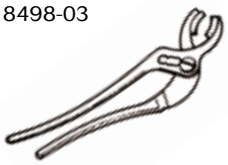
* Pneumatic plier
Note: for the #10 contact's plier and locator, please consult us.

Insertion & extraction tools

Contact size	Material	Part number		Color	
		MIL standard	Souriau	Insertion	Extraction
#26	Plastic	-	8599-0399 900	Black	White
#22D	Plastic	M81969/14-01	-	Green	White
#20	Plastic	M81969/14-10	-	Red	Orange
#16	Plastic	M81969/14-03	-	Blue	White
#12	Plastic	M81969/14-04	-	Yellow	White
#10	Plastic	M81969/14-05	-	Grey	-
#8	Plastic	M81969/14-12	-	-	Green
	Metalic	-	8660-197	-	-
#4	Plastic	M81969/14-07	-	-	Blue
	Metalic	-	8533-8175	-	-

Backshell tightening tools

8498-03



Backshell tightening pliers,
part number: **8498-03**
Square jaws (order 2 jaws),
part number: **8500-1015**

Tightening of rear accessories:

Shell size	9	11	13	15	17	19	21	23	25
Max torque in m/daN	0.62						1.24		

Tightening support

8599-0831

Part number: **8599-0831**
This tool is made up of dummy receptacles housings of all 9 sizes for all key polarisation, and secures free connectors during wiring and fitting of rear accessories.

Slackening tools

8498-04

Strap clamp,
part number: **8498-04**
Spare strap,
part number: **8498-103**

Accessories

Gaskets

Shell size	Gasket for receptacles Type 0* (ordered separately)	O ring for receptacle Type 7
9 (A)	8599-5541	AS3582-019
11 (B)	8599-5542	AS3582-022
13 (C)	8599-5543	AS3582-024
15 (D)	8599-5544	AS3582-026
17 (E)	8599-5545	AS3582-028
19 (F)	8599-5546	AS3582-128
21 (G)	8599-5547	AS3582-130
23 (H)	8599-5548	AS3582-132
25 (J)	8599-5549	AS3582-134

*For front mounting

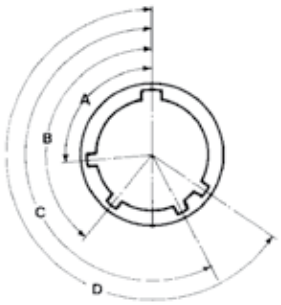
Plastic protective caps*

Shell size	Caps for receptacles	Caps for plugs	Caps for composite plugs only (J & M)	Antistatic caps for receptacles	Antistatic caps for plugs
9 (A)	70777	8500-5587 A	MS90376-12R	70777N	8500-5587N
11 (B)	MS90376-12R	70198	8500-5598	MS9037612RF	8500-5588N
13 (C)	MS90376-14R	8500-5600	8500-5600	MS9037614RF	8500-5600N
15 (D)	MS90376-16R	8500-5601	8500-5601	MS9037616RF	8500-5601N
17 (E)	70201	8500-5602	8500-5602	70201N	8500-5602N
19 (F)	70209	8500-5592 A	8500-5592 A	8500-5590N	8500-5592N
21 (G)	MS90376-22R	8500-5593 A	8500-5593 A	8500-5591N	8500-5593N
23 (H)	MS90376-24R	8500-5593 A	70472	8500-5592N	8500-5591N
25 (J)	8500-5593 A	J599ABC6009A00	J599ABC6009A00	8500-5593N	8500-5592N

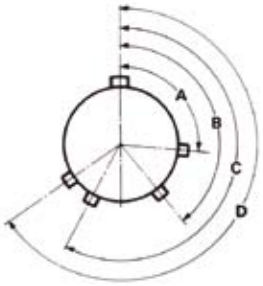
*Excepted 8D composite version (X): supplied without cap

8D Series
Common Section

Orientations



Viewed from front face of receptacle

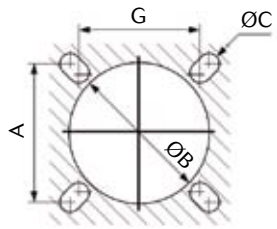


Viewed from front face of plug

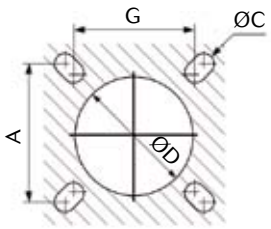
Shell size	Angles	N	A	B	C	D	E	T	V
9 (A)	A° B° C° D°	105 140 215 265	102 132 248 320	80 118 230 312	35 140 205 275	64 155 234 304	91 131 197 240	-	-
11 (B) 15 (D)	A° B° C° D°	95 141 208 236	113 156 182 292	90 145 195 252	53 156 220 255	119 146 176 298	51 141 184 242	-	-
13 (C)	A° B° C° D°	95 141 208 236	113 156 182 292	90 145 195 252	53 156 220 255	119 146 176 298	51 141 184 242	70 136 218 261	75 138 224 268
17 (E) 21 (G)	A° B° C° D°	80 142 196 293	135 170 200 310	49 169 200 244	66 140 200 257	62 145 180 280	79 153 197 272	58 162 188 316	85 150 191 307
19 (F) 23 (H) 25 (J)	A° B° C° D°	80 142 196 293	135 170 200 310	49 169 200 244	66 140 200 257	62 145 180 280	79 153 197 272	-	-

Panel cut-out

Square flange receptacle (Type 0)

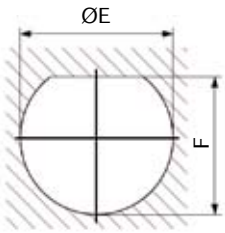


Rear mounting*



Front mounting

Jam nut receptacle (Type 7)



Shell size	A	G	B min.	C ±0.13	D min.	E ±0.25	F
9 (A)	18.26	15.09	16.66	3.25	13.11	17.78	17.02
11 (B)	20.62	18.26	20.22		15.88	20.96	19.59
13 (C)	23.01	20.62	23.42		19.05	25.65	24.26
15 (D)	24.61	23.01	26.59		23.01	28.83	27.56
17 (E)	26.97	24.61	30.96		25.81	32.01	30.73
19 (F)	29.36	26.97	32.94		28.98	35.18	33.91
21 (G)	31.75	29.36	36.12		32.16	38.35	37.08
23 (H)	34.93	31.75	39.29	3.91	34.93	41.53	40.26
25 (J)	38.10	34.94	42.47*		37.69	44.70	43.43

* For Type 0 composite shell rear mounting: 43.77 mm.

Max. thickness panel for receptacle: Type 0: front mounting = 3.2 mm, rear mounting = 2.5 mm
Type 7: 3.2 mm

Note: All dimensions are in millimeters (mm)

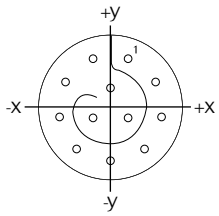
Coordinates for straight PC tail terminations

Viewed from front face of male insulator

Hole sizes: 1mm min. (#22 and #20 contacts) and 1.3mm min. (#16 contact) coordinates in mm.

09 / A

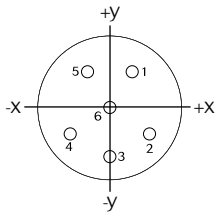
12



Ctc	x	y
1	+0.92	+2.54
2	+2.34	+1.35
3	+2.66	-0.47
4	+1.74	-2.07
5	0.00	-2.70
6	-1.74	-2.07

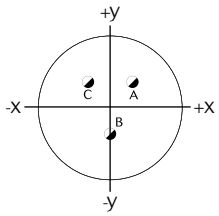
Ctc	x	y
7	-2.66	-0.47
8	-2.34	+1.35
9	-0.92	+2.54
10	0.00	+1.03
11	+0.89	-0.51
12	-0.89	-0.51

35



Ctc	x	y
1	+1.14	+1.98
2	+1.98	-1.14
3	0.00	-2.29
4	+1.98	-1.14
5	+1.14	+1.98
6	0.00	0.00

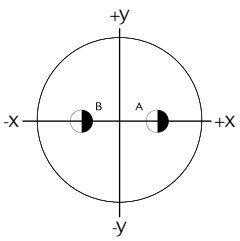
98



Ctc	x	y
A	+1.65	+0.97
B	0.00	-1.90
C	-1.65	+0.97

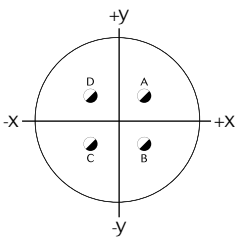
11 / B

02



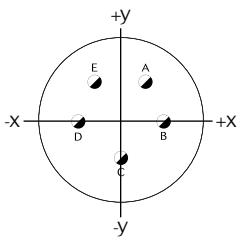
Ctc	x	y
A	0.00	+2.41
B	0.00	-2.41

04



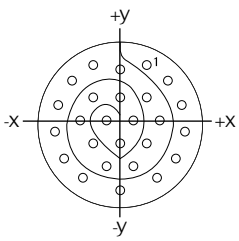
Ctc	x	y
A	+1.65	+1.65
B	+1.65	-1.65
C	-1.65	-1.65
D	-1.65	+1.65

05



Ctc	x	y
A	+1.65	+1.42
B	+2.86	-1.65
C	0.00	-3.30
D	-2.86	-1.65
E	-1.65	+1.42

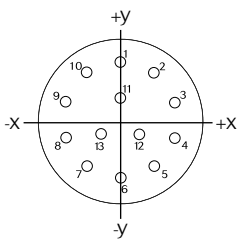
26



Ctc	x	y
1	+1.69	+3.79
2	+3.09	+2.77
3	+3.95	+1.28
4	+4.13	-0.44
5	+3.58	-2.10
6	+2.40	-3.37
7	0.00	-4.13
8	-2.40	-3.37
9	-3.58	-2.10
10	-4.13	-0.44
11	-3.95	+1.28
12	-3.09	+2.77
13	-1.69	+3.79

Ctc	x	y
14	0.00	+3.50
15	+1.70	+1.76
16	+2.55	+0.29
17	+1.70	-1.18
18	+0.85	-2.65
19	-0.85	-2.65
20	-1.70	-1.18
21	-2.55	+0.29
22	-1.70	+1.76
23	0.00	+1.76
24	+0.85	+0.29
25	0.00	-1.18
26	-0.85	+0.29

35



Ctc	x	y
1	0.00	+3.71
2	+2.16	+3.00
3	+3.51	+1.14
4	+3.51	-1.14
5	+2.16	-3.00

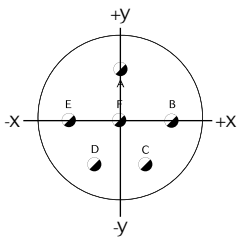
Ctc	x	y
6	0.00	-3.71
7	-2.16	-3.00
8	-3.51	-1.14
9	-3.51	+1.14

Ctc	x	y
10	-2.16	+3.00
11	0	+1.42
12	+1.24	-0.89
13	-1.24	-0.89

8D Series
Common Section

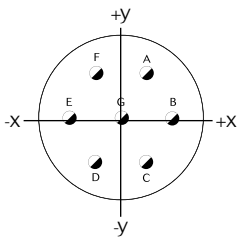
11 / B

98



Ctc	x	y
A	0.00	+3.30
B	+3.30	0.00
C	+1.65	-2.87
D	-1.65	-2.87
E	-3.30	0.00
F	0.00	0.00

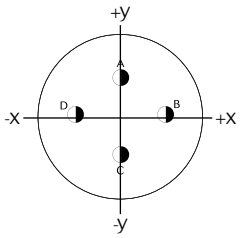
99



Ctc	x	y
A	+1.65	+2.85
B	+3.30	0.00
C	+1.65	-2.87
D	-1.65	-2.87
E	-3.30	0.00
F	-1.65	+2.87
G	0.00	0.00

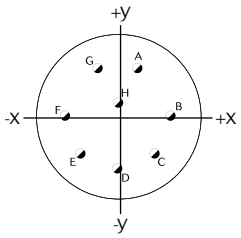
13 / C

04



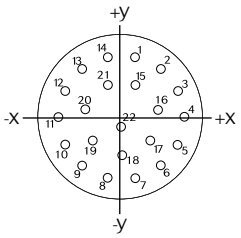
Ctc	x	y
A	0.00	+3.81
B	+3.71	+0.89
C	0.00	-2.11
D	-3.71	+0.89

08



Ctc	x	y
A	+1.65	+3.99
B	+4.32	0.00
C	+3.05	-3.05
D	0.00	-4.32
E	-3.05	-3.05
F	-4.32	0.00
G	-1.65	+3.99
H	0.00	+1.12

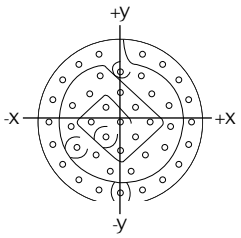
35



Ctc	x	y
1	+1.14	+5.00
2	+3.20	+4.01
3	+4.62	+2.24
4	+5.16	0.00
5	+4.62	-2.24
6	+3.20	-4.01
7	+1.14	-5.00
8	-1.14	-5.00
9	-3.20	-4.01
10	-4.62	-2.24
11	-5.16	0.00

Ctc	x	y
12	-4.62	+2.24
13	-3.20	+4.01
14	-1.14	+5.00
15	+1.14	+2.72
16	+2.97	+0.66
17	+2.36	-1.91
18	0.00	-3.05
19	-2.36	-1.91
20	-2.97	+0.66
21	-1.14	+2.72
22	0.00	-0.76

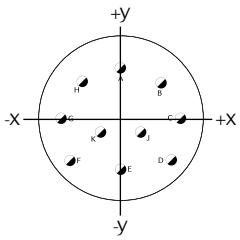
43



Ctc	x	y
1	+1.80	+5.54
2	-1.80	+5.54
3	+3.42	+4.71
4	+4.71	+3.42
5	+5.54	+1.80
6	+5.82	0.00
7	+5.54	-1.80
8	+4.71	-3.42
9	+3.42	-4.71
10	+1.80	-5.54
11	0.00	-5.82
12	-1.80	-5.54
13	-3.42	-4.71
14	-4.71	-3.42
15	-5.54	-1.80
16	-5.82	0.00
17	-5.54	+1.80
18	-4.71	+3.42
19	-3.42	+4.71
20	0.00	+4.12
21	+1.68	+3.76
22	+2.54	+2.28

Ctc	x	y
23	+3.92	+1.27
24	+4.10	-0.43
25	+3.57	-2.06
26	+1.99	-2.74
27	+0.86	-4.03
28	-0.86	-4.03
29	-1.99	-2.74
30	-3.57	-2.06
31	-4.10	-0.43
32	-3.92	+1.27
33	-2.54	+2.28
34	-1.68	+3.76
35	0.00	+2.42
36	+1.21	+1.21
37	+2.42	0.00
38	+1.21	-1.21
39	0.00	-2.42
40	-1.21	-1.21
41	-2.42	0.00
42	-1.21	+1.21
43	0.00	0.00

98



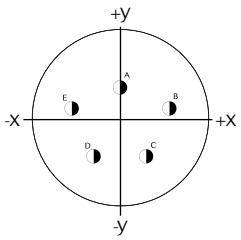
Ctc	x	y
A	0.00	+4.95
B	+3.18	+3.81
C	+4.90	+0.76
D	+4.17	-2.67
E	0.00	-3.43

Ctc	x	y
F	-4.17	-2.67
G	-4.90	+0.76
H	-3.18	+3.81
J	+1.65	-0.38
K	-1.65	-0.38

8D Series
Common Section

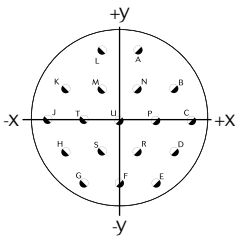
15 / D

05



Ctc	X	y
A	0	+2.54
B	+4.42	+0.61
C	+2.39	+3.76
D	-2.39	-3.76
E	-4.42	+0.61

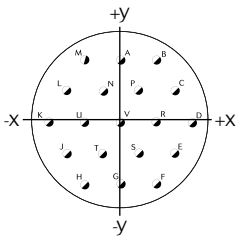
18



Ctc	X	y
A	+1.65	+6.40
B	+4.95	+2.87
C	+6.60	0.00
D	+4.95	-2.87
E	+3.30	-5.72
F	0.00	-5.72
G	-3.30	-5.72
H	-4.95	-2.87
J	-6.60	0.00

Ctc	X	y
K	-4.95	+2.87
L	-1.65	+6.40
M	-1.65	+2.87
N	+1.65	+2.87
P	+3.30	0.00
R	+1.65	-2.87
S	-1.65	-2.87
T	-3.30	0.00
U	0.00	0.00

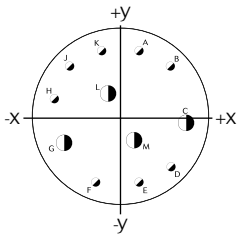
19



Ctc	X	y
A	0.00	+5.72
B	+3.30	+5.72
C	+4.95	+2.87
D	+6.60	0.00
E	+4.95	-2.87
F	+3.30	-5.72
G	0.00	-5.72
H	-3.30	-5.72
J	-4.95	-2.87
K	-6.60	0.00

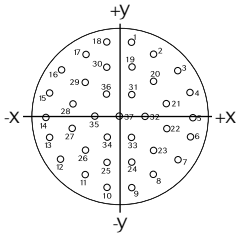
Ctc	X	y
L	-4.95	+2.87
M	-3.30	+5.72
N	-1.65	+2.87
P	+1.65	+2.87
R	+3.30	0.00
S	+1.65	-2.87
T	-1.65	-2.87
U	-3.30	0.00
V	0.00	0.00

97



Ctc	X	y
A	+1.65	+5.94
B	+4.52	+4.52
C	+5.84	-0.58
D	+4.52	-4.52
E	+1.65	-5.94
F	-2.26	-5.97
G	-5.26	-2.41
H	-5.94	+1.65
J	-4.52	+4.52
K	-1.65	+5.94
L	-1.19	+2.06
M	+1.19	-2.06

35

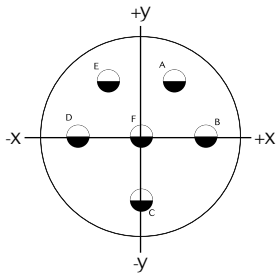


Ctc	X	y
1	+1.14	+6.65
2	+3.12	+5.51
3	+5.36	+4.06
4	+6.45	+2.03
5	+6.75	-0.25
6	+6.27	-2.49
7	+5.08	-4.45
8	+3.30	-5.89
9	+1.14	-6.65
10	-1.14	-6.65
11	-3.30	-5.89
12	-5.08	-4.45
13	-6.27	-2.49
14	-6.76	-0.25
15	-6.45	+2.03
16	-5.36	+4.06
17	-3.12	+5.51
18	-1.14	+6.65
19	+1.14	+4.37

Ctc	X	y
20	+3.12	+3.02
21	+4.32	+1.02
22	+4.32	-1.27
23	+3.12	-3.23
24	+1.14	-4.37
25	-1.14	-4.37
26	-3.12	-3.23
27	-4.32	-1.27
28	-4.32	+1.02
29	-3.12	+3.02
30	-1.14	+4.37
31	+1.14	+1.88
32	+2.29	-0.10
33	+1.14	-2.08
34	-1.14	-2.08
35	-2.29	-0.10
36	-1.14	+1.88
37	0.00	-0.10

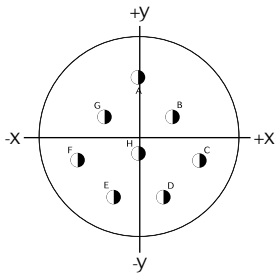
17 / E

06



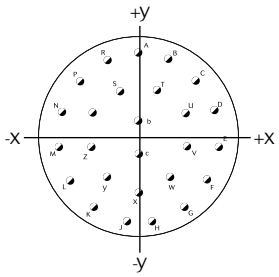
Ctc	x	y
A	+3.07	+5.31
B	+6.12	0.00
C	0.00	-6.12
D	-6.12	0.00
E	-3.07	+5.31
F	0.00	0.00

08



Ctc	x	y
A	0.00	+5.99
B	+3.25	+2.18
C	+5.84	-1.98
D	+2.39	-5.49
E	-2.39	-5.49
F	-5.84	-1.98
G	-3.25	+2.18
H	0.00	-1.32

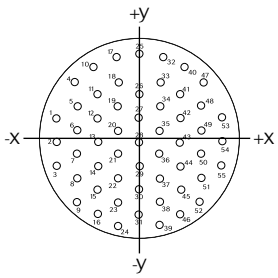
26



Ctc	x	y
A	0.00	+8.15
B	+3.33	+7.44
C	+6.07	+5.44
D	+7.75	+2.51
E	+8.10	-0.86
F	+7.06	-4.09
G	+4.80	-6.60
H	+1.70	-7.98

Ctc	x	y
J	-1.70	-7.98
K	-4.80	-6.60
L	-7.06	-4.09
M	-8.10	-0.86
N	-7.75	+2.51
P	-6.07	+5.44
R	-3.33	+7.44
S	-1.78	+4.50
T	+1.78	+4.50
U	+4.45	+2.39
V	+4.53	-0.91
W	+3.02	-3.84
X	0.00	-5.16
y	-3.02	-3.84
Z	-4.53	-0.91
a	-4.45	+2.39
b	0.00	+1.65
c	0.00	-1.65

35



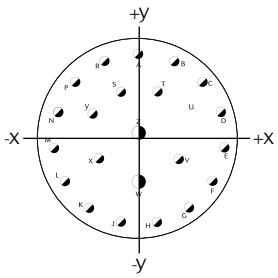
Ctc	x	y
1	-7.92	+2.18
2	-7.92	-0.10
3	-7.92	-2.39
4	-6.15	+5.61
5	-5.94	+3.33
6	-5.94	+1.04
7	-5.94	-1.24
8	-5.94	-3.53
9	-5.94	-5.82
10	-4.37	+7.09
11	-3.96	+4.47
12	-3.96	+2.18

Ctc	x	y
13	-3.96	-0.10
14	-3.96	-2.39
15	-3.96	-4.67
16	-3.96	-6.96
17	-2.26	+8.03
18	-1.98	+5.61
19	-1.98	+3.33
20	-1.98	+1.04
21	-1.98	-1.24
22	-1.98	-3.53
23	-1.98	-5.82
24	-1.98	-8.10

Ctc	x	y
25	0.00	+8.36
26	0.00	+4.47
27	0.00	+2.18
28	0.00	-0.10
29	0.00	-2.39
30	0.00	+4.67
31	0.00	-6.96
32	+2.26	+8.03
33	+1.98	+5.61
34	+1.98	+3.33
35	+1.98	+1.04
36	+1.98	-1.24
37	+1.98	-3.53
38	+1.98	-5.82
39	+1.98	-8.10
40	+4.37	+7.09

Ctc	x	y
41	+3.96	+4.47
42	+3.96	+2.18
43	+3.96	-0.10
44	+3.96	-2.39
45	+3.96	-4.67
46	+3.96	-6.96
47	+6.15	+5.61
48	+5.94	+3.33
49	+5.94	+1.04
50	+5.94	-1.24
51	+5.94	-3.53
52	+5.94	-5.82
53	+7.92	+2.18
54	+7.92	-0.10
55	+7.92	2-.39

99



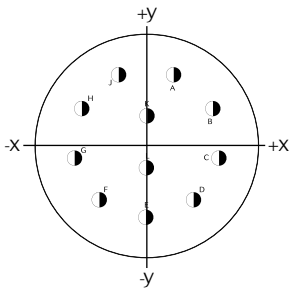
Ctc	x	y
A	0.00	+8.15
B	+3.33	+7.44
C	+6.07	+5.44
D	+7.75	+2.51
E	+8.10	-0.86
F	+7.06	-4.09
G	+4.80	-6.60
H	+1.70	-7.98
J	-1.70	-7.98
K	-4.80	-6.60
L	-7.06	-4.09
M	-8.10	-0.86

Ctc	x	y
N	-7.75	+2.51
P	-6.07	+5.44
R	-3.33	+7.44
S	-1.78	+4.50
T	+1.78	+4.50
U	+4.45	+2.39
V	+3.81	-1.91
W	0.00	-4.09
X	-3.81	-1.91
y	-4.45	+2.39
Z	0.00	+0.64

8D Series
Common Section

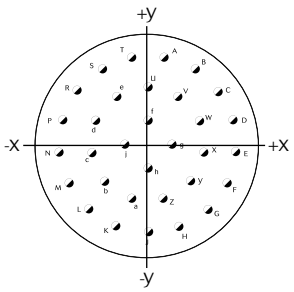
19 / F

11



Ctc	x	y
A	+2.67	+6.60
B	+6.35	+3.35
C	+6.99	-1.35
D	+4.55	-5.46
E	0.00	-7.14
F	-4.55	-5.46
G	-6.99	-1.35
H	-6.35	+3.35
J	-2.67	+6.60
K	0.00	+2.67
L	0.00	-2.34

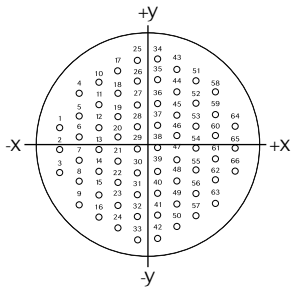
32



Ctc	x	y
A	+1.68	+8.97
B	+4.80	+7.75
C	+7.26	+5.51
D	+8.76	+2.49
E	+9.07	-0.84
F	+8.15	-4.06
G	+6.15	-6.73
H	+3.30	-8.51
J	0.00	-9.12
K	-3.30	-8.51
L	-6.15	-6.73
M	-8.15	-4.06
N	-9.07	-0.84
P	-8.76	+2.49
R	-7.26	+5.51
S	-4.80	+7.75

Ctc	x	y
T	-1.68	+8.97
U	0.00	+5.84
V	+3.15	+4.90
W	+5.31	+2.41
X	+5.79	-0.84
y	+4.42	-3.84
Z	+1.65	-5.61
a	-1.65	-5.61
b	-4.42	-3.84
c	-5.79	-0.84
d	-5.31	+2.41
e	-3.15	+4.90
f	0.00	+2.44
g	+2.44	0.00
h	0.00	-2.44
j	-2.44	0.00

35



Ctc	x	y
1	-9.07	+2.29
2	-9.07	+0.08
3	-9.07	-2.29
4	-7.09	+5.72
5	-7.09	+3.43
6	-7.09	+1.14
7	-7.09	-1.14
8	-7.09	-3.43
9	-7.09	-5.72
10	-5.11	+6.86
11	-5.11	+4.57
12	-5.11	+2.29
13	-5.11	0.00
14	-5.11	-2.29

Ctc	x	y
15	-5.11	-4.57
16	-5.11	-6.86
17	-3.12	+8.00
18	+3.12	+5.72
19	-3.12	+3.43
20	-3.12	+1.14
21	-3.12	-1.14
22	-3.12	-3.43
23	-3.12	-5.72
24	-3.12	-8.00
25	-1.14	+9.14
26	-1.14	+6.86
27	-1.14	+4.57

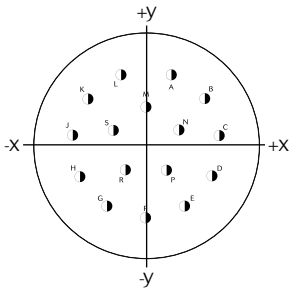
Ctc	x	y
28	-1.14	+2.29
29	-1.14	0.00
30	-1.14	-2.29
31	-1.14	-4.57
32	-1.14	-6.86
33	-1.14	-9.14
34	+1.14	+9.14
35	+1.14	+6.86
36	+1.14	+4.57
37	+1.14	+2.29
38	+1.14	0.00
39	+1.14	-2.29
40	+1.14	-4.57

Ctc	x	y
41	+1.14	-6.86
42	+1.14	-9.14
43	+3.12	+8.00
44	+3.12	+5.72
45	+3.12	+3.43
46	+3.12	+1.14
47	+3.12	-1.14
48	+3.12	-3.43
49	+3.12	-5.72
50	+3.12	-8.00
51	+5.11	+6.86
52	+5.11	+4.57
53	+5.11	+2.29

Ctc	x	y
54	+5.11	0.00
55	+5.11	-2.29
56	+5.11	-4.57
57	+5.11	-6.86
58	+7.09	+5.72
59	+7.09	+3.43
60	+7.09	+1.14
61	+7.09	-1.14
62	+7.09	-3.43
63	+7.09	-5.72
64	+9.07	+2.29
65	+9.07	0.00
66	+9.07	-2.29

21 / G

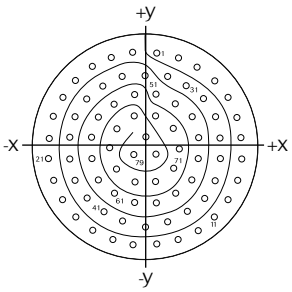
16



Ctc	x	y
A	+3.00	+8.18
B	+6.88	+5.36
C	+8.66	+0.91
D	+7.82	-3.81
E	+4.62	-7.37
F	0.00	-8.71
G	-4.62	-7.37
H	-7.82	-3.81

Ctc	x	y
J	-8.66	+0.91
K	-6.88	+5.36
L	-3.00	+8.18
M	0.00	+4.45
N	+3.91	+1.57
P	+2.39	-3.10
R	-2.39	-3.10
S	-3.91	+1.57

35



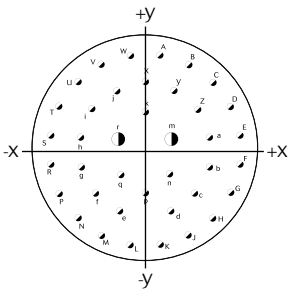
Ctc	x	y
1	+1.35	+10.82
2	+3.71	+10.26
3	+5.89	+9.19
4	+7.77	+7.67
5	+9.27	+5.77
6	+10.31	+3.58
7	+10.85	+1.22
8	+10.85	-1.22
9	+10.31	-3.58
10	+9.27	-5.77
11	+7.77	-7.67
12	+5.89	-9.19
13	+3.71	-10.26

Ctc	x	y
14	+1.35	-10.82
15	-1.35	-10.82
16	-3.71	-10.26
17	-5.89	-9.19
18	-7.77	-7.67
19	-9.27	-5.77
20	-10.31	-3.58
21	-10.85	-1.22
22	-10.85	+1.22
23	-10.31	+3.58
24	-9.27	+5.77
25	-7.77	+7.67
26	-5.89	+9.19
27	-3.71	+10.26
28	-1.35	+10.82
29	0.00	+8.20
30	+2.49	+8.18
31	+4.67	+7.11
32	+6.55	+5.59
33	+7.90	+3.58
34	+8.43	+1.22
35	+8.43	-1.22

Ctc	x	y
36	+7.90	-3.58
37	+6.55	-5.59
38	+4.67	-7.11
39	+2.49	-8.18
40	0.00	-8.81
41	-2.49	-8.18
42	-4.67	-7.11
43	-6.55	-5.59
44	-7.90	-3.58
45	-8.43	-1.22
46	-8.43	+1.22
47	-7.90	+3.58
48	-6.55	+5.59
49	-4.67	+7.11
50	-2.49	+8.18
51	-1.22	+6.12
52	+1.22	+6.12
53	+3.40	+5.05
54	+5.28	+3.53
55	+6.02	+1.22
56	+6.02	-1.22
57	+5.28	-3.53

Ctc	x	y
58	+3.40	-5.05
59	+1.22	-6.12
60	-1.22	-6.12
61	-3.40	-5.05
62	-5.28	-3.53
63	-6.02	-1.22
64	-6.02	+1.22
65	-5.28	+3.53
66	-3.40	+5.05
67	-1.22	+3.71
68	+1.22	+3.71
69	+3.18	+2.29
70	+3.94	0.00
71	+3.18	-2.29
72	+1.22	-3.71
73	-1.22	-3.71
74	-3.18	-2.29
75	-3.94	0.00
76	-3.18	+2.29
77	0.00	+1.35
78	+1.22	-0.74
79	-1.22	-0.74

39

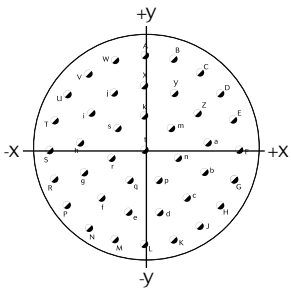


Ctc	x	y
A	+1.65	+10.44
B	+4.80	+9.42
C	+7.47	+7.47
D	+9.42	+4.80
E	+10.44	+1.65
F	+10.44	-1.65
G	+9.42	-4.80
H	+7.47	-7.47
J	+4.80	-9.42
K	+1.65	-10.44
L	-1.65	-10.44
M	-4.80	-9.42
N	-7.47	-7.47

Ctc	x	y
P	-9.42	-4.80
R	-10.44	-1.65
S	-10.44	+1.65
T	-9.42	+4.80
U	-7.47	+7.47
V	-4.80	+9.42
W	-1.65	+10.44
X	0.00	+7.49
y	+3.20	+6.50
Z	+5.89	+4.55
a	+7.11	+1.45
b	+7.11	-1.88
c	+5.51	-4.80

Ctc	x	y
d	+2.84	-6.73
e	-2.84	-6.73
f	-5.51	-4.80
g	-7.11	-1.88
h	-7.11	+1.45
i	-5.89	+4.55
j	-3.20	+6.50
k	0.00	+4.17
m	+2.90	+1.22
n	+2.69	-2.72
p	0.00	-4.80
q	-2.69	-2.72
r	-2.90	+1.22

41



Ctc	x	y
A	0.00	+10.60
B	+3.28	+10.09
C	+6.23	+8.58
D	+8.58	+6.23
E	+10.09	+3.28
F	+10.60	0.00
G	+10.09	-3.28
H	+8.58	-6.23
J	+6.23	-8.58
K	+3.28	-10.09
L	0.00	-10.60

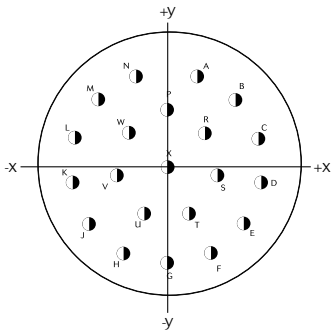
Ctc	x	y
M	-3.26	-10.09
N	-6.23	-8.58
P	-8.58	-6.23
R	-10.09	-3.28
S	-10.60	0.00
T	-10.09	+3.28
U	-8.58	+6.23
V	-6.23	+8.58
W	-3.28	+10.09
X	0.00	+7.20
y	+3.35	+6.38

Ctc	x	y
Z	+5.92	+4.09
a	+7.15	+0.87
b	+6.73	-2.55
c	+4.78	-5.39
d	+1.73	-6.99
e	-1.73	-6.99
f	-4.78	-5.39
g	-6.73	-2.55
h	-7.15	+0.87
i	-5.92	+4.09
j	-3.35	+6.38
k	0.00	+3.81
m	+2.98	+2.38
n	+3.71	-0.85
p	-1.66	-3.43
q	+1.66	-3.43
r	-3.71	-0.85
s	-2.98	+2.38
t	0.00	0.00

8D Series
Common Section

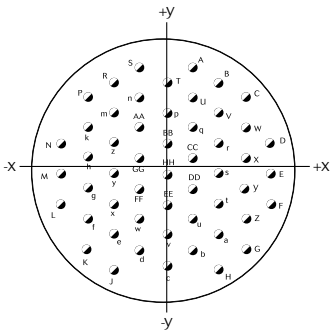
23 / H

21



Ctc	x	y
A	+3.25	+9.78
B	+7.34	+7.24
C	+9.80	+3.12
D	+10.16	-1.65
E	+8.33	-6.07
F	+4.65	-9.19
G	0.00	-10.31
H	-4.65	-9.19
J	-8.33	-6.07
K	-10.16	-1.65
L	-9.80	+3.12
M	-7.34	+7.24
N	-3.25	+9.78
P	0.00	+6.22
R	+4.06	+3.71
S	+5.44	-0.89
T	+2.39	-4.93
U	-2.39	-4.93
V	-5.44	-0.89
W	-4.06	+3.71
X	0.00	0.00

53



Ctc	x	y
A	+2.84	+11.56
B	+5.72	+9.91
C	+8.53	+8.26
D	+11.43	+3.30
E	+11.43	0.00
F	+11.43	-3.30

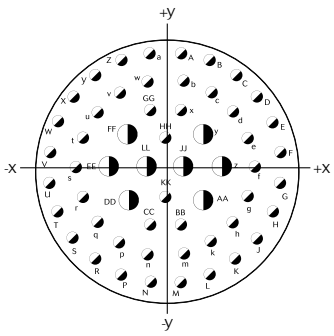
Ctc	x	y
G	+8.53	-8.26
H	+5.72	-10.41
J	-5.72	-10.41
K	-8.53	-8.26
L	-11.43	-3.30
M	-11.43	0.00

Ctc	x	y
N	-11.43	+3.30
P	-8.53	+8.26
R	-5.72	+9.91
S	-2.84	+11.56
T	0.00	+9.91
U	+2.84	+8.26
V	+5.72	+6.60
W	+8.53	+4.95
X	+8.53	+1.65
y	+8.53	-1.65
Z	+8.53	-4.95
a	+5.72	-6.60
b	+2.84	-8.26
c	0.00	-9.91
d	-2.84	-8.26
e	-5.72	-6.60
f	-8.53	-4.95
g	-8.53	-1.65
h	-8.53	+1.65
k	-8.53	+4.95

Ctc	x	y
m	-5.72	+6.60
n	-2.84	+8.26
p	0.00	+6.60
q	+2.84	+4.95
r	+5.72	+3.30
s	+5.72	0.00
t	+5.72	-3.30
u	+2.84	-4.95
v	0.00	-6.60
w	-2.84	-4.95
x	-5.72	-3.30
y	-5.72	0.00
z	-5.72	+3.30
AA	-2.84	+4.95
BB	0.00	+3.30
CC	+2.84	+1.65
DD	+2.84	-1.65
EE	0.00	-3.30
FF	-2.84	-1.65
GG	-2.84	+1.65
HH	0.00	0.00

25 / J

04



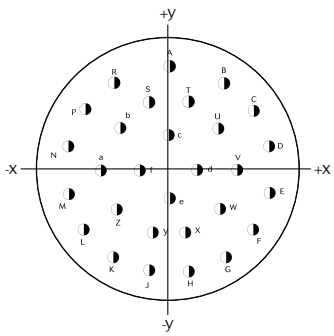
Ctc	x	y
A	+1.75	+13.49
B	+5.16	+12.57
C	+8.23	+10.80
D	+10.77	+8.28
E	+12.52	+5.21
F	+13.49	+1.75
G	+13.49	-1.75

Ctc	x	y
H	+12.52	-5.21
J	+10.77	-8.28
K	+8.23	-10.80
L	+5.16	-12.57
M	+1.75	-13.49
N	-1.75	-13.49
P	-5.16	-12.57

Ctc	x	y
R	-8.23	-10.80
S	-10.77	-8.28
T	-12.52	-5.21
U	-13.49	-1.75
V	-13.49	+1.75
W	-12.52	+5.21
X	-10.77	+8.28
y	-8.23	+10.80
Z	-5.16	+12.57
a	-1.75	+13.49
b	+2.18	+10.08
c	+5.38	+8.78
d	+7.90	+6.38
e	+9.58	+3.35
f	+10.46	0.00
g	+9.58	-3.35
h	+7.90	-6.38
k	+5.38	-8.78
m	+2.18	-10.08
n	-2.18	-10.08
p	-5.38	-8.78

Ctc	x	y
q	-7.90	-6.38
r	-9.58	-3.35
s	-10.46	0.00
t	-9.58	+3.35
u	-7.90	+6.38
v	-5.38	+8.78
w	-2.18	+10.08
x	+1.75	+6.66
y	+4.37	+3.78
z	+6.55	0.00
AA	+4.37	-3.78
BB	+1.75	-6.66
CC	-1.75	-6.66
DD	-4.37	-3.78
EE	-6.55	0.00
FF	-4.37	-3.78
GG	-1.75	-6.66
HH	0.00	+3.35
JJ	+2.18	0.00
KK	0.00	-3.35
LL	-2.18	0.00

29



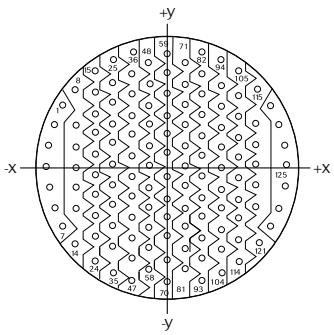
Ctc	x	y
A	0.00	+12.22
B	+6.55	+10.31
C	+10.03	+7.04
D	+11.91	+2.77
E	+11.91	-2.77
F	+10.03	-7.04
G	+6.68	-10.31
H	+2.31	-11.99

Ctc	x	y
J	-2.31	-11.99
K	-6.68	-10.31
L	-10.03	-7.04
M	-11.91	-2.77
N	-11.91	+2.77
P	-10.03	+7.04
R	-6.55	+10.31
S	-2.31	+8.15
T	+2.31	+8.15
U	+5.79	+4.93
V	+8.10	0.00
W	+6.10	-4.60
X	+2.31	-7.37
y	-2.31	-7.37
Z	-6.10	-4.60
a	-8.10	0.00
b	-5.79	+4.93
c	0.00	+4.09
d	+3.40	0.00
e	0.00	-3.30
f	-3.40	0.00

8D Series
Common Section

25 / J

35



Ctc	x	y
1	-12.17	+7.09
2	-13.21	+4.83
3	-13.87	+2.41
4	-14.10	0.00
5	-13.87	-2.41
6	-13.21	-4.83
7	-12.17	-7.09
8	-10.77	+9.07
9	-10.54	+4.83
10	-10.54	+2.41
11	-10.54	0.00
12	-10.54	-2.41
13	-10.54	-4.83
14	-10.77	-9.07
15	-8.43	+11.28
16	-8.43	+8.43
17	-8.43	+6.02
18	-8.43	+3.61
19	-8.43	+1.19
20	-8.43	-1.19
21	-8.43	-3.61
22	-8.43	-6.02
23	-8.43	-8.43
24	-8.43	-10.85
25	-6.32	+12.60
26	-6.32	+9.65

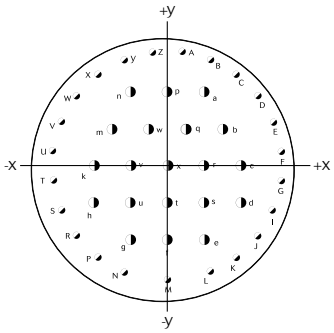
Ctc	x	y
27	-6.32	+7.24
28	-6.32	+4.83
29	-6.32	+2.41
30	-6.32	0.00
31	-6.32	-2.41
32	-6.32	-4.83
33	-6.32	-7.24
34	-6.32	-9.65
35	-6.32	-12.07
36	-4.06	+13.49
37	-4.22	+10.85
38	-4.22	+8.43
39	-4.22	+6.02
40	-4.22	+3.61
41	-4.22	+1.19
42	-4.22	-1.19
43	-4.22	-3.61
44	-4.22	-6.02
45	-4.22	-8.43
46	-4.22	-10.85
47	-4.22	-13.26
48	-2.11	+12.07
49	-2.11	+9.65
50	-2.11	+7.24
51	-2.11	+4.83
52	-2.11	+2.41

Ctc	x	y
53	-2.11	0.00
54	-2.11	-2.41
55	-2.11	-4.83
56	-2.11	-7.24
57	-2.11	-9.65
58	-2.11	-12.07
59	0.00	+13.26
60	0.00	+10.85
61	0.00	+8.43
62	0.00	+6.02
63	0.00	+3.61
64	0.00	+1.19
65	0.00	-1.19
66	0.00	-3.61
67	0.00	-6.02
68	0.00	-8.43
69	0.00	-10.85
70	0.00	-14.10
71	+2.11	+12.07
72	+2.11	+9.65
73	+2.11	+7.34
74	+2.11	+4.83
75	+2.11	+2.41
76	+2.11	0.00
77	+2.11	-2.41
78	+2.11	-4.83

Ctc	x	y
79	+2.11	-7.24
80	+2.11	-9.65
81	+2.11	-12.07
82	+4.06	+13.49
83	+4.22	+10.85
84	+4.22	+8.43
85	+4.22	+6.02
86	+4.22	+3.61
87	+4.22	+1.19
88	+4.22	-1.19
89	+4.22	-3.61
90	+4.22	-6.02
91	+4.22	-8.43
92	+4.22	-10.85
93	+4.22	-13.26
94	+6.32	+12.60
95	+6.32	+9.65
96	+6.32	+7.24
97	+6.32	+4.83
98	+6.32	+2.41
99	+6.32	0.00
100	+6.32	-2.41
101	+6.32	-4.83
102	+6.32	-7.24
103	+6.32	-9.65

Ctc	x	y
104	+6.32	-12.07
105	+8.43	+11.28
106	+8.43	+8.43
107	+8.43	+6.02
108	+8.43	+3.61
109	+8.43	+1.19
110	+8.43	-1.19
111	+8.43	-3.61
112	+8.43	-6.02
113	+8.43	-8.43
114	+8.43	-10.85
115	+10.77	+9.07
116	+10.54	+4.83
117	+10.54	+2.41
118	+10.54	0.00
119	+10.54	-2.41
120	+10.54	-4.83
121	+10.77	-9.07
122	+12.17	+7.09
123	+13.21	+4.83
124	+13.87	+2.41
125	+14.10	0.00
126	+13.87	-2.41
127	+13.21	-4.83
128	+12.17	-7.09

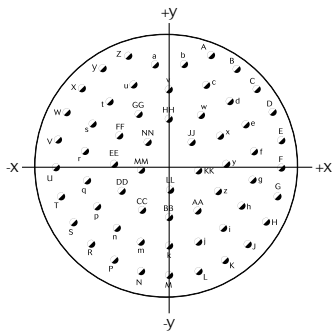
43



Ctc	x	y
A	+1.75	+13.49
B	+5.16	+12.57
C	+8.23	+10.80
D	+10.77	+8.28
E	+12.52	+5.21
F	+13.49	+1.75
G	+13.49	-1.75
H	+12.52	-5.21
J	+10.77	-8.28
K	+8.23	-10.80
L	+5.16	-12.57
M	0.00	-13.49
N	-5.16	-12.57
P	-8.23	-10.80
R	-10.77	-8.28
S	-12.52	-5.21
T	-13.49	-1.75
U	-13.49	+1.75
V	-12.52	+5.21
W	-10.77	+8.28
X	-8.23	+10.80
y	-5.16	+12.57

Ctc	x	y
Z	-1.75	+13.4
a	+4.37	+8.74
b	+6.55	+4.37
c	+8.74	0.00
d	+8.74	-4.37
e	+4.37	-8.74
f	0.00	-8.74
g	-4.37	-8.74
h	-8.74	-4.37
k	-8.74	0.00
m	-6.55	+4.37
n	-4.37	+8.74
p	0.00	+8.74
q	+2.18	+4.37
r	+4.37	0.00
s	+4.37	-4.37
t	0.00	-4.37
u	-4.37	-4.37
v	-4.37	0.00
w	-2.18	+4.37
x	0.00	0.00

61



Ctc	x	y
A	+4.98	+12.70
B	+7.98	+11.05
C	+10.49	+8.71
D	+12.32	+5.84
E	+13.39	+2.57
F	+13.61	-0.76
G	+12.98	-4.17
H	+11.53	-7.29
J	+9.35	-9.93

Ctc	x	y
K	+6.58	-11.94
L	+3.40	-13.18
M	0.00	-13.64
N	-3.40	-13.18
P	-6.58	-11.94
R	-9.35	-9.93
S	-11.53	-7.29
T	-12.98	-4.17
U	-13.61	-0.76

Ctc	x	y
V	-13.39	+2.57
W	-12.32	+5.84
X	-10.49	+8.71
y	-7.98	-11.05
w	+3.73	+5.66
Z	-4.98	+12.10
x	+6.02	+3.10
a	-1.73	+11.53
y	+6.78	-0.25
b	+1.73	+11.53
z	+5.79	-3.53
c	+4.39	+9.22
AA	+3.33	-5.92
d	+7.24	+7.19
BB	0.00	-6.78
e	+9.19	+4.45
CC	-3.33	-5.92
f	+10.13	+1.17
DD	-5.79	-3.53
g	+9.96	-2.24
EE	-6.78	-0.25
h	+8.66	-5.41
FF	-6.02	+3.10
i	+6.38	-7.98
GG	-3.73	+5.66
j	+3.38	-9.63
HH	0.00	+5.08
k	0.00	-10.21
JJ	+2.67	+2.39
m	-3.38	-9.63
KK	+3.43	-1.04
n	-6.38	-7.98
LL	0.00	-3.35
p	-8.66	-5.41
MM	-3.43	-1.04
q	-9.96	-2.24
NN	-2.67	+2.39
r	-10.13	+1.17
PP	0.00	0.00
s	-9.19	+4.45

Ctc	x	y
t	-7.24	+7.19
u	-4.39	+9.22
v	0.00	+8.59
w	+3.73	+5.66
x	+6.02	+3.10
y	+6.78	-0.25
z	+5.79	-3.53
AA	+3.33	-5.92
BB	0.00	-6.78
CC	-3.33	-5.92
DD	-5.79	-3.53
EE	-6.78	-0.25
FF	-6.02	+3.10
GG	-3.73	+5.66
HH	0.00	+5.08
JJ	+2.67	+2.39
KK	+3.43	-1.04
LL	0.00	-3.35
MM	-3.43	-1.04
NN	-2.67	+2.39
PP	0.00	0.00

8D Series

Derived Series

8D Series
Reinforced Sealing Series

Description

- Reinforced sealed receptacle with male or female straight PC tail contacts
- Strong hermetic performance: 10^{-7} atm.cm³/s
- 100 % scoop proof
- High density connectors
- Compact, low profile design
- Weight saving compared to hermetic version
- Reinforced sealing for harsh environments

Technical features

Mechanical

- **Shell plating:**
  - . Aluminum shell:
    - . Black zinc nickel (Z)
    - . Green zinc cobalt (ZC)
    - . Olive drab cadmium (W)
    - . Nickel (F)
  - . Composite shell:
    - . Olive drab cadmium (J)
    - . Nickel (M)
  - . Stainless steel shell:
    - . Nickel (S)
    - . Passivated (K)
  - . Titanium shell:
    - . Nickel (TF)
    - . Without plating (TT)
- **Insulator:** Thermoplastic
- **Interfacial seal:** Silicone elastomer
- **Contacts:** Copper alloy
- **Contacts plating:** Gold over nickel plated
- **Endurance:** 500 mating/unmating operations
- **Shock:** 300g, 3 ms
- **Vibration:**
  - . Sinus: 10 to 2000 Hz-30g, 3x12h
  - . Random: 50 to 2000 Hz, 2x8h

Electrical

- **Test voltage rating (Vrms) sea level:** 1300 to 2300Vrms
- **Contact resistance:** From 2 to 14.6mΩ
- **Insulation resistance:** ≥ 5000MΩ at 500Vdc
- **Shielding:**
  - . 65db - 10GHz (F)
  - . 50db - 10GHz (W)
  - . 85db - 1GHz (F & W)
- **Shell continuity:**
  - . F; TF; S: 1mΩ
  - . Z; ZC; W: 2.5mΩ
  - . J; M: 3mΩ
  - . JVS: 5mΩ
  - . TT; K: 10mΩ

Climatics

- **Temperature range:** -65°C +125°C
- **Sealing:** 10^{-7} atm.cm³/s
- **Salt spray:**
  - . F; S; TF: 48h
  - . ZC: 250h
  - . Z; W; JVS; TT; K; S: 500h
  - . X; J; M: 2000h
- **Damp heat:** MIL C: 10x24h
- **Resistance to fluids:**
  - . According to MIL-DTL-38999 standard: Synthetic hydraulic fluid: Skydrol 500 B4

Ordering information

Basic Series:	8DR	0	C	11	F	35	P	N
Shell type: **0:** Square flange receptacle **1:** In line receptacle (8D aluminum only) **7:** Jam nut receptacle (except 8D Composite)								
Contact type: **C:** Receptacle with short PC tail (male and female #22D, #20, #16) **L:** Connector with long PC tail (male and female #22D) **S:** Connector with specific PC Tail (male and female #22D) **M:** Connector with medium PC tail (male #22D) **P:** Connector with solder cup: . Pin: #22D, #20 & #16; Socket: #12 . Socket: #22D, #20 & #16; Pin: #12 - Please consult us								
Shell size: **09, 11, 13, 15, 17, 19, 21, 23, 25**								
Aluminum plating: **F:** Nickel **Z:** Black zinc nickel **W:** Olive drab cadmium **ZC:** Green zinc cobalt **Composite plating:** **J:** Olive drab cadmium **M:** Nickel **Stainless steel plating:** **K:** Passivated **S:** Nickel **Titanium plating:** **TT:** Without plating **TF:** Nickel								
Contact layout: See pages 13 to 17								
Contact type: **P:** Male **S:** Female								
Orientation: **N, A, B, C, D, E**								

8D Series
Hermetic Series

Description

- Glass sealed hermetic:
  . high hermeticity perfomance
  . compact low profile
- Quick screw coupling according to EN3645 and MIL-DTL-38999 Series III standards
- Robust stainless steel adapted for any weld/solder operation
- Various mounting styles:
  . compact solder mount receptacle
  . easy to fix square flange receptacle
  . easy to replace jam nut receptacle
- Signal and power contacts
- Various PCB contact versions available
- Special fuel tank versions for long term fuel immersion
- 230V qualified versions where higher voltage is used to reduce cable weight

Applications

Any application where a pressure difference must be insured such as:

- aircraft equipment in unpressurized areas (fuel tanks, actuators, ...)
- Pyrotechnic equipments
- Hightech surveillance, cameras

Technical features

Mechanical

- **Shell:**
  . Class Y: passivated stainless steel
  . Class N: nickel plated stainless steel
- **Seals:** silicone elastomer
- **Contact:** gold plated ferrous alloy
- **Endurance:** 500 mating/unmating operations

Electrical

- **Max current rating per contact:**

Contact size	22D	20	16	12	8	4
Rating (A)	3	5	10	17	33	60

- **Dielectric withstanding voltage:**

Service	sea level	at 30 000 m
M	1300 Vrms	800 Vrms
I	1800 Vrms	1000 Vrms
II	2300 Vrms	1000 Vrms

- **Shielding:**
  . Class Y: 45 dB min at 10 GHz
  . Class N: 65 dB min at 10 GHz
- **Insulation resistance:**
  5000 MΩ (under 500 Vdc)

Environmental

- **Operating temperature:** -65°C to 200°C
- **Hermeticity:** leak rate $<10^{-7}$ atm.cm^3/s (helium gas test)
- **Salt spray:**
  . Class Y: 500 hours
  . Class N: 48 hours
- **Resistance to fluids per MIL-DTL-38999:**
  . Gasoline JP5 (OTAN 44) - short immersion
  . Mineral hydraulic fluid MIL-H-5606 (OTAN H515)
  . Synthetic hydraulic fluid Skydrol 500 B4
- **Fuel immersion version:**
  . JP5 - long term immersion
  . 105°C max.

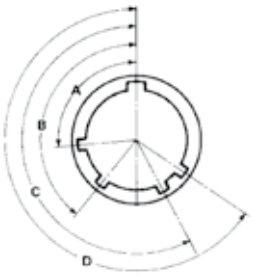
Contact layouts (matrix)

Shell size	Layout	F38999	8D type 21 Spec. 600*	8D Spec. 022*	Number of contacts					
					#22D	#20	#16	#12	#08	#04
09	09-35				6					
	09-98					3				
11	11-35				13					
	11-98					6				
13	13-04						4			
	13-08					8				
	13-35				22					
	13-98					10				
15	15-19					19				
	15-35				37					
	15-97					8	4			
17	17-08						8			
	17-26					26				
	17-35				55					
19	19-35				66					
21	21-48								4	
23	23-53					53				
25	25-04					48	8			

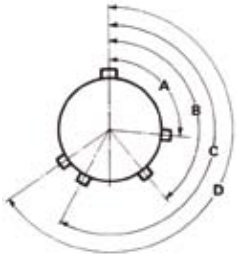
Souriau's layout
Q Souriau's qualified layout
* Spec. 600 = 230V qualified connector; Spec. 022 = Fuel tank version

Orientation

Orientations



Viewed from front face of receptacle



Viewed from front face of plug

Shell size	Angles	N	A	B	C	D	E	T	V
9 (A)	A° B° C° D°	105 140 215 265	102 132 248 320	80 118 230 312	35 140 205 275	64 155 234 304	91 131 197 240	-	-
11 (B) 15 (D)	A° B° C° D°	95 141 208 236	113 156 182 292	90 145 195 252	53 156 220 255	119 146 176 298	51 141 184 242	-	-
13 (C)	A° B° C° D°	95 141 208 236	113 156 182 292	90 145 195 252	53 156 220 255	119 146 176 298	51 141 184 242	70 136 218 261	75 138 224 268
17 (E) 21 (G)	A° B° C° D°	80 142 196 293	135 170 200 310	49 169 200 244	66 140 200 257	62 145 180 280	79 153 197 272	58 162 188 316	85 150 191 307
19 (F) 23 (H) 25 (J)	A° B° C° D°	80 142 196 293	135 170 200 310	49 169 200 244	66 140 200 257	62 145 180 280	79 153 197 272	-	-

Connector part numbers

Standard configuration

Basic Series	F38999	21	y	A	35	P	N	WF

Shell style:
21: Square flange receptacle
23: Jam nut receptacle
25: Solder mount receptacle

Class:
y: Passivated stainless steel
N: Nickel plated stainless steel

Shell size:
09=**A**, 11=**B**, 13=**C**, 15=**D**, 17=**E**, 19=**F**, 21=**G**, 23=**H**, 25=**J**

Contact layout:
See previous page and pages 13 to 17

Contact type:
P: Male solder cup
C: Male PC tail contacts

Orientation:
N, A, B, C, D, E, T, V

Specification:
WF: Standard
600: 230V qualified connector (layouts 13-04, 17-08, 21-11 & 21-48 - orientation T & V)

Specific configuration

Basic Series	8D	0	y	13	35	P	N	022

Shell style:
0: Square flange receptacle
1: Solder mount receptacle
7: Jam nut receptacle

Class:
y: Passivated stainless steel
N: Nickel plated stainless steel

Shell size:
09, 11, 13, 15, 17, 19, 21, 23, 25

Contact layout:
See previous page and pages 13 to 17

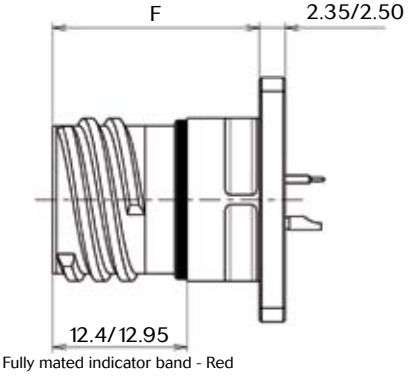
Contact type:
P: Male solder cup
C: Male PC tail contacts

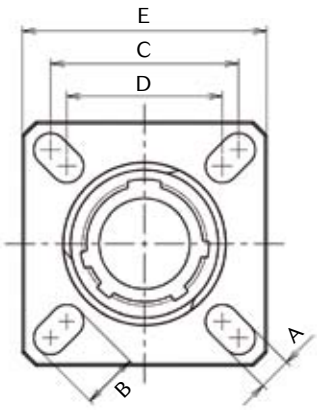
Orientation:
N, A, B, C, D, E

Specification:
022: Fuel tank
840: Short PC tail contact
850: Long PC tail contact

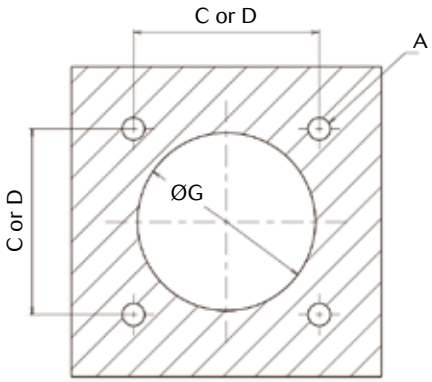
Dimensions

Square flange receptacle (type 21)

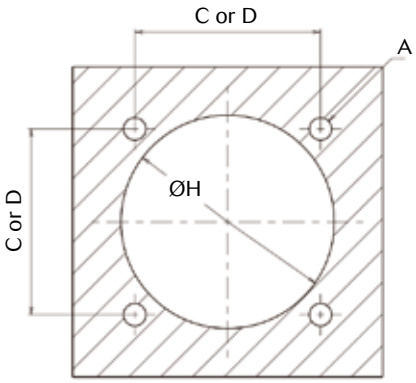




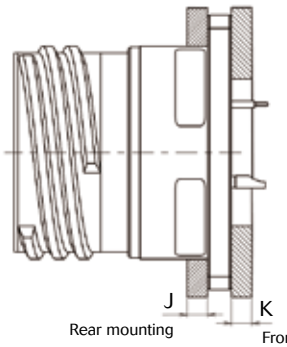
Shell size	A ± 0.20	B ± 0.20	C	D	E ± 0.30	F max	Ø G	Ø H	J max	K max
A (9)	3.25	5.49	18.26	15.09	23.80	20.40	13.11	16.66	2.5	3.2
B (11)		4.93	20.62	18.26	26.20		15.88	20.22		
C (13)			23.01	20.62	28.60		19.05	23.42		
D (15)		4.39	24.61	23.01	31.00		23.01	26.59		
E (17)		4.93	26.97	24.61	33.30		25.81	30.96		
F (19)			29.36	26.97	36.50		28.98	32.94		
G (21)			31.75	29.36	39.70		32.16	36.12		
H (23)	3.91	6.15	34.93	31.75	42.90		34.93	39.29		
j (25)			38.10	34.93	46.00		37.69	42.47		



Panel cut-out
Front mounting



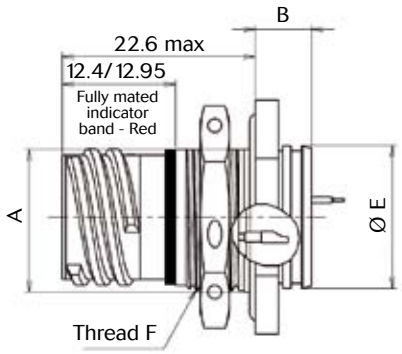
Panel cut-out
Rear mounting

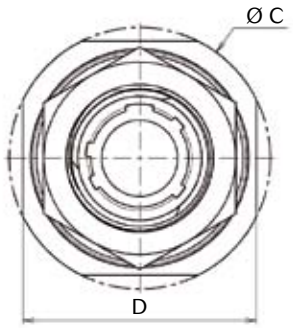


Rear mounting
Front mounting

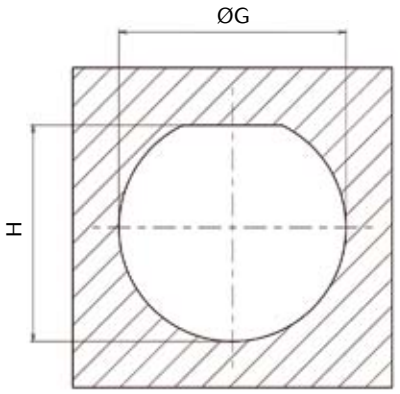
Note: All dimensions are in millimeters (mm)

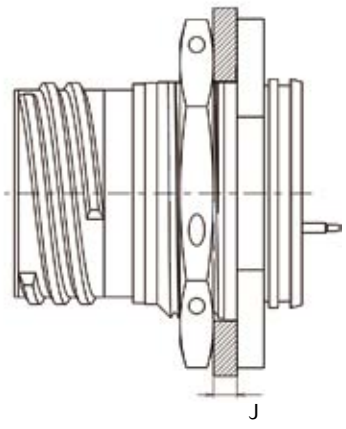
Jam nut receptacle (type 23)





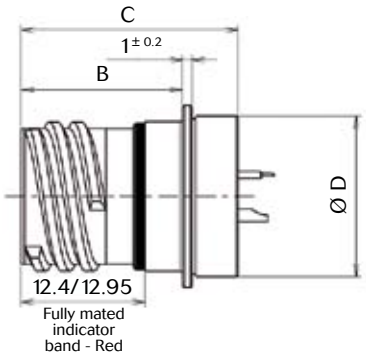
Shell size	A flat $^{+0.10}_{-0.15}$	B max	Ø C $^{\pm 0.30}$	Ø D $^{\pm 0.40}$	Ø E $^{\pm 0.30/0}$	F thread	Ø G $^{\pm 0.25}$	H	J
A (9)	16.53	9.10	30.20	27.00	16.30	M17 x 1-6g	17.78	17.02	3.2
B (11)	19.07		34.90	31.80	19.40	M20 x 1-6g	20.96	19.59	
C (13)	23.82		38.10	34.90	22.70	M25 x 1-6g	25.65	24.26	
D (15)	26.97		41.30	38.10	25.90	M28 x 1-6g	28.83	27.56	
E (17)	30.15		44.50	41.30	29.00	M32 x 1-6g	32.01	30.73	
F (19)	33.32	9.70	49.20	46.00	32.20	M35 x 1-6g	35.18	33.91	
G (21)	36.50		52.40	49.20	35.40	M38 x 1-6g	38.35	37.08	
H (23)	39.67		55.60	52.40	38.60	M41 x 1-6g	41.53	40.26	
J (25)	42.85		58.70	55.60	41.70	M44 x 1-6g	44.70	43.43	

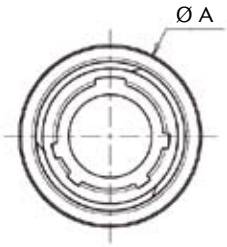




Note: All dimensions are in millimeters (mm)

Solder mounting receptacle (type 25)





Shell size	Ø A max	B max	C max	D max
A (9)	19.40	17.20	23.80	17.10
B (11)	21.80			19.90
C (13)	24.90			23.10
D (15)	28.10			26.20
E (17)	31.30			29.40
F (19)	33.60			31.80
G (21)	36.80			35.00
H (23)	40.00		24.60	38.20
J (25)	43.20			41.30

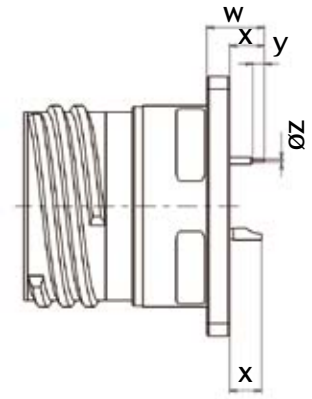
Maximum connector weights (in gramms)

Shell size	Square flange receptacle	Jam nut receptacle	Solder mount receptacle
09 (A)	23	39	21
11 (B)	28	53	25
13 (C)	35	63	31
15 (D)	41	73	38
17 (E)	57	92	53
19 (F)	60	106	55
21 (G)	65	118	57
23 (H)	75	132	68
25 (J)	91	154	83

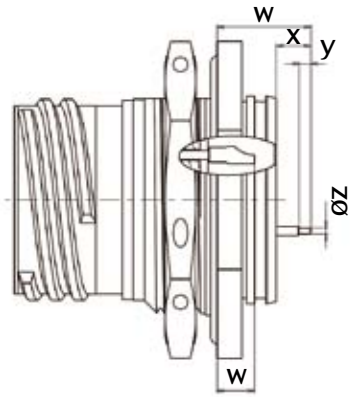
Note: All dimensions are in millimeters (mm)

Contact variations

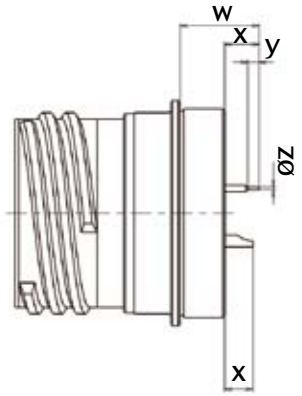
Contact variations summary



Type 21: Square flange receptacle



Type 23: Jam nut receptacle



Type 25: Solder mount receptacle

Type of contact	Specification	Type of shell	Contact size	W max	X min	y min	ØZ max
Solder cup (P)	WF	21	20 & 22	N/A	3.45	N/A	N/A
		23	20 & 22	4.5	N/A	N/A	N/A
		25	20 & 22	N/A	2.3	N/A	N/A
PC tail (C)	WF	21	16	6.65	3.45	N/A	N/A
			20			0.89	0.71
			22			0.89	0.38
		23	16	11.5	3.3	N/A	N/A
			20			0.89	0.71
			22			0.89	0.38
		25	16	10.75	3.4	N/A	N/A
			20	12.15		0.89	0.71
			22	13.55		0.89	0.38
	840	21	20	8.05	4.85	4.5	0.62
			22	7.32	4.12	3.82	0.53
		23	20	11.8	3.6	4.5	0.62
			22	10.6	2.4	5.75	0.53
		25	20	10.15	3.7	4.5	0.62
			22	9.42	2.97	3.82	0.53
	850	21	20	13	9.8	6	0.62
			22	10.69	7.49	7.35	0.53
		23	20	15.3	7.1	6.25	0.62
			22	16.2	8	9.25	0.45
		25	20	15.1	8.65	6	0.62
			22	12.79	6.34	7.35	0.53

Note: All dimensions are in millimeters (mm)

8D Series
Integrated Clinch Nuts

Description

- Square flange receptacle with 4 clinch nuts
- Clinch nut are self-locking
- Rear mounting
- Easy to install
- Time saving
- Equivalent MIL level qualification as 38999 Series III
- Clinch nut tested:
  - Impact test (drop 0.4kg from height of 100mm)
  - Push out test (130N during 15s max)
  - Wrench out test (1N/m)

Technical features

Mechanical

- **Shell:** Aluminum
- **Shells plating:**
  Cadmium olive drab (W)
  Nickel (F)
- **Insulator:** Thermoplastic
- **Grommet and interfacial seal:**
  Silicone elastomer
- **Contact:** Copper alloy
- **Contact plating:** Gold over nickel plated
- **Endurance:**
  . 500 mating/unmating operations
- **Shock:**
  300g, 3ms according EN2591-D2 method A
- **Vibration:**
  . Sinus:
  . . 10 à 2000 Hz, 3x12 hrs
  (60g, 140 - 2000 Hz) with T° cycling
  . Random:
  . . 50 to 2000 Hz, 2x8 Hrs
  (1g2/ Hz, 100 - 2000Hz) at T° max.
  . . 25 to 2000 Hz, 2x8 Hrs
  (5g2/ Hz, 100 - 300Hz) at ambiant T°
  Test with accessories in acc with EN2591-D3
- **Contact retention:**

Contact size	22	20	16	12	8	4
Min force in N	44	67	111	111	111	200

Electrical

- **Test voltage rating (Vrms)**

Service	sea level	at 21000 m
M	1 300	800
N	1 000	600
I	1 800	1 000
II	2 300	1 000

- **Contact resistance**

Contact size	22	20	16	12	8	4
Resistance mΩ	14.6	7.3	3.8	3.5	3	2

- **Insulation resistance:**
  ≥ 5 000 MΩ (under 500 Vdc)
- **Contact rating:**

Contact size	22	20	16	12	8	4
Rating (A)	5	7.5	13	23	45	80

- **Shell continuity**
  Cadmium olive drab (W): 2.5 Ωh
  Nickel (F): 1 Ωh
- **Shielding:**
  F: 65 db at 10 GHz
  F: 85 db at 1 GHz
  W: 50 db at 10 GHz

Climatics

- **Temperature range:**
  W: -65°C +175°C
  F: -65°C +200°C
- **Sealing:**
  Mated connectors meet altitude immersion requirements of MIL-DTL-38999.
- **Salt spray:**
  W: 500 Hours
  F: 48 Hours

Resistance to fluids

- **According to MIL-DTL-38999 standard**
  . Gasoline: JP5 (OTAN F44)
  . Mineral hydrolic fluid: MIL-H-5606 (OTAN H515)
  . Synthetic hydraulic fluid: Skydrol 500 B4
- **LD4 (SAE AS 1241)**
  . Mineral lubricating: MIL-L-7870A (OTAN 0142)
  . Synthetic lubricating: MIL-L-23699 (OTAN 0156), MIL-L-7808
  . Cleaning fluid: MIL-DTL-25769 diluted
  . De-icing fluid: MIL-A-8243
  . Extinguishing fluid: Chlorobrométhane
  . Cooling fluid: Coolanol

Ordering information

Basic Series	8D	34	-	19	F	35	S	N

Shell style:
34: Square flange receptacle with M3 clinch nuts
39: Square flange receptacle with UNC 4-40 clinch nuts

Contact lenght: (consult us)
-: Connectors with standard crimp contacts
C: Short PC tail
L: Long PC tail
S: Specific PC tail

Shell size:
9 - 11 - 13 - 15 - 17 - 19 - 21 - 23 - 25

Plating:
F: Nickel
W: Olive green cadmium

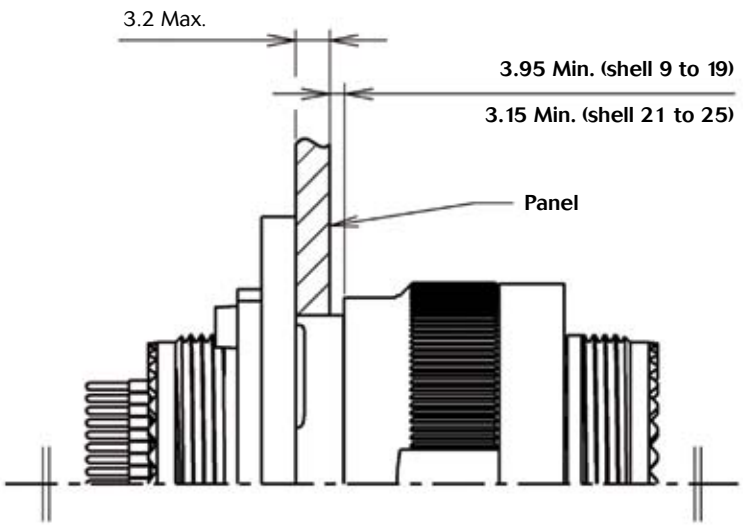
Contact layout:
See pages 13 to 17

Contact type:
P: Pin
S: Socket

Orientation:
N, A, B, C, D & E

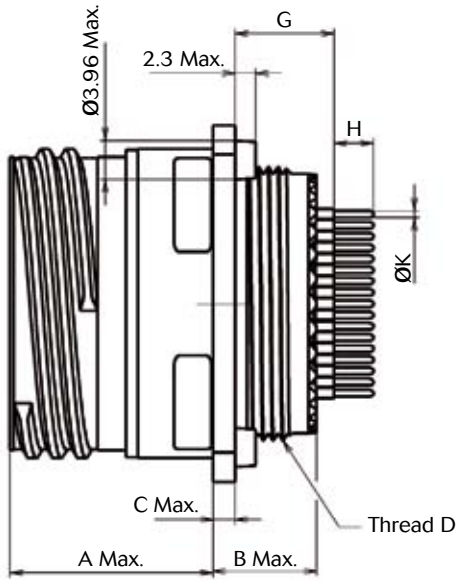
Dimensions

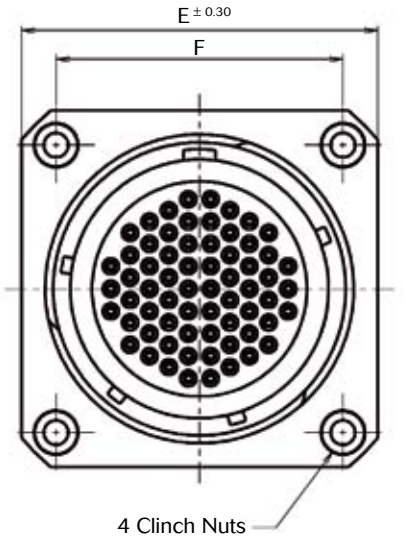
Mounted connectors (with 8D5 connector)



Note: All dimensions are in millimeters (mm)

Square flange receptacle - type 34 & type 39





Shell Size	A Max	B Max	C Max	D Thread	E ±0.3	F
9	20.90	10.60	2.50	M12x1-6g	27.79	18.26
11				M15x1-6g	30.15	20.62
13				M18x1-6g	32.54	23.01
15				M22x1-6g	34.14	24.61
17				M25x1-6g	36.5	26.97
19				M28x1-6g	38.89	29.36
21	20.10	11.40	3.20	M31x1-6g	41.27	31.75
23				M34x1-6g	44.45	34.93
25				M37x1-6g	47.62	38.1

Short contact length

For other length please consult us

Shell size	G					H		K	
	#22D		#20		#16	#22D	#20 & #16	#22D & #20	#16
	P	S	P	S	P & S	P & S	P & S	P & S	P & S
9	9.47 / 10.54	9.09 / 10.54	9.64 / 10.71	9.26 / 10.71	9.64 / 10.75	3.8 / 4.0	4.9 / 5.1	0.65 / 0.70	1.09 / 1.15
11									
13									
15									
17									
19									
21	9.58 / 10.65	9.20 / 10.65	9.75 / 10.82	9.37 / 10.82	9.75 / 10.86				
23									
25									

Note: All dimensions are in millimeters (mm)

8D Series
Double Flange

Description

- High level vibration resistance in harsh environments.
- Offers the same level of performance as the MIL-DTL-38999 Series III connector.
- Jam nut receptacle.
- No risk of breaking contacts.
- No risk of micro-cuts.
- Allow direct grounding from PCB to the flange.
- PC tails contacts without shoulder: #16, #20 and #22.

Technical features

Mechanical

- **Shell:** Aluminum
- **Shell plating:**
  . Cadmium olive drab (W)
  . Nickel (F)
  . Black zinc nickel (Z)
- **Insulator:** Thermoplastic
- **Grommet and interfacial seal:**
  Silicone elastomer
- **Contacts:** Copper alloy
- **Contacts plating:** Gold over nickel plated
- **Endurance:** 500 mating cycles
- **Shock:**
  300g, 3ms according EN2591-D2 method A
- **Vibration:**
  . Sinus:
  . . 10 à 2000 Hz, 3x12 hrs
  (60g, 140 - 2000 Hz) with T° cycling
  . Random:
  . . 50 to 2000 Hz, 2x8 Hrs
  (1g2/ Hz, 100 - 2000Hz) at T° max.
  . . 25 to 2000 Hz, 2x8 Hrs
  (5g2/ Hz, 100 - 300Hz) at ambiant T°
  Test with accessories in acc with EN2591-D3
- **Contact retention:**

Contact size	22	20	16	12	8	4
Min force in N	44	67	111	111	111	200

Electrical

- **Test voltage rating (Vrms)**

Service	sea level	at 21000 m
M	1 300	800
N	1 000	600
I	1 800	1 000
II	2 300	1 000

- **Contact resistance**

Contact size	22	20	16	12	8	4
Resistance mΩ	14.6	7.3	3.8	3.5	3	2

- **Insulation resistance:**
  ≥ 5 000 MΩ (under 500 Vdc)
- **Contact rating:**

Contact size	22	20	16	12	8	4
Rating (A)	5	7.5	13	23	45	80

- **Shell continuity:**
  . Cadmium olive drab (W): 2.5 Ωh
  . Nickel (F): 1 Ωh
  . Black zinc nickel (Z): 2.5 Ωh
- **Shielding:**
  . F: 65 db at 10 GHz; 85 db at 1 GHz
  . W: 50 db at 10 GHz
  . Z: Consult us

Climatics

- **Temperature range:**
  . W: -65°C +175°C
  . F: -65°C +200°C
  . Z: -65°C +200°C
- **Sealing:**
  Mated connectors meet altitude immersion requirements of MIL-DTL-38999.
- **Salt spray:**
  . W: 500 Hrs
  . F: 48 Hrs
  . Z: 500 Hrs

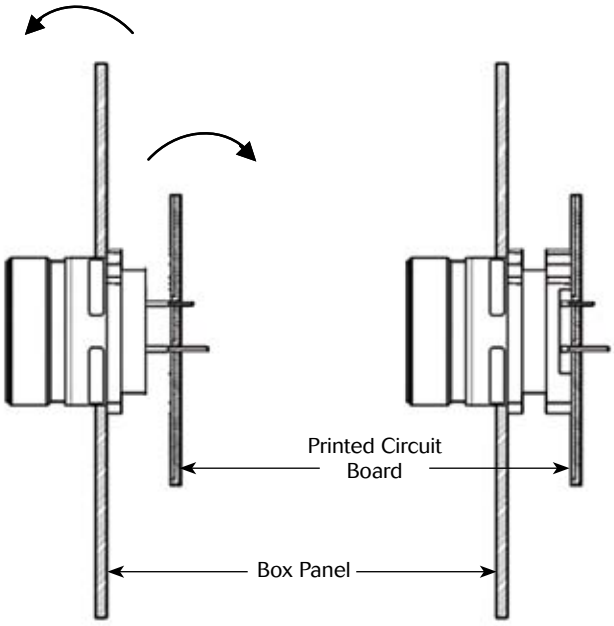
Resistance to fluids

- **According to MIL-DTL-38999 standard**
  . Gasoline: JP5 (OTAN F44)
  . Mineral hydrolic fluid: MIL-H-5606 (OTAN H515)
  . Synthetic hydraulic fluid: Skydrol 500 B4
- **LD4 (SAE AS 1241)**
  . Mineral lubricating: MIL-L-7870A (OTAN 0142)
  . Synthetic lubricating: MIL-L-23699 (OTAN 0156), MIL-L-7808
  . Cleaning fluid: MIL-DTL-25769 diluted
  . De-icing fluid: MIL-A-8243
  . Extinguishing fluid: Chlorobromethane
  . Cooling fluid: Coolanol

Comparison

Before
Risk of breaking contacts
Risk of micro-cuts

After
Double flange



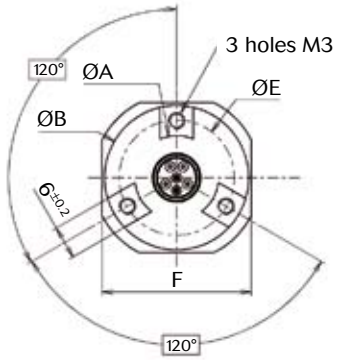
Ordering information

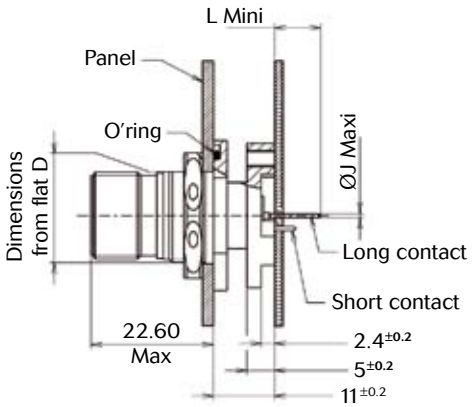
Basic Series	**8D**	**87**	**11**	**C**	**17**	**W**	**35**	**P**	**N**	**L**
Shell type: **87:** Jam nut receptacle										
Length between panel & PCB * (mm)										
Type: **C:** Receptacle with short PC tail **L:** Receptacle with long PC tail										
Shell size: **09, 11, 13, 15, 17, 19, 21, 23, 25**										
Plating: **W:** Olive green cadmium **F:** Nickel (ROHS) **Z:** Zinc nickel										
Contact layout: See pages 13 to 17										
Contact type: **P:** Pin **S:** Socket										
Orientation: **N, A, B, C, D, E**										
Specification: **None:** Standard **L:** Without contacts For other specification, please contact us										

* For other length beetween panel & PCB please consult us.

Dimensions

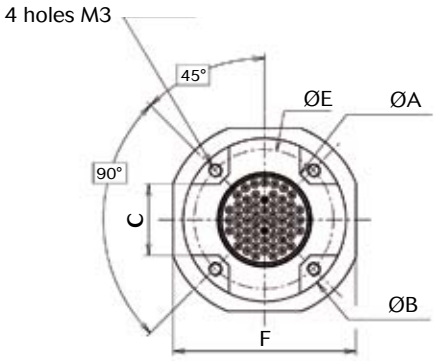
Jam nut receptacle (type 87) - Size 9 & 11

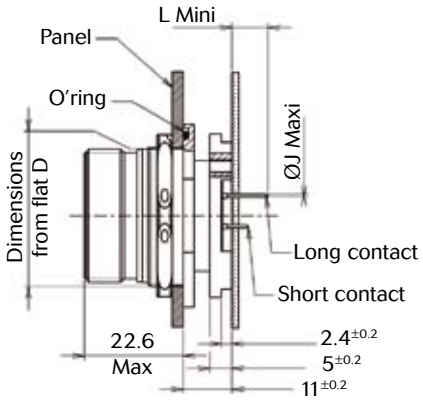




Shell size	ØA ± 0.15	ØB ± 0.15	D ± 0.15	ØE	F ± 0.4
9	15.10	26.00	16.53	20.50	27.00
11	19.90	30.80	19.07	25.20	31.80

Jam nut receptacle (type 87) - Size 13 to 25





Shell size	ØA ± 0.15	ØB ± 0.15	C +0 -0.2	D ± 0.15	ØE	F ± 0.4
13	19.90	30.80	12	23.82	25.25	34.90
15	23.00	33.90	14	26.97	28.42	38.10
17	26.00	36.80	16	30.15	31.42	41.30
19	29.50	40.40	18	33.32	35.03	46.00
21	32.50	43.20	20	36.50	37.82	49.20
23	35.50	46.50	23	39.67	41.12	52.40
25	38.60	49.60	25	42.85	44.30	55.60

Note: All dimensions are in millimeters (mm)

Straight PC tail contacts

Contact size	Contact type	PC tail length	L min	ØJ max
22D	P	L	7.1	0.7
	S			
	P	C	3.6	
	S			
20	P	L	7.1	0.9
	S			
	P	C	3.6	
	S			
16	P	L	7.1	1.35
	S			
	P	C	3.6	
	S			
12	P	L	-	-
	S			
	P	C	3.6	1.7
	S			

Note: All dimensions are in millimeters (mm)

8D Series
PCB Contacts without Shoulder

Description

- Pin & socket PCB contacts without shoulder #22D & #20 as per MIL-DTL-38999 Series I, II & III. Contacts without shoulder allows a more flexible mounting on variable PCB thicknesses or depths.
- Ruggedized contacts:
  . Material: copper alloy
  . Finish: gold per MIL-G-45204 type I class 1 over nickel plate
  . Sleeve: stainless steel
- Flexible mounting:
  . Various PCB thicknesses
  . Multiple PCB positioning

Ordering information
8D Series connector with PCB contacts without shoulder

Basic Series:	8D	0	C	11	F	35	P	N	M	900

Shell type:
0: Square flange wall mounting receptacle
7: Jam nut receptacle
34: Square flange wall mounting receptacle with M3 clinch nuts
39: Square flange wall mounting receptacle with UNC 4-40 clinch nuts
8711: Jam nut double flange receptacle

PCB contact without shoulder type: (see next page for information & dimensions)
C: Short PC tail
M: Medium PC tail
L: Long PC tail

shell size: 09, 11, 13, 15, 17, 19, 21, 23, 25

8D aluminum plating:
F: Nickel
Z: Black zinc nickel
W: Olive green cadmium
ZC: Green zinc cobalt

8D composite plating:
J: Olive green cadmium
M: Nickel
X: Without plating

8D stainless steel plating:
K: Passivated
S: Nickel

8D titanium plating:
TT: Without plating
TF: Nickel

Contact layout: See pages 13 to 17

Contact type:
P: Male
S: Female

Orientation: N, A, B, C, D, E

Special custom:
None: Standard plastic cap
M: Antistatic plastic cap

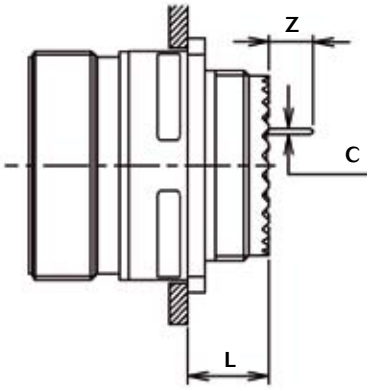
8D0, 8D7, 8D34 & 8D39 contact plating:
900: Contact without shoulder with gold plated barrel (termination area)
901: Contact without shoulder with tin plated barrel (termination area)

8D8711 contact plating:
None: Contact without shoulder with gold plated barrel (termination area)
580: Contact without shoulder with tin plated barrel (termination area)

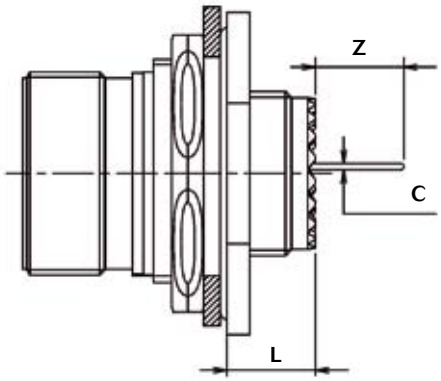
Note: For JVS (8D Bronze Series, please consult us)

8D Series

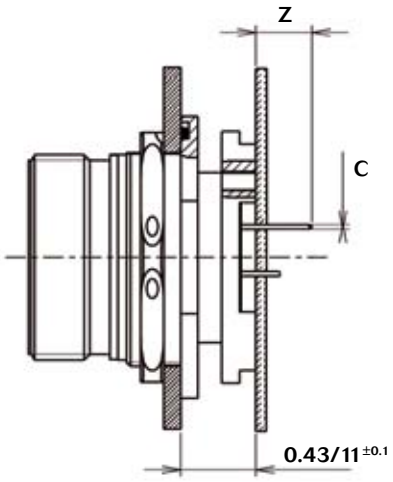
Square flange receptacle
8D0
8D34 (with M3 clinch nuts)
8D39 (with UNC 4-40 clinch nuts)



Jam nut receptacle
8D7



Jam nut double flange receptacle
8D8711



Contact size	Contact Type		Ø C Max	Square flange receptacle 8D0 / 8D34		Jam nut receptacle 8D7	
				Z Min	Z Max	Z Min	Z Max
#22D & #20	Pin	C: Short PC tail	0.50	3.96	4.88	3.56	4.63
		M: Medium PC tail	0.50	5.99	6.91	5.59	6.66
		L: Long PC tail	0.50	7.51	8.43	7.11	8.18
#22D & #20	Socket	C: Short PC tail	0.50	3.96	5.21	3.56	4.81
		M: Medium PC tail	0.50	5.99	7.24	5.59	6.84
		L: Long PC tail	0.50	7.51	8.76	7.11	8.36

Contact size	Contact Type		Ø C Max	Double flange receptacle 8D8711
				Z Min
#22D	Pin & Socket	C: Short PC tail	0.70	3.60
		L: Long PC tail	0.70	7.10
#20	Pin & Socket	C: Short PC tail	0.90	3.60
		L: Long PC tail	0.90	7.10

Shell type	Square flange receptacle 8D0 / 8D34		Jam nut receptacle 8D7
Shell size	9 to 19	21 to 25	9 to 25
L Max	10.7	11.5	9.90

Note: All dimensions are in millimeters (mm)

8D Series
High Density

Description

- Derived from standards:
  - MIL-DTL-38999 Series III (8D)
- 100% scoop proof
- Available in 3 shell sizes
- Contacts #26 for cable AWG 26 to 30 (24 to 30 under request)
- Double flange & clinch nut version available

Technical features

Mechanical

- **Shell:**
  . Aluminium, Composite, Stainless steel
- **Shell palting:**
  . 8D Aluminum:
  Cadmium olive drab (W)
  Nickel (F)
  Black zinc nickel (Z)
  . 8D Composite:
  Cadmium olive drab (J)
  Nickel (M)
- **Insulator:** Thermoplastic
- **Seal:** Liquid Silicone rubber
- **Contact:** Copper alloy
- **Contact plating:** Gold
- **Endurance:** 500 matings/unmatings
- **Shock & Vibration:**
  According to 38999 specification

Electrical

- **Contact resistance:**
  Size 26: 16 mΩ
- **Insultation resitance:**
  ≥5000mΩ (at 500Vdc)
- **Contact rating:**
  Size 26: 3Amp
- **Shell continuity:**
  . Aluminum shell:
  Cadmium olive drab (W): 2.5 mΩ
  Nickel (F): 1 mΩ
  Black zinc nickel (Z): 2.5 mΩ
  . Composite shell:
  Cadmium olive drab (J): 3 mΩ
  Nickel (M): 3 mΩ
  . Stainless steel shell:
  Passivated (K): 10 mΩ
  Nickel (S): 1 mΩ

Environmental

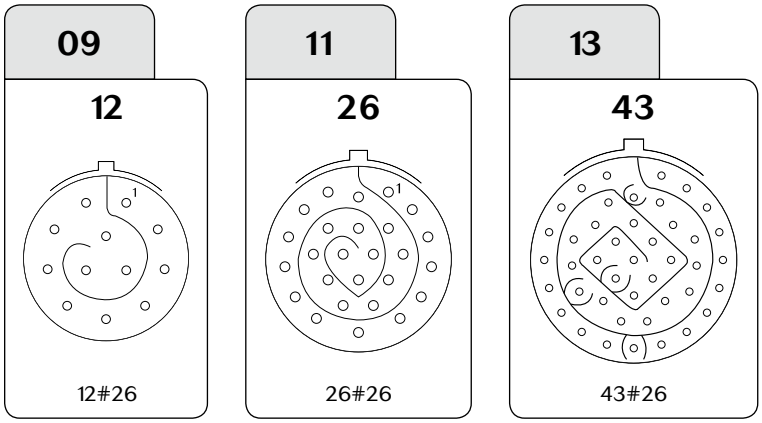
- **Temperature range:**
  -55°c to +175°C
  -55°c to +200°C (Nickel version)
- **Sealing mated connectors:**
  IP 67 (1 metre for 30 min minimum)
- **Salt spray:**
  . Aluminum shell:
  W: 500 Hrs
  F: 48 Hrs
  Z: 500 Hrs
  . Composite shell: 2000 Hrs
  . Stainless steel shell: 500 Hrs

Resistance to fluids

- **According to MIL-DTL-38999 standard**
  . Gasoline: JP5 (OTAN F44)
  . Mineral hydraulic fluid: MIL-H-5606 (OTAN H515)
  . Synthetic hydraulic fluid: Skydrol 500 B4
- **LD4 (SAE AS 1241)**
  . Mineral lubricating: MIL-L-7870A (OTAN 0142)
  . Synthetic lubricating: MIL-L-23699 (OTAN 0156), MIL-L-7808
  . Cleaning fluid: MIL-DTL-25769 diluted
  . De-icing fluid: MIL-A-8243
  . Extinguishing fluid: Chlorobrométhane
  . Cooling fluid: Coolanol

8D Series
High Density

Contact layouts



PCB hole drilling and position information

See pages 76 & 77.

Ordering information

8D Series

Basic Series	8D	0	-	11	W	35	P	N

Shell style:
- **0:** Square flange receptacle
- **1:** In line receptacle (Aluminum only)
- **7:** Jam nut receptacle (Aluminum, Stainless steel & Titanium only)
- **5:** Plug with RFI shielding

Type:
- **-:** Connectors with standard crimp contacts
- **L:** Receptacle with PC tail (available with Pin contact only)

Shell size: 09, 11, 13

Plating:
- **W:** Olive drab cadmium (Aluminum only)
- **F:** Nickel (Aluminum only)
- **Z:** Black zinc nickel (Aluminum only)
- **J:** Olive drab cadmium (Composite only)
- **M:** Nickel (Composite only)

Contact layout: See previous page

Contact type:
- **P:** Pin
- **S:** Socket

Orientation: N, A, B, C, D, E

Specifications:
- **L:** Delivered without contact
- **900** (mandatory for PC tail version): PC tail contacts without shoulder
- **901** (mandatory for PC tail version): Tin plated PC tail contacts without shoulder

Contact, tooling & accessories

See «Common Section» page 65.

Recommanded cable

Standard military cable as M22759 or EN2267 and derivated.

8D Series
Quadrax Contacts

Description

• Front and rear removable versions available.

• Crimp and PC tail versions available.

• Standard #8 cavity insertion and removal tools.

• Ground connection of the cable braid to the shell possible through the external shell of the # 8 contact.

• Compatible with star quad cable.

• Characteristic impedance of 100 Ohms.

Technical features

Mechanical

• **Operating temperature:**
-65°C up to 150°C

• **Inner contact:**
copper alloy

• **Contact body:**
copper alloy

• **Contact insulator:**
thermoplastic resin

• **Contact plating:**
gold over nickel

• **Shell plating:**
Aluminum shell:
Cadmium olive drab (W)
Nickel (F)
Black zinc nickel (Z)
Green zinc cobalt (ZC)
Composite shell:
Cadmium olive drab (J)
Nickel (M)
Without plating (X)
Stainless steel shell:
Passivated (K)
Nickel (S)
Titanium shell:
Without plating (TT)
Nickel (TF)
Bronze shell:
Without plating

Electrical

• **ISO/IEC 11801 category 6 compliant:**
next (cross talk): > 46 db at 250 MHz
return loss: > 16 db at 250 MHz
shield effectiveness: > 36 db at 80 MHz

• **Contact to shell continuity:**
< 10 mΩ

• **Contact resistance (low level):**
initial 15 mΩ
after tests 30 mΩ

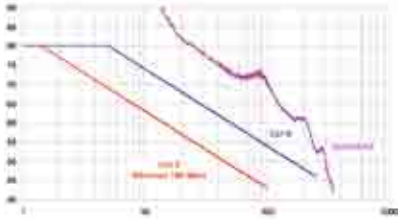
• **Dielectric withstanding voltage:**

Altitude	Service I
sea level	500 Vrms
21 000 m	125 Vrms

• **Insulation resistance:**
at ambient temperature: > 5000 MΩ
at high temperature: > 1000 MΩ

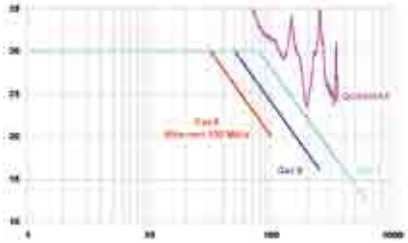
• **#24 contact cable size acceptance:**
AWG 22 to AWG 26

Next (dB)



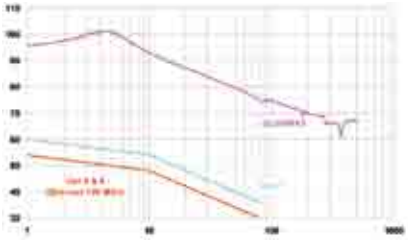
Frequency (MHz)

Return loss (dB)



Frequency (MHz)

Shield effectiveness (dB)



Frequency (MHz)

Ordering information

Aluminum, Composite, Stainless steel & Titanium connector

Basic Series	8D	0	Q	11	W	81	P	N	621

Shell style:
- **0:** Square flange receptacle
- **5:** Plug
- **7:** Jam nut receptacle

Type:
- **C:** Quadrax PC tail contacts*
- **Q:** Quadrax crimp contacts

Shell size: 9 - 11 - 17 - 19 - 21 - 23 - 25

Plating:
- **Aluminum shell:**
  - **W:** Olive green cadmium
  - **F:** Nickel
  - **Z:** Black zinc nickel
  - **ZC:** Green zinc cobalt
- **Composite shell:**
  - **J:** Olive green cadmium
  - **M:** Nickel
  - **X:** Without plating
- **Stainless steel shell:**
  - **K:** Passivated
  - **S:** Nickel
- **Titanium shell:**
  - **TF:** Nickel
  - **TT:** Without plating

Contact layout: See next page

Contact type:
- **P:** Pin — **A:** Connector supplied without quadrax pin contact
- **S:** Socket — **B:** Connector supplied without quadrax socket contact

Orientation: N, A, B, C, D & E

Specification:
- **284:** Quadrax grounded PC tail contact (100Ω)*
- **308:** Quadrax not grounded PC tail contact (100Ω)
- **384:** Quadrax grounded crimp contact (150Ω)*
- **408:** Quadrax not grounded crimp contact (150Ω)
- **620:** Quadrax grounded crimp contact (100Ω)*
- **621:** Quadrax not grounded crimp contact (100Ω)

Bronze connector

Basic Series	JVS	C	00A	09	35	P	N	284

Type:
- **C:** Quadrax PC tail contacts*
- **Q:** Quadrax crimp contacts

Shell style:
- **00A:** Square flange receptacle
- **16A:** Plug
- **07A:** Jam nut receptacle

Shell size: 9 - 11 - 17 - 19 - 21 - 23 - 25

Contact layout: See next page

Contact type:
- **P:** Pin — **A:** Connector supplied without quadrax pin contact
- **S:** Socket — **B:** Connector supplied without quadrax socket contact

Orientation: N, A, B, C, D & E

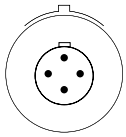
Specification:
- **284:** Quadrax grounded contact (100Ω)*
- **308:** Quadrax not grounded contact (100Ω)
- **384:** Quadrax grounded contact (150Ω)*
- **408:** Quadrax not grounded crimp contact (150Ω)
- **620:** Quadrax grounded crimp contact (100Ω)*
- **621:** Quadrax not grounded crimp contact (100Ω)

* For PC tail contacts or grounded versions please consult us.

Contact layouts

09

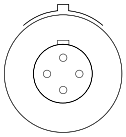
05



1#8 Quadrax

11

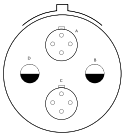
81



1#8 Quadrax

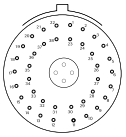
17

80



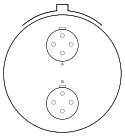
2#12
2#8 Quadrax

81



38#22D
1#8 Quadrax

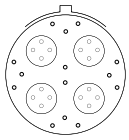
82



2#8 Quadrax

19

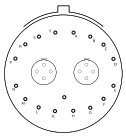
84



14#22D
4#8 Quadrax

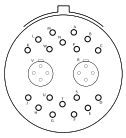
21

78



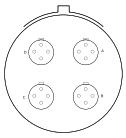
17#22D
2#8 Quadrax

80



18#20
2#8 Quadrax

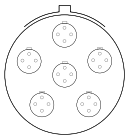
84



4#8 Quadrax

23

86



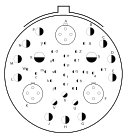
6#8 Quadrax

25

80

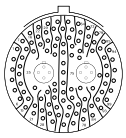
10#20
13#16
4#12 Coax
3#8 Quadrax

81



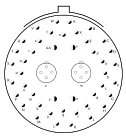
22#22D
3#20, 11#16
2#12
3#8 Quadrax

82



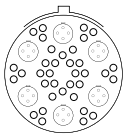
97#22D
2#8 Quadrax

86



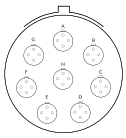
40#20
4#16
2#8 Quadrax

87



36#22D
6#8 Quadrax

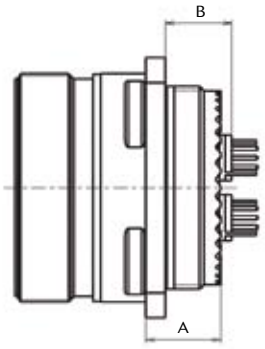
88



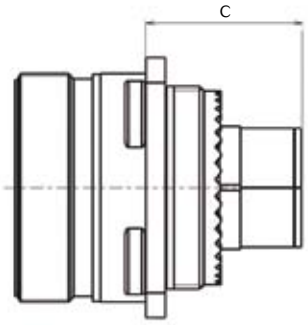
8#8 Quadrax

Dimensions

Square flange receptacle - Type 0



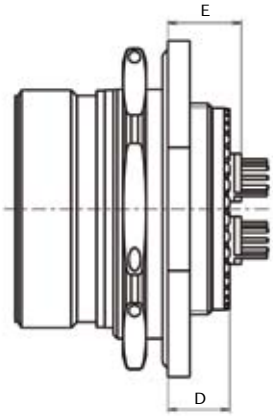
PC Tail contacts



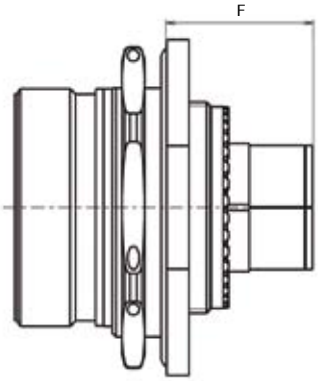
Crimp contacts

Shell size	A Max			B Min			B Max			C Max
	Aluminum	Composite	Stainless steel, Titanium & Bronze	Aluminum	Composite	Stainless steel, Titanium & Bronze	Aluminum	Composite	Stainless steel, Titanium & Bronze	All materials
11 to 19	10.72	11.96	11.4	11.5	12.5	12	13.5	13.5	14	29
21 to 25	11.54	12.76	11.8	12	14.5	12.5	14	15.5	14.5	30

Jam nut receptacle - Type 7



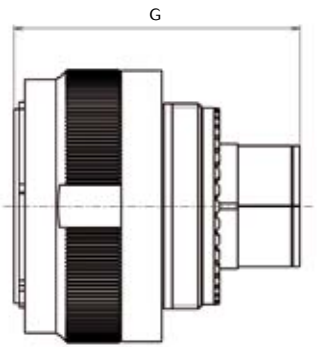
PC Tail contacts



Crimp contacts

Material	Aluminum, Stainless steel, Titanium & Bronze			
Shell size 11 to 25	D Max	E Min	E Max	F Max
	9.9	9.5	12	27

Plug - Type 5

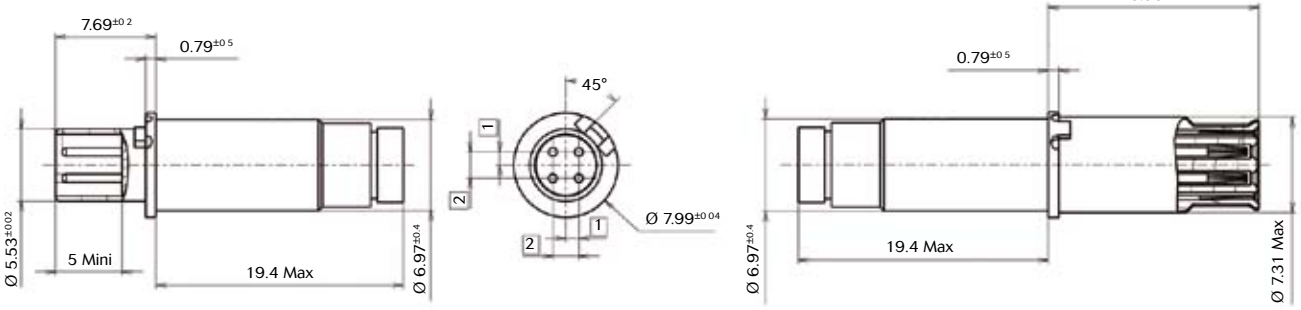


All materials	
Shell size 11 to 25	G Max
	48

Note: All dimensions are in millimeters (mm)

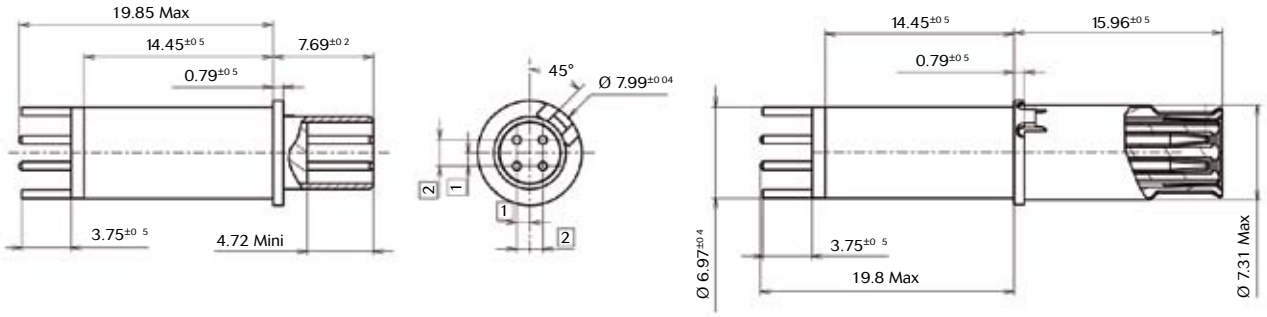
8D Series
Quadrax Contacts

Quadrax crimp contact



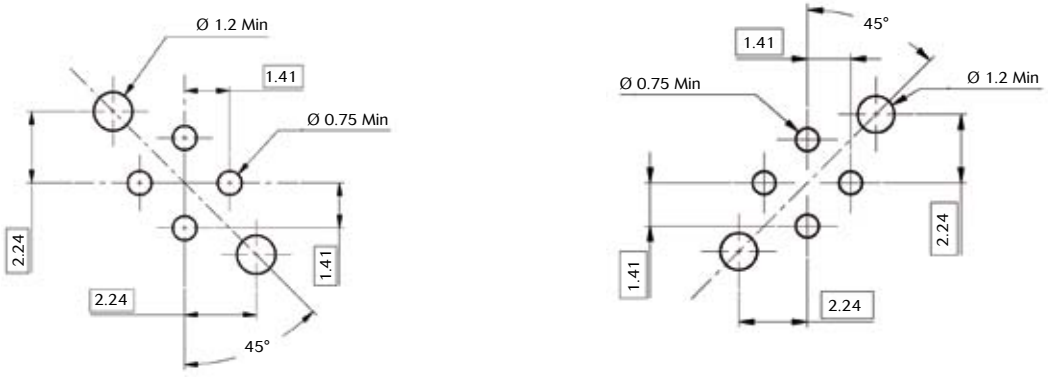
Male contact **Female contact**

Quadrax PCB contact



Male contact **Female contact**

Drill dimensions for PCB mount



Male contact **Female contact**

Note: All dimensions are in millimeters (mm)

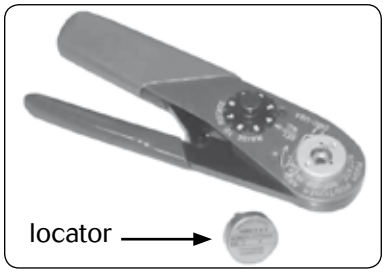
Contact ordering information

In-line alignment key. All crimp contacts are sealed thru a sealing boot. Crimp contacts ordered separately are delivered with sealing boot.

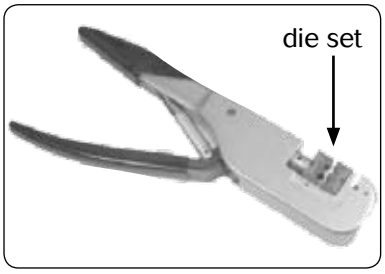
Contact type		SOURIAU part number	Cross Norm	Impedance	Release	T° Max
PC tail L= 4 ±0.1 mm	Pin	ETH1-1237A	-	100Ω	Rear	125°C
		ETH1-1501A	-	150Ω	Rear	125°C
	Socket	ETH1-1238A	-	100Ω	Rear	125°C
		ETH1-1502A	-	150Ω	Rear	125°C
Crimp	Pin	ETH1-1345A	EN 3155-074	100Ω	Rear	150°C
		ETH1-1503A	-	150Ω	Rear	150°C
	Socket	ETH1-1346A	EN 3155-075	100Ω	Rear	150°C
		ETH1-1504A	-	150Ω	Rear	150°C

Quadrax tools

• Inner contacts: M22520/2-01 crimping tool and K709 locator



• Outer body: M22520/5-01 crimping tool and M22520/5-45 die set



• Insertion/extraction tool (standard size 8 cavity tools): 8660-197 (metallic) or M81969/14-06 (plastic)

Recommanded cable

impedance	Reference	Cable type	Number of pairs
100Ω	ABS 1503 KD24	Star quad	2

8D Series
Power Contacts

Description

- Quick screw coupling connector with removable crimp contact.
- Shell available in aluminum, composite, Stainless steel, Titanium & Bronze.
- Six layouts with different current rating.
- Consult us for power hermetic version.
- High Power offer available on demand.

Technical features

Mechanical

- **Shell:** Aluminum alloy, Composite, Bronze, Stainless steel, Titanium.
- **Plating:**
  - Olive green cadmium (W/J),
  - Nickel (F/M/TF/S),
  - Without plating (X for composite, TT for titanium and JVS for Bronze),
  - Passivated (K).
- **Grommet and seal:** Silicon elastomer.
- **Insulator:** Thermoset.
- **Contact body:** Copper Alloy.
- **Contact retention:**
  #4 = 200N
  #8 = 111N.
- **Shock:** 300g during 3ms.
- **Endurance:** 500 mating / unmating operations.
- **Vibration:** As per MIL DTL 38999.

Electrical

- **Dielectric withstanding:**
  Test voltage rating (Vrms).

Service	Sea level	at 21 000 m
M	1 300	800
I	1 800	1 000

- **Insulation Resistance:**
  5000 MΩ under 500 Vdc.
- **Max current rating per contact:**
  #4 = 80A
  #8 = 45A.
- **Contact resistance:**
  #4 = 2mΩ
  #8 = 3MΩ.
- **Shielding:** As per MIL DTL 38999.
- **Shell continuity:**
  W = 2.5 mΩ,
  F = 1mΩ,
  J, M = 3 mΩ,
  JVS = 5 mΩ.

Environmental

- **Temperature range:**
  W, J, X, JVS = - 65°C +175°C,
  F, M, K, S, TT, TF = - 65°C +200°C.
- **Sealing:** As per MIL DTL 38999.
- **Damp Heat:** As per MIL DTL 38999.
- **Salt Spray:**
  W, TT, TF, K, JVS = 500 hours,
  F, S = 48 hours,
  J,M,X = 2000 hours.
- **Fire resistance:**
  As per EN 2591 - c 17 method A.
- **Resistance to fluid:**
  As per MIL DTL 38999.

Connector part numbers

Aluminum, Composite, Stainless steel & Titanium connector

Basic Series	8D	0	-	11	W	80	P	N	251

Style:
- **0:** Square flange receptacle
- **5:** Plug with RFI shielding
- **7:** Jam nut receptacle

Type: Crimp contact

Shell size: 11 - 17 - 19 - 21 - 23 - 25

Plating:

Aluminum shell:
- **W:** Olive drab cadmium
- **F:** Nickel
- **ZC:** Green zinc cobalt
- **Z:** Black zinc nickel

Composite shell:
- **J:** Olive green cadmium
- **M:** Nickel
- **X:** Without plating

Stainless steel shell:
- **K:** Corrosion resistant
- **S:** Nickel

Titanium shell:
- **TT:** Without plating
- **TF:** Nickel

Contact layouts: See next page

Contact style:
- **P:** Pin contact
- **S:** Socket contact
- **A:** Male connector supplied without contact
- **B:** Female connector supplied without contact

Orientation: N - A - B - C - D - E

Specification:
- **251:** To be added for some layouts to be supplied with power contacts (see next page)

Bronze connector

Basic Series	JVS	16	A	11	80	P	N	251

Style:
- **00:** Square flange receptacle
- **07:** Jam nut receptacle
- **16:** Plug

Material:
- **A:** Bronze shell material

Shell size: 11 - 17 - 19 - 21 - 23 - 25

Contact layouts: See next page

Contact style:
- **P:** Pin contact
- **S:** Socket contact
- **A:** Male connector supplied without contact
- **B:** Female connector supplied without contact

Orientation: N - A - B - C - D - E

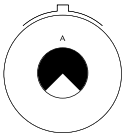
Specification:
- **251:** To be added for some layouts to be supplied with power contacts (see next page)

Contact layouts

- Contact #22D
- Contact #20
- Contact #16
- Contact #12
- Contact #8 Power
- Contact #4 Power

11

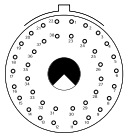
80
Spec 251



1#8

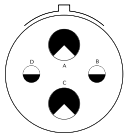
17

02
Spec 251



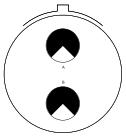
38#22D
1#8

22
Spec 251



2#12
2#8

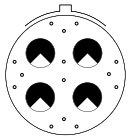
75
Spec 251



2#8

19

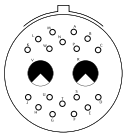
18
Spec 251



14#22D
4#8

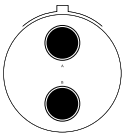
21

20
Spec 251



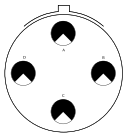
18#20
2#8

42



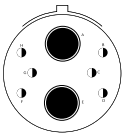
2#4

48



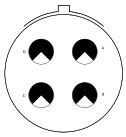
4#8

72



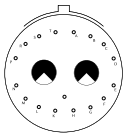
6#16
2#4

75
Spec 251



4#8

77
Spec 251



17#22D
2#8

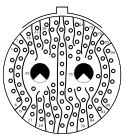
23

06
Spec 251

6#8

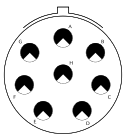
25

07
Spec 251



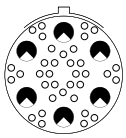
97#22D
2#8

08
Spec 251



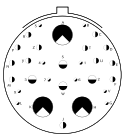
8#8

17
Spec 251



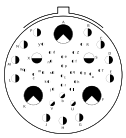
36 #22D
6 #8

20
Spec 251



10#20
13#16
4#12
3#8

41
Spec 251

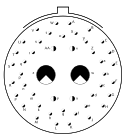


22#22D
3#20
11#16
2#12
3#8

44

4#16
4#4

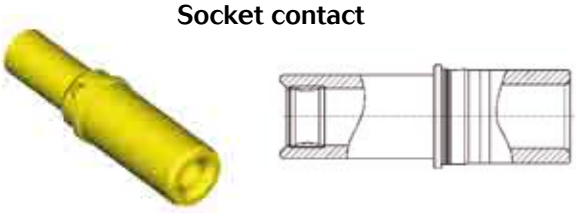
46
Spec 251



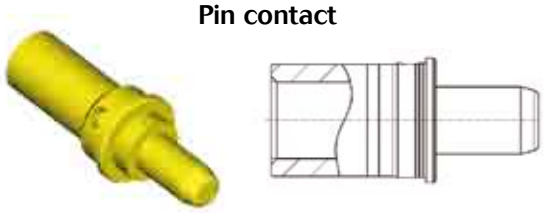
40#20
4#16
2#8

Contacts

Socket contact



Pin contact



Contact size	Contact type	Contact reference	Cable		Protection	Dimensions	
			Cable size	Cable material		L	D
#4	Male	8599-7534	#4-5 or 10-16mm² **	Copper	Au	9.70	5.74
	Female	8599-7535				16.58	8.50
	Male	8599-7598 900 *	for cable 25mm² (#3)	Copper	Au	9.70	5.74
	Female	8599-7599 900 *				16.58	8.50
#4 with reduced barrel	Male	8599-7528 900	#6 or 10mm² **	Copper	Au	9.70	5.74
	Female	8599-7529 900				16.58	8.50
#8 JVS only	Male	8599-7544	#8 or 10 **	Copper	Au	9.60	3.64
	Female	8599-7541				16.00	7.30
#8	Male	8599-7580	#8 or 10 **	Copper	Au	9.60	3.64
	Female	8599-7581				16.00	7.30

* Not included in connector P/N. Must be ordered separately.
** To be used with crimping bucket reductor.

Sealing boot and crimping bucket reducer

Contact size	Cable size	Cable material	Sealing boot reference
#4	16mm²	Copper	8599-4594
	10mm²		8599-4593
#8	#8	Copper	8599-4542
	#10		8599-4547

Contact size	Cable size	Reducing sleeve reference
#4	10mm²	8400-2352A
#8	#10	8599-7545

Power tools

Contact size	Contact type	Contact reference	Cable AWG	Crimping tool	Die set	Locator	Contact extraction tool (metallic)	Contact extraction tool (plastic)
#4	Male	8599-7534	#4-5 or 10-16mm² *	M22520/23-01	M22520/23-04	M22520/23-11	8533-8175	M81969/14-07
	Female	8599-7535	#4-5 or 10-16mm² *	M22520/23-01	M22520/23-04	M22520/23-11	8533-8175	M81969/14-07
#8 JVS only	Male	8599-7544	#8 or 10 *	M22520/23-01	M22520/23-02	8599-9601	8660-197	M81969/14-12
	Female	8599-7541	#8 or 10 *	M22520/23-01	M22520/23-02	8599-9601	8660-197	M81969/14-12
#8	Male	8599-7580	#8 or 10 *	M22520/23-01	M22520/23-02	8599-9601	8660-197	M81969/14-12
	Female	8599-7581	#8 or 10 *	M22520/23-01	M22520/23-02	8599-9601	8660-197	M81969/14-12

Manual hand tool also existing fo power contacts #8.
* To be used with crimping bucket reductor.

Automatic tool for contacts #4 & #8

Crimping tool (M22520/23-01)

Die set (M22520/23-02)

Locator (M22520/23-11)

Manual hand tool for contacts #8

Crimping tool (M300 BT)

Locator (SP 593)

Metallic extraction tool

For #4: 8533-8175
For #8: 8660-197

8D Series
High Power Contacts

Description

- Threaded coupling connector with single power contact.
- Aluminum shell.
- 3 shell sizes available:
  - size 19: Up to 450 A at 40°C
  - size 23: Up to 650 A at 40°C
  - size 25: Up to 850 A at 40°C
- Silver plated contact.
- Pin contact is equipped with a plastic cap to prevent electrical shock.
- Modular design:
  . Removable backshell: straight, right angle or threaded contact.
  . Backshell termination: shrink boot.

Technical features

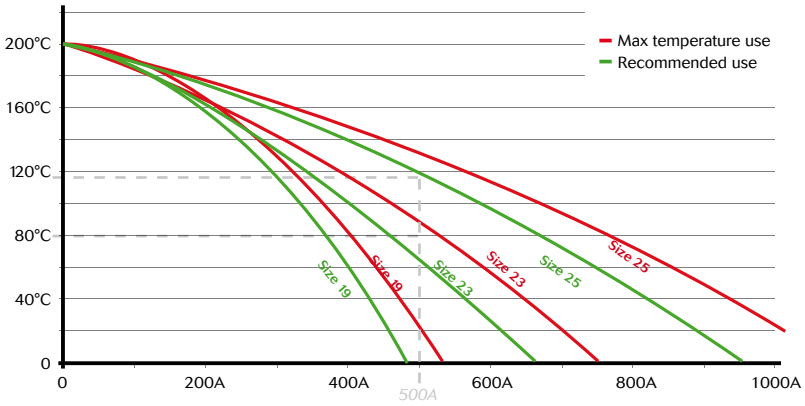
Mechanical

- **Shell:** Aluminum alloy
- **Shell plating:**
  Black zinc nickel (Z)
  Cadmium olive drab (W)
- **Insulator:** Thermoplastic
- **Grommet and interfacial seal:**
  Silicone elastomer
- **Contact body:** Copper alloy
- **Endurance:**
  500 mating/unmating operations
- **Vibration:**
  According Def Stan 00-35
  4.2 g rms vert - 6h/3 axes

Electrical

- **Test voltage**
  > 1500 V
- **Shell to shell continuity** (no backshell)
  < 2.5 mΩ
- **EMI**
  85 dB @ 1GHz (F)

- **Connector rating**



Example for 500A:
Shell size 25 with contact diameter 20: max temperature 135°C; recommended 120°C
Shell size 23 with contact diameter 18: max temperature 90°C; recommended 80 °C
Shell size 19 with contact diameter 14: not recommended
Wire must be compatible with current and temperature used for the connector.

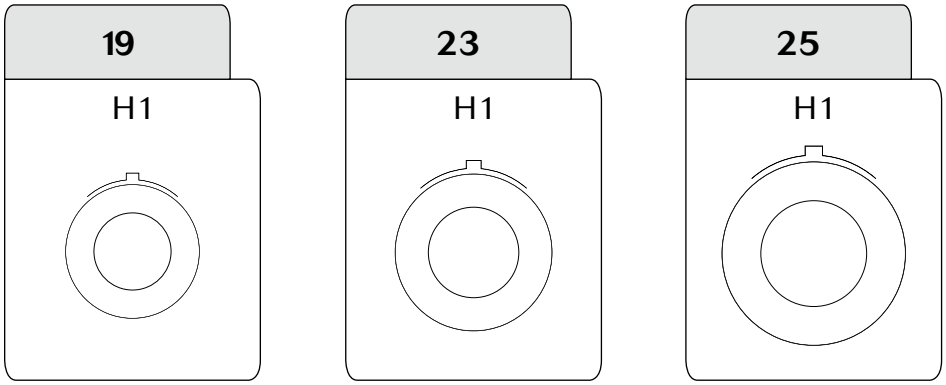
Climatics

- **Temperature range:**
  -65°C +175°C
- **Sealing:**
  IP67 on mated connector (1 meter/30 min)
- **Salt spray:**
  500 hours

Resistance to fluids

- **According to MIL-DTL-38999 standard**
  . Gasoline: JP5 (OTAN F44)
  . Mineral hydrolic fluid: MIL-H-5606 (OTAN H515)
  . Synthetic hydraulic fluid: Skydrol 500 B4
- **LD4 (SAE AS 1241)**
  . Mineral lubricating: MIL-L-7870A (OTAN 0142)
  . Synthetic lubricating: MIL-L-23699 (OTAN 0156), MIL-L-7808
  . Cleaning fluid: MIL-DTL-25769 diluted
  . De-icing fluid: MIL-A-8243
  . Extinguishing fluid: Chlorobromethane
  . Cooling fluid: Coolanol

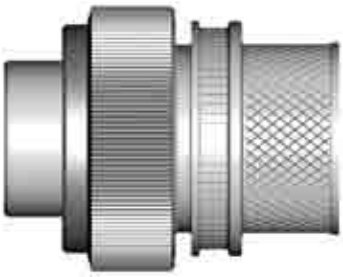
Contact layouts



Other size: Please consult us.

Backshell type

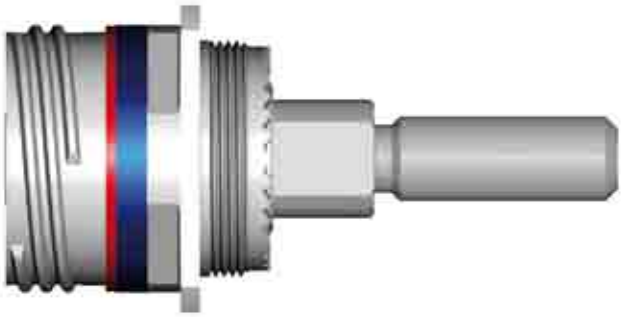
Description



D1: Straight backshell shrink boot & EMI (crimp version)

G0: Backshell low profile (threaded termination)

R1: Right angle backshell shrink boot & EMI (crimp version)



W0: Without backshell (threaded termination)

Ordering information

Basic Series	8D	0	25	W	H1	P	N	R1	A

Style:
0: Square flange receptacle
5: Plug (available with backshell D1, R1, G0 & W0 Types)
7: Jam nut receptacle

Shell size:
19, 23, 25

Plating:
Z: Zinc Nickel
W: Olive green cadmium

H1: Single power

Contact style:
P: Pin contact
S: Socket contact

Orientation:
N, A, B, C, D, E

Backshell type:
D1: Straight backshell shrink boot & EMI (crimp version)
R1: Right angle backshell shrink boot & EMI (crimp version)
G0: Backshell low profile (threaded termination)
W0: Without backshell (threaded termination)

Specification for backshells D1 & R1 Types (crimp version):

Specification	Shell size	Admissible cable (mm)		Barrel diameter (mm $^{\pm 0.05}$)
		Outer Ø max	Nominal core Ø	
A	19	17	10.15	10.8
B	19	17	11.1	11.8
C	19	17	12	12.5
D	23	22	14.05	15
E	23	22	16.3	17
	25	26.5		
F	25	26.5	19	20.5

Specification for backshells G0 & W0 Types (only threaded termination):

Specification	Shell size	Thread
C	19, 23 & 25	M12

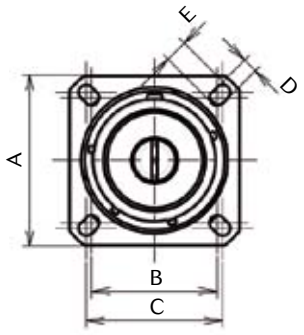
Note: Plug not available with backshell W0 Type. Other thread, please consult us.

Note: For other configuration, please consult us.

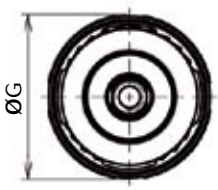
Dimensions

Plug & receptacles

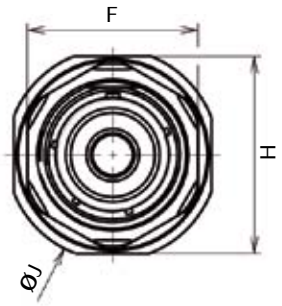
8D0 Square flange receptacle



8D5 Plug



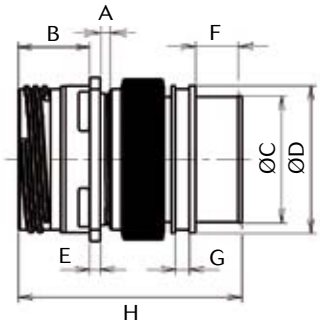
8D7 Jam nut receptacle



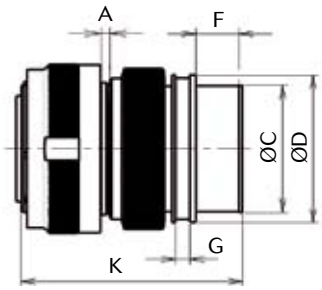
Shell size	A ±0.1	B ±0.1	C ±0.1	D ±0.1	E ±0.1	F Max	ØG Max	H ±0.25	ØJ ±0.25
19	36.5	26.97	29.36	3.29	4.98	41	38.5	45.95	49.15
23	42.9	31.75	34.93	3.96	6.2	47	44.9	52.35	55.55
25	46	34.93	38.1			52	48	55.55	58.65

Backshell D1 type

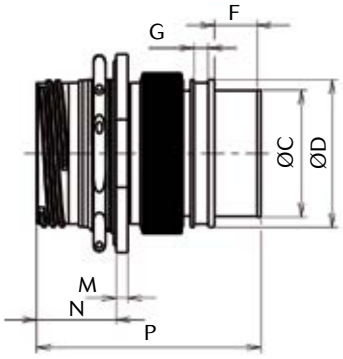
With 8D0
(square flange receptacle)



With 8D5
(plug)



With 8D7
(jam nut receptacle)



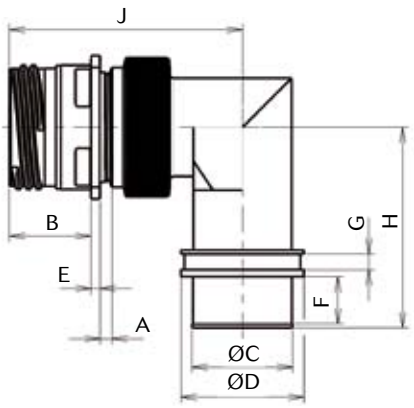
Shell size	A Max	B Max	ØC ±0.1	ØD ±0.1	E ±0.1	F ±0.2	G ±0.2	H Max	K Max	M ±0.25	N Max	P Max
19	2.65	20.9	25.6	31.6	2.26	12	4	62.5	62	3.25	22.8	63
23		20.1	32.4	38.6	2.97							
25			35.6	42.1								

Note: All dimensions are in millimeters (mm)

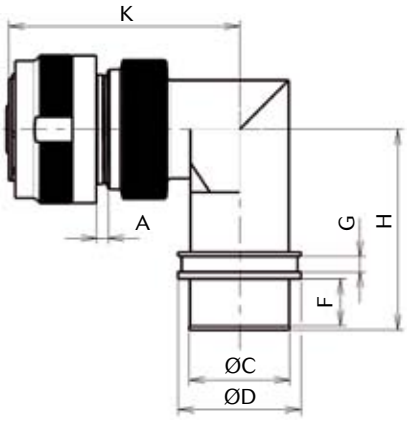
8D Series
High Power Contacts

Backshell R1 type

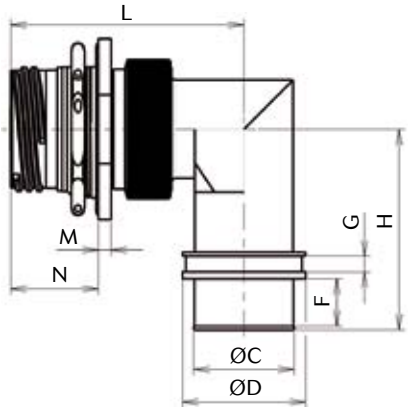
With 8D0
(square flange receptacle)



With 8D5
(plug)



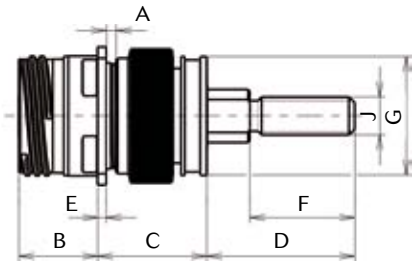
With 8D7
(jam nut receptacle)



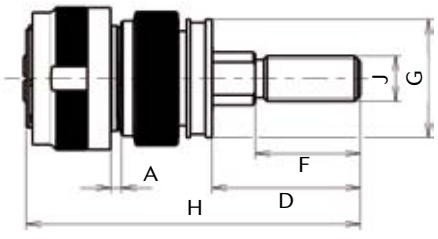
Shell size	A Max	B Max	ØC$^{\pm0.1}$	ØD$^{\pm0.1}$	E$^{\pm0.1}$	F$^{\pm0.2}$	G$^{\pm0.2}$	H Max	J Max	K Max	L Max	M$^{\pm0.25}$	N Max
19	2.85	20.9	25.6	31.3	2.26	12	4	51.1	59.3	58.7	59.6	3.25	22.8
23		20.1	32.4	38.1	2.97			54.4	62.7	62.1	63		
25			35.6	41.3				56.1	64.3	63.7	64.6		

Backshell G0 type

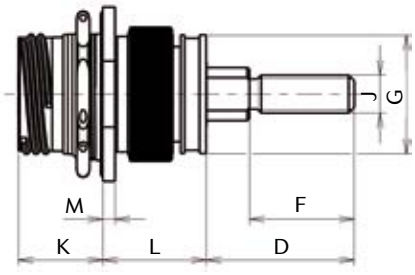
With 8D0
(square flange receptacle)



With 8D5
(plug)



With 8D7
(jam nut receptacle)

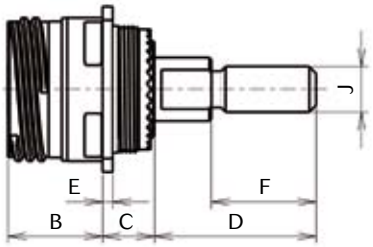


Shell size	A Max	B Max	C Max	D Max	E$^{\pm0.1}$	F$^{\pm0.2}$	ØG$^{\pm0.1}$	H Max	J Max	K Max	L Max	M$^{\pm0.25}$
19	2.65	20.9	29	39.4	2.26	25	31.3	88.1	M12 x 1.75	22.6	27.6	3.25
23		20.1	29.8		2.97		38.1				28.4	
25							41.3					

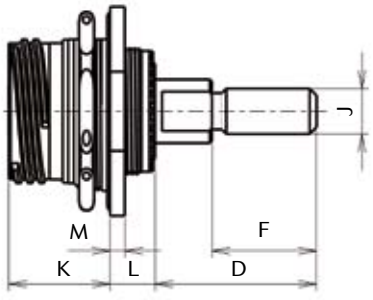
Note: All dimensions are in millimeters (mm)

Backshell W0 type

With 8D0
(square flange receptacle)



With 8D7
(jam nut receptacle)



Shell size	B Max	C Max	D Max	$E^{\pm 0.1}$	$F^{\pm 0.2}$	J Max	K Max	L Max	$M^{\pm 0.25}$
19	20.9	14	40	2.26	25	M12 x 1.75	22.6	12	3.25
23	20.1			2.97					
25									

Note: All dimensions are in millimeters (mm)

8D Series
Optical ELIO® Contacts

ELIO® contact

- Robust spring-loaded butt-joint optical contact using ST style ferrule (diameter 2.5mm)
- Contact size equivalent to a #16 contact
- Anti-rotation of the contact for better vibration withstanding and optical performance
- Boot-grommet for rear sealing and protection of the cable against excessive bending
- Compatibility with loose and tight structure cables
- High level optical performance even after aging
- Bayonet locking system: no tool needed for mounting/dismounting
- Compatible with singlemode, multimode and POF cable

Technical features

Mechanical

- **Endurance:**
  Minimum 500 mating / unmating operations
- **Shock:**
  300 g, 3 ms as per EN 2591-6402 method A
- **Vibration:**
  In MIL-DTL-38999 Series III/EN3645 connectors:
  - Sine 5Hz to 3000Hz as per EN2591-6403 method A
  - Random as per EN2591-6403 method B
- **Cable cyclic flexing*:**
  100 cycles, load 40N as per EN2591-609
- **Cable pulling*:** 111N
- **Cable torsion*:**
  100 cycles, load 40N as per EN2591-611

Environmental

- **Salt spray:**
  See the connector standard
- **Temperature range*:**
  - 65°C to +125°C (1000 hours)
- **Rapid temperature change:**
  10 cycles - 65°C / +150°C (30min/30min)
- **Air leakage:**
  Max leakage 16 cm^3/h, 2 hours, 40kPa differential pressure
- **Damp heat and low temperature:**
  5 cycles of 48h -65°C/+70°C with stage at 40°C with 95% of humidity as per EN2591- 6303 method A

Optical

- **Multimode contact - Insertion Loss (IL):**
  0.1dB typical
  < 0.3dB over 95% of the samples as per EN2591-601,
  < 0.7dB maximum on 100% of the samples after tests
- **Multimode contact - Return Loss (RL):**
  > 21dB before and after tests as per EN2591-605
- **Singlemode contact - Insertion Loss (IL):**
  0.3dB typical
  < 0.5dB over 95% of the samples as per EN2591-601,
  < 0.9dB maximum on 100% of the samples after tests
- **Singlemode contact - Return Loss (RL):**
  > 55dB typical and > 50dB mininum

Resistance to fluids as per MIL-DTL-38999/EN3645 standard

- **Fuel:** JP5
- **Mineral Hydraulic fluid:**
  MIL-PRF-5606 (NATO H-515)
- **Synthetic hydraulic fluid:**
  AS1241 (Skydrol 500B4, LD4)
- **Mineral lubricant:**
  MIL-PRF-7870 (NATO O-142)
- **Synthetic lubricant:**
  MIL-PRF-23699 (NATO O-156),
  MIL-PRF-7808 (NATO O-148)
- **Cleaning fluid:**
  MIL-PRF-87937 diluted, Propanol, white spirit, Azeotrope R113 + Methanol
- **De-icing fluid:**
  AMS 1424 (NATO S-742)
- **Extinguishing fluid:**
  Chlorobromethane
- **Cooling fluid:**
  Coolanol

Ordering information

	ELIO	09	N	G	L	A

Cable external diameter:
09: 0.9 mm or cable wider than 1.9mm with 0.9mm jacket inside
18: from 1.5mm to 1.9mm

Contact sealing:
W: waterproof (1.8mm +/- 0.1mm cable only)
N: non waterproof

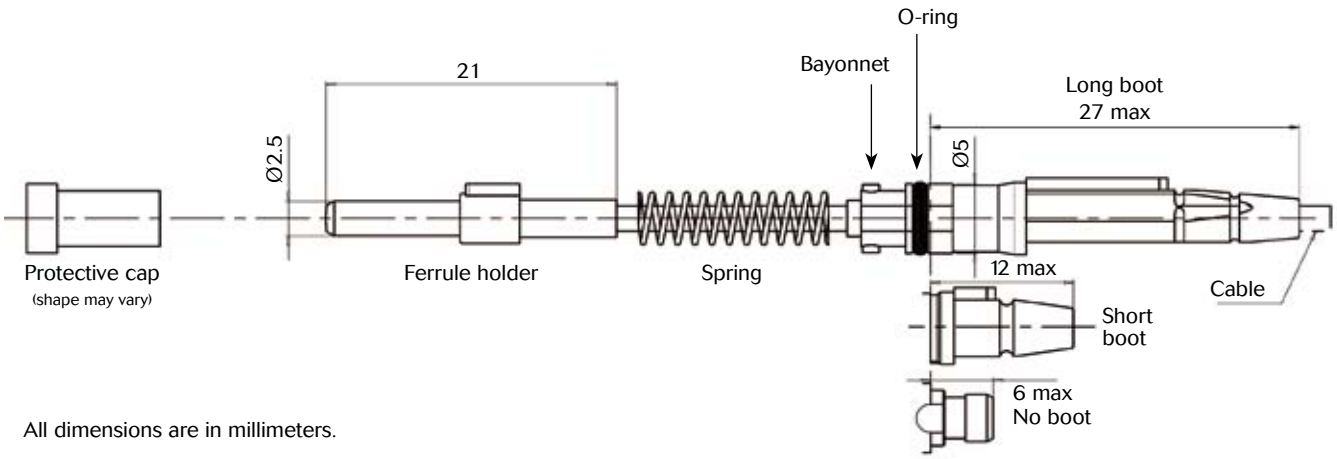
Fibre type:
G: 50 or 62,5/125 µm
D: 100/140 µm
E: 9/125 PC
For POF cable please consult us.

Boot type:
L: Long boot
S: Short boot
N: No boot (non waterproof version only)

Contact version index

Note: For ABS1379/EN4531 cross reference, please consult us.

ELIO® contact dimensions



All dimensions are in millimeters.

Recommended cables

SOURIAU can offer a wide range of cables in its assemblies, from low cost to high performance aeronautical cables.
ELIO® contact is compatible with singlemode and multimode cable, with tactical and breakout cable.
ELIO® contact is suitable with loose and tight structure cable.

See Souriau "ELIO® Fiber Optic Technology» catalog.

Accessories & Tooling

See Souriau "ELIO® Fiber Optic Technology» catalog.

Note: All dimensions are in millimeters (mm)

8D Series
Optical ELIO® Contacts

MIL-DTL-38999 Series III/EN3645 with ELIO® high density insert

- Standard MIL-DTL-38999/EN3645 shells without shielding ring (aluminum, composite, stainless steel, bronze)
- Environmental performance as per EN4531 based on MIL-DTL-38999/ EN3645
- Temperature range: - 65°C to +125°C (cable limitation)

Ordering information

Composite, Aluminum & Stainless Steel

	8D	5	E	11	W	02	A	N

Shell type:
5: Plug
0: Receptacle with 4-hole square flange fixing
7: Receptacle with single hole jam nut fixing *(aluminum & stainless steel)*

Designation:
E: ELIO® optical connector

Shell size:
09 - 11 - 13 - 15 - 19 - 21
25 *(for aluminum & stainless steel plug only)*

Plating:

Aluminum:
Z: Zinc nickel
ZC: Zinc cobalt
W: Olive green cadmium
F: Nickel

Composite:
J: Olive green cadmium
M: Nickel
X: Without plating

Stainless steel:
K: Passivated
S: Nickel

Layouts: See page 127

Insert type:
A: Male insert
B: Female insert with ceramic alignment sleeves

Polarization:
N, A, B, C, D, E,
U (universal connector for testing - mates with any other polarization)

Specification:
None or **674:** See table beside

Multimode Fiber		Singlemode Fiber	
Male Insert (A)	Female insert (B)	Male Insert (A)	Female insert (B)
None	**None**	**None**	
	674 (for recessed contact position)		**674**

JVS Bronze Part Number: Please see Souriau "ELIO® Fiber Optic Technology» catalog.

Note: For ABS/EN4531 cross reference, please consult us.

ELIO® AQ
Adaptor for Quadrax #8 cavities

- ELIO® AQ is an adaptor to enable the ELIO® contact to fit in any #8 Quadrax cavities in several types of connectors. Therefore, any layout containing #8 cavities can be implemented with the ELIO® fiber optic contact
- Multiple possibilities to mix optical and electrical signals in the same insert
- Temperature range: -65°C to +125°C (cable limitation)
- 100% compliant with ELIO® contact optical performance
- Before use, please ask for ''Technical Bulletin N°160 Mounting Instructions ELIO® AQ adaptor''

Ordering information

Male Insert	**Multimode, Singlemode or recessed multimode contact**	ELIOAQ6PB		MIL-DTL-38999 Series III EN3645
Female Insert	**Multimode**	ELIOAQ6SB		MIL-DTL-38999 Series III EN3645
	Singlemode or recessed multimode contact	ELIOAQ6SB674		

Note: Delivered with alignment boot.

Contact layouts

See next page

Ordering information

Aluminum Series: see page 22
Composite Series: see page 36
Stainless steel Series: see page 42
Bronze Series: see page 54

MIL-DTL-38999 Series III/EN3645 with ELIO® AQ
Adaptor for Quadrax #8 cavities

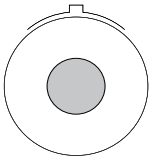
- Compatible with standard MIL-DTL-38999 Series III/EN3645 Souriau connectors (aluminum, composite, stainless steel, bronze)
- Design ensures ELIO® optical performance
- Environmental performance as per MIL-DTL-38999 and EN3645 standard
- Temperature range: - 65°C to +125°C (cable limitation)

Contact layouts

MIL-DTL-38999 Series III/EN3645 with ELIO® high density insert

09

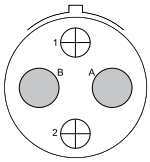
01



1 optical way

11

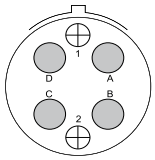
02



2 optical ways

13

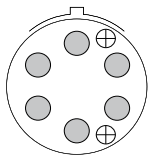
04



4 optical ways

15

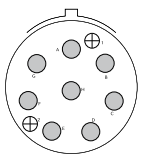
06



6 optical ways

19

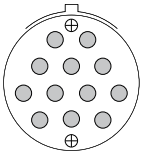
08



8 optical ways

21

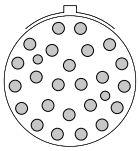
12



12 optical ways

25

24



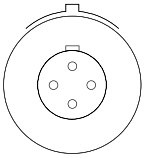
24 optical ways

Note: Layouts 15-06 and 21-12 limited availability, please consult us.

MIL-DTL-38999 Series III/EN3645 with ELIO® AQ

11

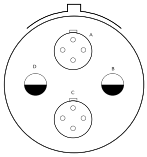
81



1#8

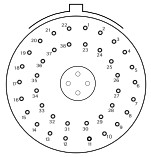
17

80



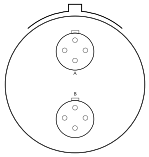
2 #12
2 #8

81



38 #22D
1 #8

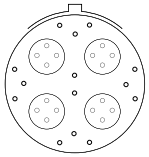
82



2 #8

19

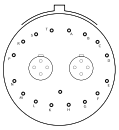
84



14 #22D
4 #8

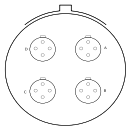
21

78



17 #22D
2 #8

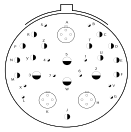
84



4 #8

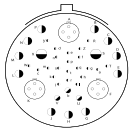
25

80



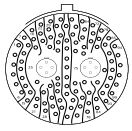
10 #20
13 #16
4 #12, 3 #8

81



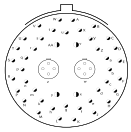
22 #22D
3 #20, 11 #16
2 #12, 3 #8

82



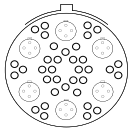
97 #22D
2 #8

86



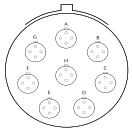
40 #20
4 #16
2 #8

87



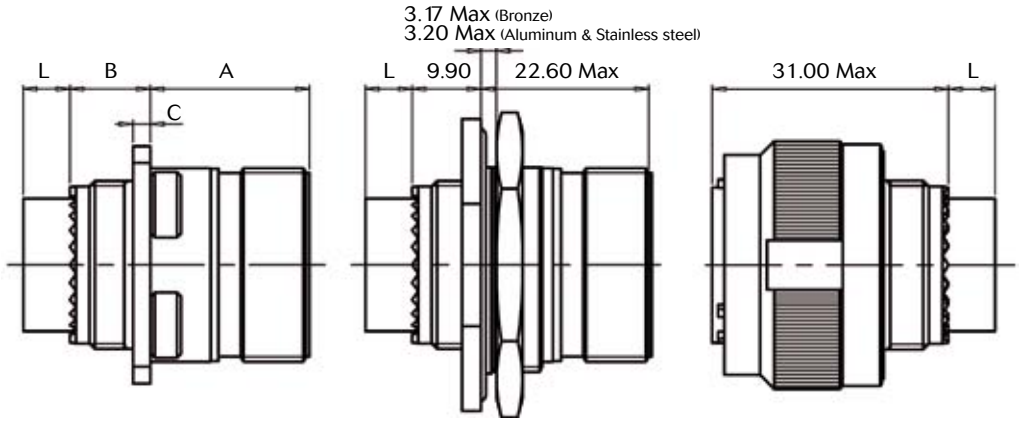
36 #22D
6 #8

88



8 #8

Dimensions



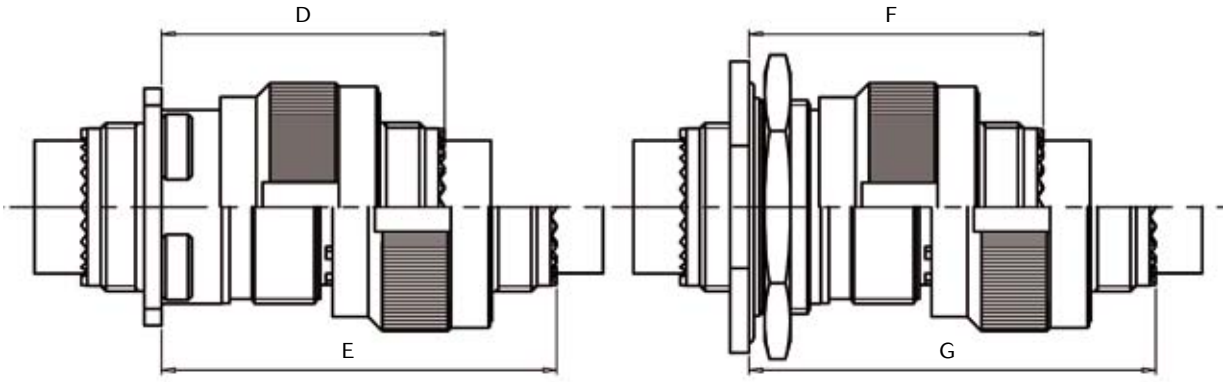
Type 0
Square Flange Receptacle

Type 7
Jam Nut Receptacle

Type 5
Plug

	A		B		C	
	Shell size 09 to 19	Shell size 25	Shell size 09 to 19	Shell size 25	Shell size 09 to 19	Shell size 25
Receptacle Type 0 & 7 Metal	20.90 Max	20.10 Max	12.50 Max	13.00 Max	2.50 Max	3.20 Max
Receptacle Type 0 Composite	20.90 Max	20.10 Max	12.50 Max	13.00 Max	3.65 Max	4.35 Max

L	
Male insulator	Female insulator
4 Max	6.60 Max

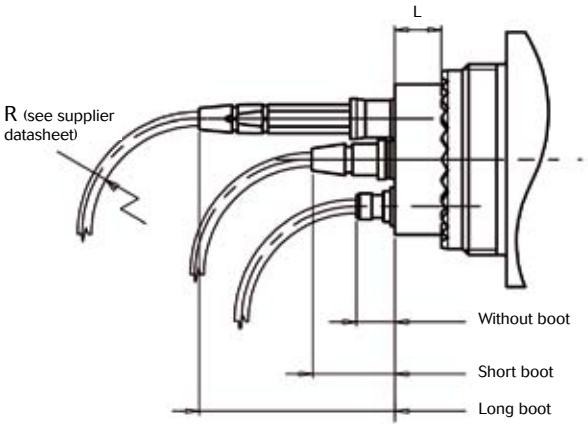


	D		E		F		G	
	Shell size 09 to 19	Shell size 25	Shell size 09 to 19	Shell size 25	Shell size 09 to 11	Shell size 13 to 25	Shell size 09 to 11	Shell size 13 to 25
Plug + Receptacle Type 0 & 7 Metal	37.00 Max	36.50 Max	52.30 Max	51.50 Max	39.00 Max	39.00 Max	54.00 Max	54.00 Max
Plug + Receptacle Type 0 Composite	37.00 Max	36.50 Max	52.30 Max	51.50 Max	N/A	N/A	N/A	N/A

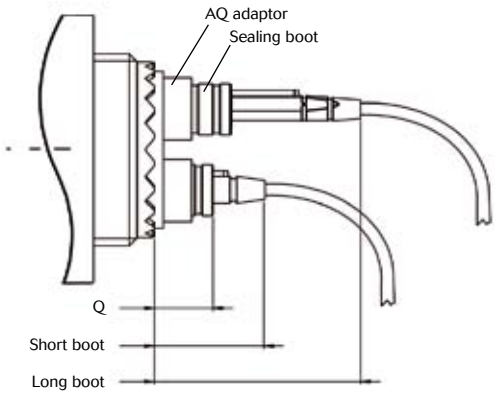
Note: All dimensions are in millimeters (mm)

Dimensions

38999 Series III/EN3645 with ELIO® contacts in ELIO® high-density insert



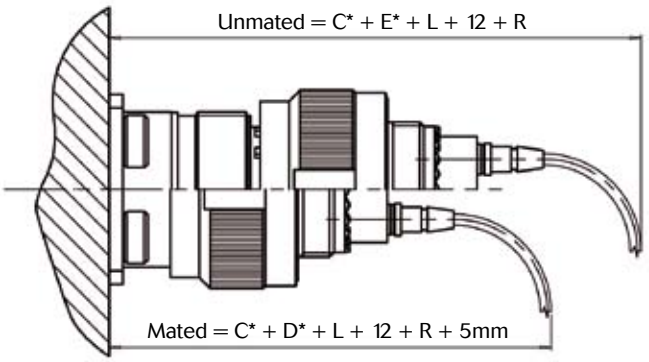
38999 Series III/EN3645 with ELIO® contacts in ELIO® AQ adaptors



	ELIO® high density insert					ELIO® AQ adaptors			
	L		Contact length			Q		Contact length	
	Male insulator	Female insulator	Without boot	Short boot	Long boot	Male insulator	Female insulator	Short boot	Long boot
Plug	4 Max	6.60 Max	6 Max	12 Max	27 Max	11.80 Max	9.10 Max	17.60 Max	32.60 Max
Square flange receptacle						12 Max	9.30 Max		
Jam nut receptacle						11.60 Max	8.90 Max		

Total length example

Square flange receptacle + plug + ELIO® contacts in ELIO® high-density insert



* See previous page

Note: All dimensions are in millimeters (mm)

8D Series
BMA Coaxial Contacts

Description

- Quick screw coupling connector
- Shell available in aluminum, composite, Stainless steel, Titanium & Bronze.
- 16 layouts available with coaxial contact.
- D38999 with High Frequency coaxial contact: DC 18GHz.
- Qualified coaxial contact according to MIL-STD-348A/321.
- Removable coaxial contact.
- Contacts delivered with boots.

BMA contact features
For .086" flexible cable

Electrical

- **Impedance:** 50 Ω
- **Frequency range:** DC 18GHz
- **Dielectric withstanding voltage:** 1.5 kVrms, 50Hz (at sea level)
- **Insulation resistance:** ≥ 5 000 MΩ
- **Contact resistance:**
  . center contact: ≤ 2 mΩ
  . outer contact: ≤ 2 mΩ
- **Return loss (DC-18GHz):** < -17dB (mated connector)
- **RF leakage interface only (fully mated):** ≥ 90 dB f (GHz) measured at interface with reference planes being in true alignment.
- **RF testing voltage:** 1.0 kVrms, 5 MHz (at sea level)
- **Admissible power:** ≤ 300 W at 3 GHz (at sea level & room T°)

Climatics

- **Temperature range:** -65°C +125°C
- **Thermal shock:** MIL-STD-202, method 107, condition B
- **Moisture resistance:** MIL-STD-202, method 106
- **Corrosion:** Saltspray test according to MIL-STD-202, method 101, condition B
- **Vibration:** MIL-STD-202, method 204, condition D
- **Shock:** MIL-STD-202, method 213, condition I

/!\ Caution: *be careful that your application doesn't exceed contact specification.*

Connector features

Mechanical

- **Shell material & plating:**

. Aluminum:	Cadmium olive drab (W) Nickel (F) Black zinc nickel (Z) Green zinc cobalt (ZC)
. Composite:	Cadmium olive drab (J) Nickel (M) Without plating (X)
. Stainless steel:	Passivated (K) Nickel (S)
. Titanium:	Without plating (TT) Nickel (TF)
. Bronze:	Without plating

- **Insulator:** Thermoplastic
- **Grommet and interfacial seal:** Silicone elastomer
- **Contact endurance:** 1000 mating cycles
- **Connector endurance:** 500 mating cycles
- **Shock:** 300g, 3 ms (EN 2591-D2 method A)
- **Vibration:**
  . Sinus:
    . 10 à 2000 Hz, 3x12 hrs
    (60g, 140 - 2000 Hz) with T° cycling
  . Random:
    . 50 to 2000 Hz, 2x8 Hrs
    (1g2/ Hz, 100 - 2000Hz) at T° max.
    . 25 to 2000 Hz, 2x8 Hrs
    (5g2/ Hz, 100 - 300Hz) at ambiant T°
  Test with accessories in acc with EN2591-D3

Electrical

- **Shell continuity:**

. F, S & TF:	1 mΩ	. J & M:	3 mΩ
. W, Z & ZC:	2.5 mΩ	. Bronze:	5 mΩ
. K & TT:	10 mΩ		

- **Shielding:**

. F & M:	85 db at 1 GHz
. K & TT:	45 db at 10 Ghz
. W & Z:	50 db at 10 GHz
. F, S & TF:	65 db at 10 GHz
. Bronze:	85 db at 10 GHz
. J:	90 db at 10 GHz
. ZC:	Consult us

Climatics

- **Temperature range:**

. W, ZC, J, X & bronze:	-65°C +175°C
. F, Z, M, K, S, TT & TF:	-65°C +200°C

- **Salt spray:**

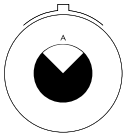
. F, S & TF:	48 Hours
. ZC:	250 Hours
. W, Z, K, TT & bronze:	500 Hours
. J, M & X:	2000 Hours

Contact layouts

Specification 737 mandatory

11

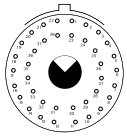
80



1#8 Coax

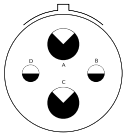
17

02



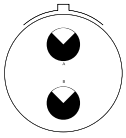
38#22D
1#8 Coax

22

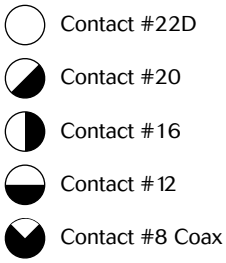


2#12
2#8 Coax

75

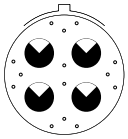


2#8 Coax



19

18



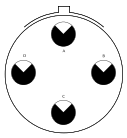
14#22D
4#8 Coax

21

20

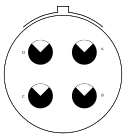
18#20
2#8 Coax

48



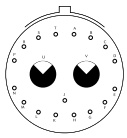
4#8 Coax

75



4#8 Coax

77



17#22D
2#8 Coax

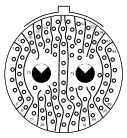
23

06

6#8 Coax

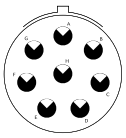
25

07



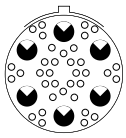
2#8 Coax
97#22D

08



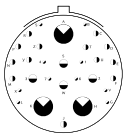
8#8 Coax

17



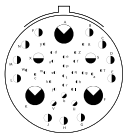
36#22D
6#8 Coax

20



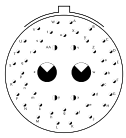
10#20, 13#16
4#12 Coax
3#8 Coax

41



22#22D, 3#20
11#16, 2#12
3#8 Coax

46



40#20, 4#16
2#8 Coax

8D Series
BMA Coaxial Contacts

Ordering information

Basic Series	8D	0	25	W	46	P	N	737
Shell style: **0:** Square flange receptacle **1:** In line receptacle **7:** Jam nut receptacle **5:** Plug with RFI shielding								
Shell size: **11, 17, 19, 21, 23, 25**								
Aluminum plating: **W:** Olive drab cadmium **F:** Nickel **Z:** Black zinc nickel								
Contact layout: See previous page								
Contact type: **P:** Pin **S:** Socket								
Orientation: **N, A, B, C, D, E**								
Specification (mandatory): **737:** Coaxial contacts - for .086″ flexible cable **747:** Coaxial contacts - for .141″ flexible cable								

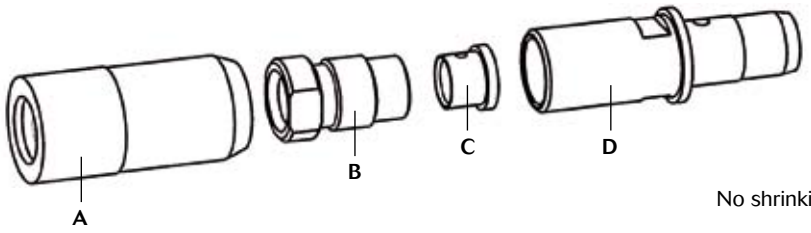
For other material and configuration (integrated clinch nuts, double flange, other cables, ...) please consult us.

Recommended cables

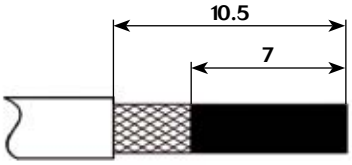
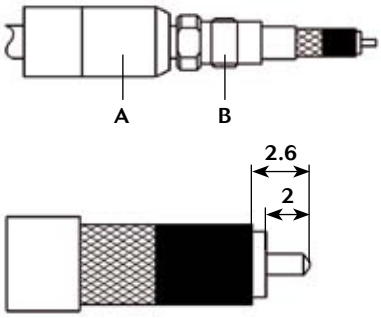
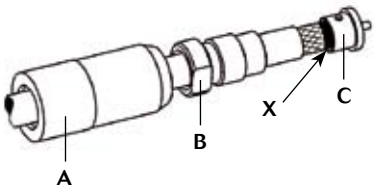
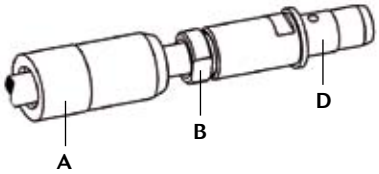
Designation	Part number	Description	
.086″ flexible cable	Multiflex 86	Outer conductor contact	Soldered
.141″ flexible cable	Multiflex 141		

For other cables please consult us.

Assembly Instruction



No shrinking sleeve allowed.

Picture	Process	Feature / Check	Tools required
	Dip the cut length of cable in flux and tin. Cut the jacket to the braid. Remove jacket.	The solder must flow at rear for min. 7 mm.	Stanley blade
	Remove cable dielectric and tinned braid according to diagram. Form tip of centre contact to a 90° cone. Slide Taper sleeve A and nipple B over cable.	Do not damage inner conductor, dielectric and braid of cable.	Stanley blade Tip trimmer
	Slide ferrule C over cable, flush to dielectric. Solder at X. Avoid excessive heat, immediately cool down and clean with alcohol.	If the cable does not fit into the cable entry, use a flat-nose plier to calibrate the braid. Center conductor of cable must be exactly centered.	Soldering iron Solder Flat-nose pliers
	Push prepared cable into connector body D and tighten nipple B. Taper sleeve A will be used for MIL-connector.	Torque: 3 Nm.	Male contact: Torque wrench AF.6 (3 Nm) Spanner AF.5.5 Female contact: Torque wrench AF.6 (3 Nm) Spanner AF.6

8D Series
RJ45/USB Series

Description

- Derived from MIL-DTL-38999 Series III
- True ruggedized RJ45 & USB A solution
- High vibration resistance
- Shock resistant
- IP67
- Shielded
- Available in feed through, solder out and pig tail version
- No tools for cabling
- RoHS version

Applications

- Data transmission using standard interface
- Flight data transmissions

Technical features

Mechanical

- **Shell material:**
  Aluminum alloy
  Composite
- **Shell plating:**
  Olive drab cadmium
  Nickel
  Black zinc nickel
  Zinc cobalt
- **Insert:**
  Thermoplastic
- **Contacts:**
  Copper alloy
- **Contacts plating:**
  Gold
- **Endurance:**
  Per MIL-DTL-38999, 500 mating cycles
- **Vibration:**
  10-500 Hz 20 g

Electrical

- **RJ45:**
  10 BaseT, 100 BaseTX and 1000 BaseT
  Cat 5e per TIA/EIA 568A/B
- **USB:**
  10 BaseT and 100 BaseTX
  Cat 5e per TIA/EIA 568A/B

Climatic

- **Sealing:**
  IP67 with protective cap
- **Temperature range:**
  -40°C to +85°C
- **Fluid resistance:**
  Per MIL-DTL-38999 with protective cap

Connector part numbers

Basic Series	8D	0	F	17	W	UA	S	N

Shell type:
- **0:** Square flange receptacle
- **7:** Jam nut receptacle (aluminum only)

Designator:
- **F:** Feedthrough
- **S:** Solder out
- **C:** Pig tail cable receptacle

Shell size:
- **17:** USB
- **19:** RJ45

Plating:
- **W:** Olive drab cadmium (aluminum) - 500 hours salt spray
- **F:** Nickel (aluminum) - 48 hours salt spray
- **J:** Olive drab cadmium (composite) - 500 hours salt spray
- **M:** Nickel (composite) - 500 hours salt spray
- **Z:** Black zinc nickel (aluminum) - 500 hours salt spray
- **ZC:** Zinc cobalt - 250 hours salt spray
- **X:** No finish (composite)

Insert:
- **UA:** USB type A
- **RJ:** RJ45

Contact style:
- **S:** Socket

Orientation:
- **N, A, B, C, D, E**

Specification code:
Consult us for custom configuration (cable type, length, termination style)

8D RJ45 Series

Square flange receptacle

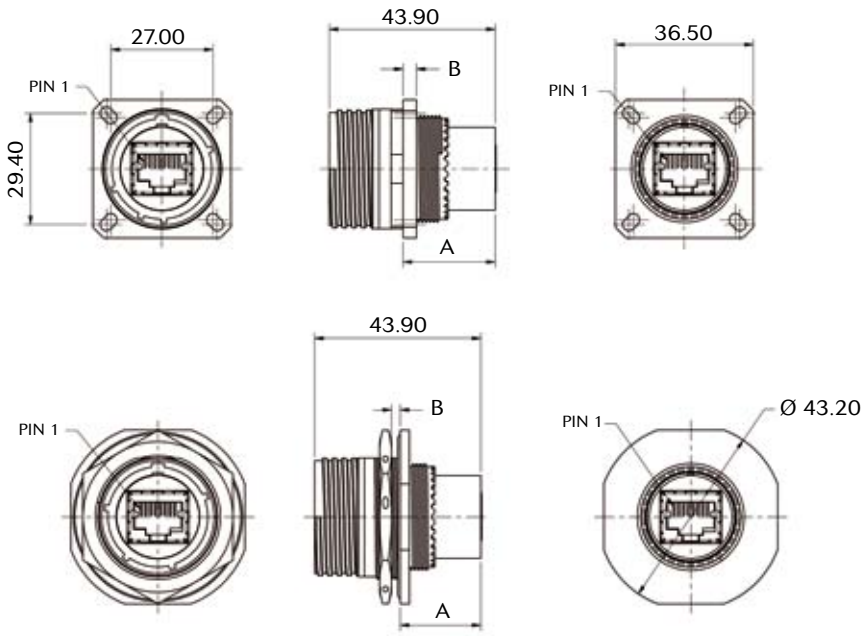
Jam nut receptacle

8D USB Series

Square flange receptacle

Jam nut receptacle

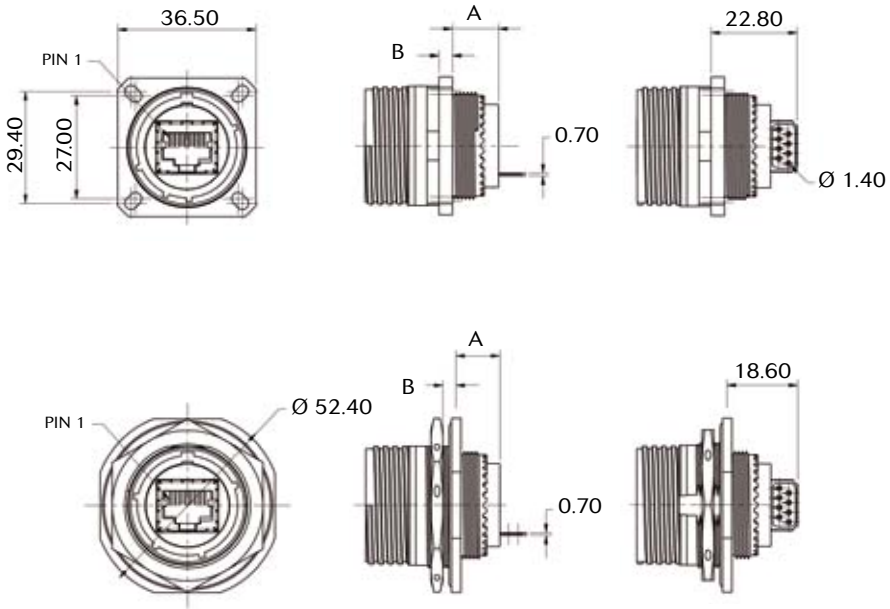
RJ45 interface - receptacle feedthrough series



Square flange receptacle		
Material	**A (max)**	**B (max)**
Aluminum	20.55	2.50
Composite	20.78	3.65

Jam nut receptacle		
Material	**A (max)**	**B (max)**
Aluminum	21.34	3.20

RJ45 interface - receptacle solder out series

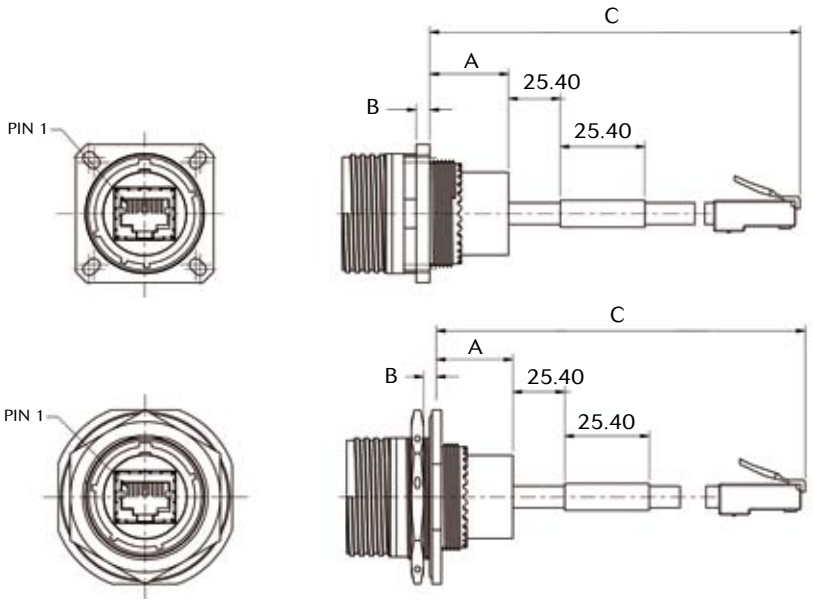


Square flange receptacle		
Material	**A (max)**	**B (max)**
Aluminum	11.91	2.50
Composite	12.14	3.65

Jam nut receptacle		
Material	**A (max)**	**B (max)**
Aluminum	12.70	3.20

Note: All dimensions are in millimeters (mm)

RJ45 interface - receptacle pigtail series

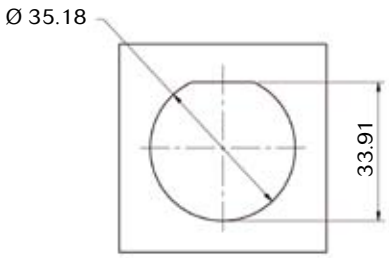


Square flange receptacle			
Material	**A (max)**	**B (max)**	**C (max)**
Aluminum	20.78	2.50	304.8 $^{\pm 25.4}$
Composite	20.78	3.65	304.8 $^{\pm 25.4}$

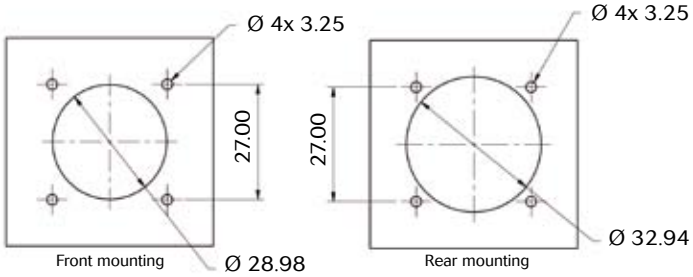
Jam nut receptacle			
Material	**A (max)**	**B (max)**	**C (max)**
Aluminum	21.34	3.20	304.8 $^{\pm 25.4}$

RJ45 interface - receptacle panel cut out

Jam nut panel cut out

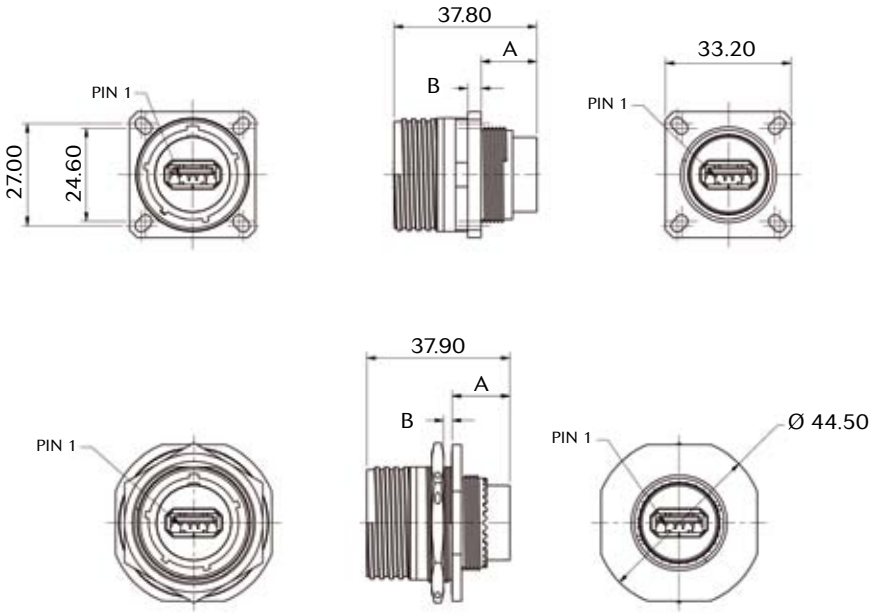


Square flange panel cut out



Note: All dimensions are in millimeters (mm)

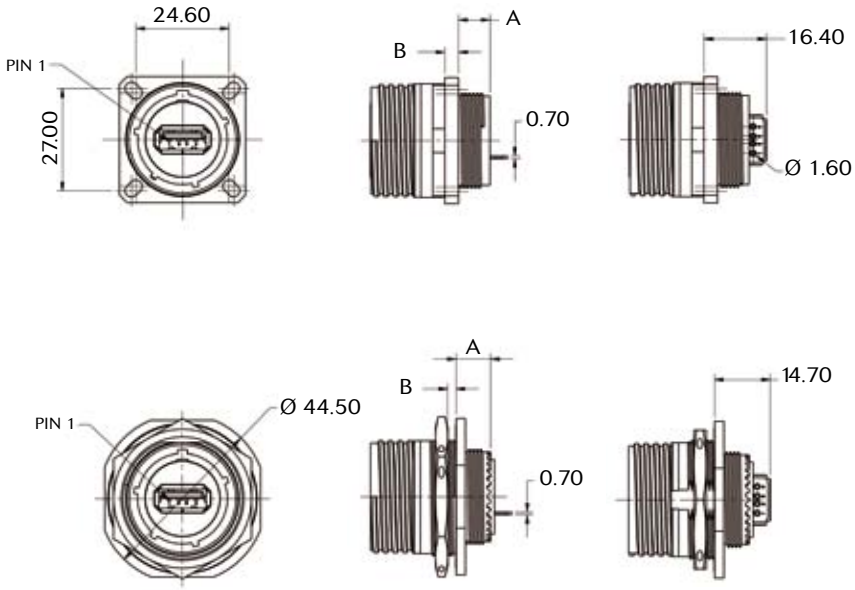
USB interface - receptacle feedthrough series



Square flange receptacle		
Material	**A (max)**	**B (max)**
Aluminum	14.45	2.50
Composite	14.68	3.65

Jam nut receptacle		
Material	**A (max)**	**B (max)**
Aluminum	15.24	3.20

USB interface - receptacle solder out series

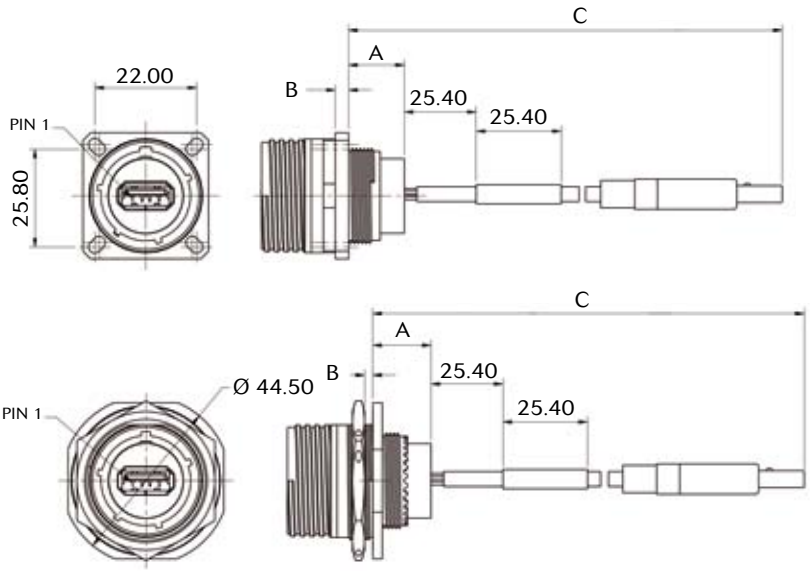


Square flange receptacle		
Material	**A (max)**	**B (max)**
Aluminum	8.10	2.50
Composite	8.33	3.65

Jam nut receptacle		
Material	**A (max)**	**B (max)**
Aluminum	11.94	3.20

Note: All dimensions are in millimeters (mm)

USB interface - receptacle pigtail series

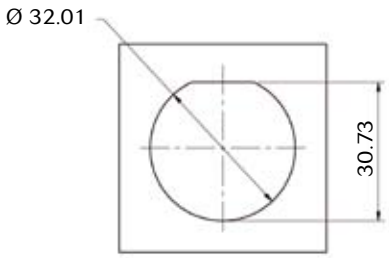


Square flange receptacle			
Material	**A (max)**	**B (max)**	**C (max)**
Aluminum	14.45	2.50	304.8 $^{\pm 25.4}$
Composite	14.68	3.65	304.8 $^{\pm 25.4}$

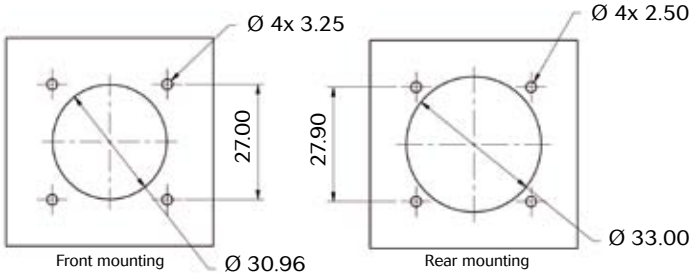
Jam nut receptacle			
Material	**A (max)**	**B (max)**	**C (max)**
Aluminum	15.24	3.20	304.8 $^{\pm 25.4}$

USB interface - receptacle panel cut out

Jam nut panel cut out



Square flange panel cut out



Note: All dimensions are in millimeters (mm)

8D Series

Range Extension

Product range extension

micro38999

A complete miniature range: threaded (8DA), break away (8BA) & bayonet (8LTA). Space saving with scoop proof connector for harsh applications.

A compact solution:
. Diameter up to 45% smaller than size 9 (D38999).
. Up to 50% shorter.
. Integrated backshell: Cost and space saving.

A high density solution:
. With #26 contacts (according to 39029).
. 5 layouts (size 3, 5 and 7 with #22 & #26).

Excellent features:
. Designed for D38999 requirements.
. IP67 sealing when mated.
. Stainless steel shell (1500 matings) & aluminum shell (500 matings).

RoHS and Cadmium free:
. Available in zinc nickel (RoHS) plating, as well as nickel and olive drab cadmium.

See «micro38999, A Complete Miniature Range» catalog on www.souriau.com

8D Hermetic ELIO® Feedthrough

The first truly hermetic aluminum 38999 fiber optic feedthrough.

Truly hermetic:
. Leak rate $<10^{-9}$ atm.cm³/s.

Weight saving:
. Aluminum shell save 30 to 40% of weight vs stainless steel.

Single and multi way:
. Unique multiway hermetic fiber optic feedhrough in the world.

Intermateable with Souriau's ELIO® connectors:
. Airbus A380 spec ABS 1379 qualified
. Intermateable with ARINC 801 and EN4531 standards

See «38999 Series III - Hermetic ELIO® Feedthrough» product news on www.souriau.com

Product range extension

Rack & Panel

Sealed rack & panel for blind connection. A 100% scoop proof connector with quick connection in hard-to-reach areas.

Blind connection:
. Easy & fast connection without any coupling/uncoupling between a float-mounting unit & a fixed unit

Float-mounting unit - rack:
. Female crimp contacts.
. Mounting on the cabinet side.
. Angular orientation with a key.
. Possibility to supply rear accessories.

Misalignment catching:
. Longitudinal, axial and angular.

See «38999 Series I - Rack & Panel 8LT» product news on www.souriau.com

230V Connector

The use of higher voltage to reduce cable weight has lead to the development of double voltage connectors.

Robust design and materials:
. In high altitude un-pressurized areas, higher voltages increase electrical partial discharges ➔ Risk of contact short circuits. Our 230V connector avoids this risk !

No possible mismatch:
. Specific T and V clocking to avoid mating with a non 230V qualified counterpart.

Flexible offering:
. Available in standard watertight and hermetic connectors with the same performance.
. Available in composite and stainless steel shells.

See «230 Volt EN3645 Derived Connectors» product news on www.souriau.com

Product range extension

8D8/8D9 Series

8D8: high vibration performance push-pull connector.
8D9: lanyard release, high performance 38999 quick release.

A wide range with excellent performances:
. MIL-DTL-38999 layouts and contacts
. MIL-DTL-38999 Series electric performances
. Scoop proof
. Compatible with standard backshells 38999 Series III
. Very high performance coupling with ball locking concept, check of locking by free ring when mated.

Easy to connect-disconnect:
. 8D8: ideal for restricted space mating.
. 8D9: simple push to connect - pull to disconnect.

High vibration performance:
. Up to 44g
. 8D8: ideal for mil-aero and space applications.
. 8D9: ideal for missiles, inter-stage separation, space probes, UAVs.

See «8D8/8D9 Series - 38999 Push pull/Quick release» catalog on www.souriau.com

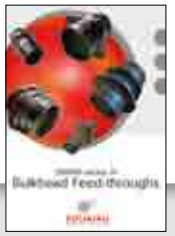
8DB: Bulkhead

"Double Receptacle" mounted on panel allows cable plug connection on both sides of the bulkhead. Create a permanent sealed barrier on your panel suitable for pressurized or depressurized areas.

Easy integration:
. Standard 38999 mounting interface (square flange, jam nut)..
. Easy modular assembly and connection.
. Time saving for maintenance.
. The ideal interconnect solution for aircraft pressurized/non pressurized panels.

Reinforced sealing:
. Feedthrough sealing even when unmated (10^{-6} atm.cm³/s).
. Permanent sealing barrier on panel (O rings).
. Glass fused hermetic version available ($<10^{-8}$ atm.cm³/s) for fuel tanks/space systems.

A large platform available:
. All 38999 Series III layouts (signal and power contacts).



See «38999 Series III - Bulkhead Feedthrough» catalog on www.souriau.com

Product range extension

8PS Series

Sealed cable feedthrough. Allows a bundle of cables to cross through the bulkhead without any contact junctions.

All cables are individually sealed inside the feedthrough:
- . For maximum MTBF by eliminating cable termination & contact junction.
- . When maximum continuity is required for copper cables.
- . To suppress contact attenuation with Fiber optic cables.

Easy and safe installation.

Reinforced sealing.

8D Hermetic Aluminum 38999 Power and Signal Connector

The unique connecting solution offering hermeticity, great conductivity and mass saving all at once: ideal for power applications.

Truly hermetic:
- . Leak rate $<10^{-9}$ atm.cm^3/s.

Weight saving:
- . Save 30 to 40% of weight vs stainless steel.

Outstanding conductivity:
- . Conductivity 5 times better than regular Fe/Ni contacts.

Product range extension

8D36 Lanyard Release

Field repairable / MIL-STD-1760 umbilical. Self-alignment, blind connector mating & safe operational solution to weapon releases.

Safe quick disconnect at high speed:
. Robust unlocking system : 9.15m/s ±10%.

Field repairable:
. Damaged coupling mechanism can be removed and fully replaced without need to disassemble the electric harness or cable backshell.

High vibration performances:
. Random: 44 G RMS, Sine: 60G with angular separation up to 20° (maximum)

8TFD Filter Connector

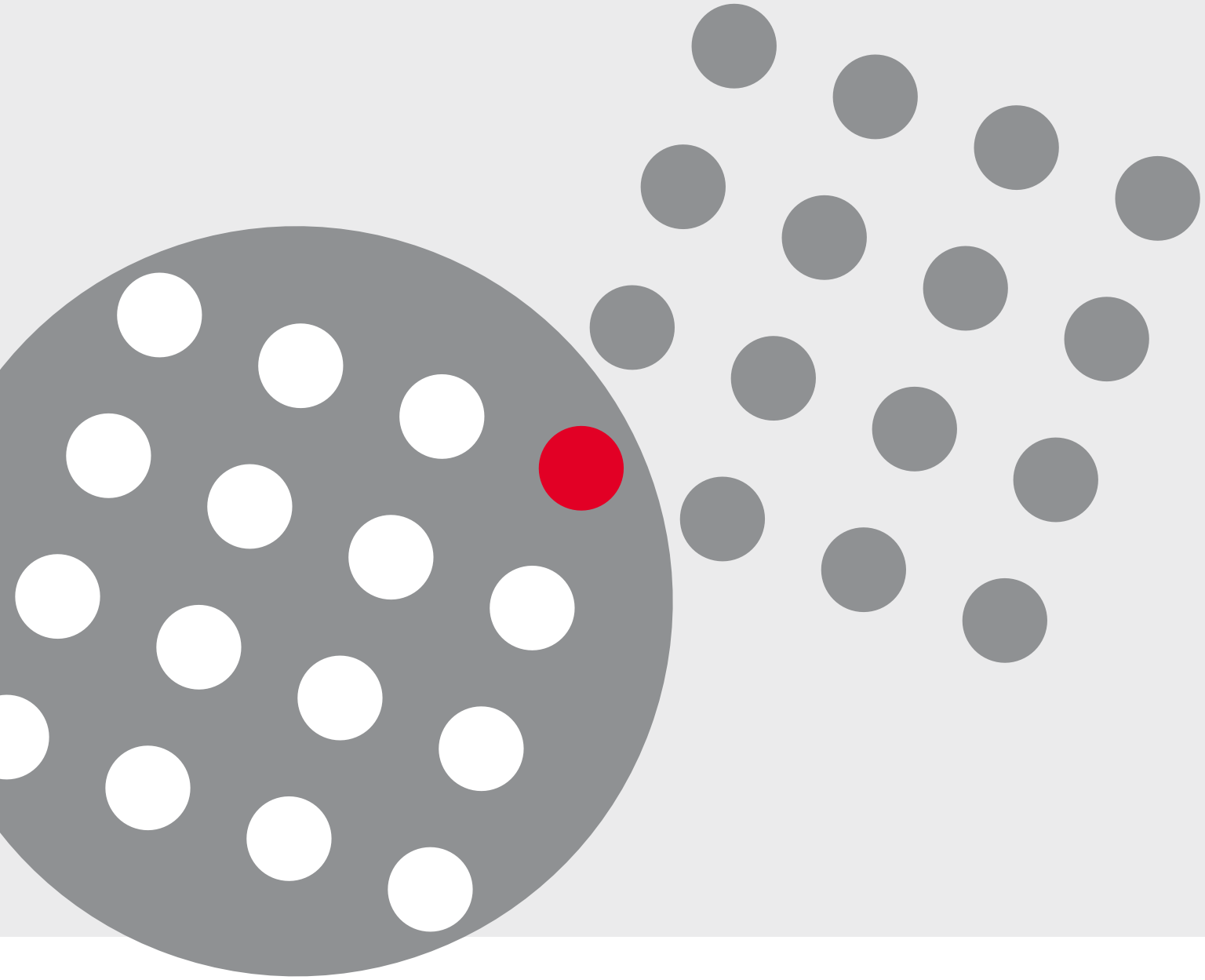
EMI-RFI filters and lightning protection in composite light-weight shell.

Space saving:
. Complete filter solution in standard shell.
. No need for filter PCB inside equipment.
. Smaller equipment envelope required.

Excellent filter performance:
. Excellent performance, comparable to aluminum shell EMI-RFI filter connectors.

Highly corrosion resistant:
. 2000 hours salt spray in either nickel or olive drab finish.

Wide range of layouts available:
. SOURIAU EMI-RFI Filter 38999 Series III connectors are available in aluminum, marine bronze, and stainless steel shells.



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Connection Technologies