8D Aluminum Series

Applications

High density connectors for all military and aeronautical purposes with severe vibration environment

Standards

MIL-C 38999 Series III - QPL approved
Pr EN 3645

Description

- High density connector from 1 to 128 contacts
- Sizes 22D, 20, 16, 12, # 16 coax and # 8 triax
- A quick screw coupling with anti-decoupling mechanism
- 100 % scoop proof
- An EMI/RFI reinforced shielding with grounding fingers

Characteristics

Mechanical

- Shell : aluminum alloy
- Plating :
  - olive green cadmium (W)
  - nickel (F)
- Insulator : thermoplastic or thermoset
- Grommet and seal : silicone elastomer
- Contact : copper alloy
- Plating : gold over nickel
- Endurance :
  500 mating/unmating operations
- Shock : high impact as per MIL-S 901
- Vibration :
  - sine 60 g with temperature cycling and simulated accessory (36 hours)
  - random :
    44.1 grms at high temperature
    49.5 grms at ambient temperature
- Contact retention (mini force in N) :
  - size 22 D : 45 N - size 20 : 67 N
  - size 16 : 111 N - size 12 : 111 N
  - size 8 : 111 N

Electrical

- Test voltage (Vrms)

Service	sea level	at 21000 m
M	1300	800
N	1000	600
I	1800	1000
II	2300	1000

- Contact resistance :
  resistance of wire included in measurement :
  - size 22 D : 14.6 mΩ - size 16 : 3.8 mΩ
  - size 20 : 7.3 mΩ - size 12 : 1.7 mΩ
  - size 8 : 3 mΩ
- Insulation resistance : ≥ 5000 MΩ (at 500 Vdc)
- Contact rating :
  - size 22 D : 5 A - size 16 : 13 A
  - size 20 : 7.5 A - size 12 : 23 A
  - size 8 : 45 A
- Shell continuity : - olive green plating : 2.5 mΩ
  - nickel plating : 1 mΩ
- Shielding : - 65 db to 10 GHz (F)
  - 50 db to 10 GHz (W)
  - 85 db to 1 GHz (F and W)
- Triaxial contact : # 8
  - bandwidth : 0 - 20 MHz
  - voltage rating : 500 Vac maxi.
    125 Vac at 21000 m
  - voltage drop :
    inner and middle contact ≤ 55 mV under 1A
    outer contact ≤ 75 mV under 12A

Climatic

- Temperature range :
  - cadmium plating (W) -65°C +175°C
  - nickel plating (F) -65°C +200°C
- Sealing : mated connectors meet altitude immersion requirements of MIL-C 38999
- Salt spray to : MIL-STD 1344 method 1001
  - 500 hours (version W)
  - 48 hours (version F)
- Damp heat : MIL-C 38999 - 10 cycles (24 hours)

Resistance to fluids

To MIL-C 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-C 25769 diluted
- De-icing fluid : MIL-A 8243
- Extinguishing fluid : chlorobromethane
- Cooling fluid : Coolanol

Ordering information

Part numbers

basic series	8 D	0	-	11	W	35	P	N	***

shell type
0 - square flange receptacle
7 - jam nut receptacle
5 - plug with RFI shielding

designator
- - connectors with crimp contacts
L - receptacle with long spill (male and female # 22D)
C - receptacle with short spill (male and female # 22D - # 20 - # 16)
S - receptacle with specific spill (male and female # 22D)
W - receptacle with male contacts size 22D for wire wrap (3 wraps)
T - receptacle with male contacts size 20 for wire wrap (2 wraps)

shell size
09-11-13-15-17-19-21-23-25

plating
W - olive green cadmium
F - nickel

contact layout
- see table p 120

contact type
P - male
S - female
A - male connector supplied less contact or with specific contacts
B - female connector supplied less contact or with specific contacts

polarization
N- normal
A-B-C-D-E - see table p 109

046 tinned straight spill

8D Aluminum Series

MIL-C 38999 part numbers

basic series	D 38999/	20	W	B	35	P	N

shell type
- **20** - square flange receptacle
- **24** - jam nut receptacle
- **26** - plug with RFI shielding

plating
- **W** - olive green cadmium
- **F** - nickel

shell size **A** to **J**

09	11	13	15	17	19	21	23	25
A	B	C	D	E	F	G	H	J

contact layout - see table p 109

contact type
- **P** - male
- **S** - female
- **A** - male connector supplied less contact or with specific contacts
- **B** - female connector supplied less contact or with specific contacts

polarization
- **N** - normal
- **A-B-C-D-E** - see table below

Backshells

basic series	8D	102	B	02

shell size	09	11	13	15	17	19	21	23	25
index number	101	102	103	104	105	106	107	108	109

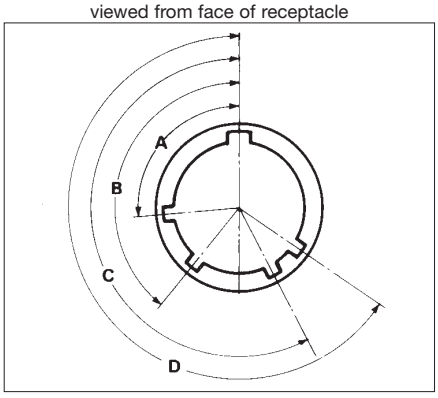
plating
- **B** - olive green cadmium
- **F** - nickel

backshell type
- **01** - backnut
- **02** - straight cable clamp
- **03** - elbow cable clamp
- **13** - backshell for heat shrink sleeving

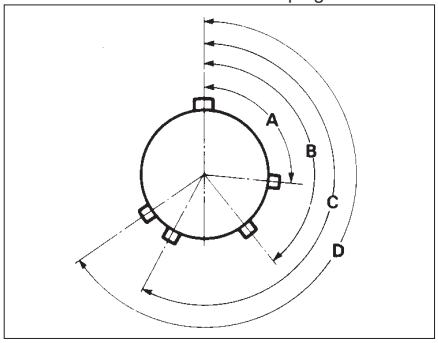
NOTE : Backshells will be marked with supplier's part number. Labels will bear both part numbers : supplier's and Souriau's.

Polarization

viewed from face of receptacle



viewed from front of plug

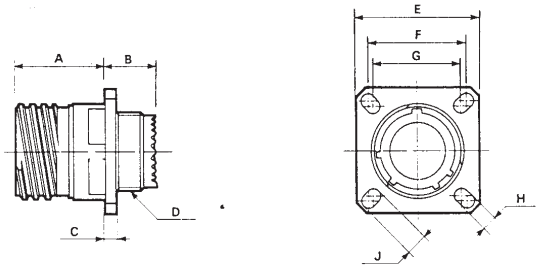


Note : Polarization A.B.C.D.E. consult us.

shell size	MS shell size	angles	N	A	B	C	D	E
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	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
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
17	E	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
19	F	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
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
23	H	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
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

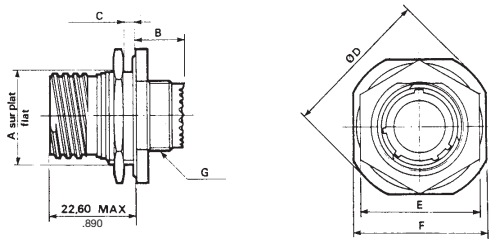
Dimensions

Receptacle type 0



shell size	MS shell size	A Max	B Max	C Max	D Thread	E	F	G	H	J
9	A	20.90 .823	10.60 .417	2.50 .098	M 12x 1-6g	23.80 .937	18.26 .719	15.09 .594	3.25 .128	5.49 .216
11	B	20.90 .823	10.60 .417	2.50 .098	M 15 x 1-6g	26.20 1.031	20.62 .812	18.26 .719	3.25 .128	4.93 .194
13	C	20.90 .823	10.60 .417	2.50 .098	M 18 x 1-6g	28.60 1.126	23.01 .906	20.62 .812	3.25 .128	4.93 .194
15	D	20.90 .823	10.60 .417	2.50 .098	M 22x 1-6g	31.00 1.220	24.61 .969	23.01 .906	3.25 .128	4.39 .173
17	E	20.90 .823	10.60 .417	2.50 .098	M 25 x 1 -6g	33.30 1.311	26.97 1.062	24.61 .969	3.25 .128	4.93 .194
19	F	20.90 .823	10.60 .417	2.50 .098	M 28 x 1-6g	36.50 1.437	29.36 1.156	26.97 1.062	3.25 .128	4.93 .194
21	G	20.10 .791	11.40 .449	3.20 .126	M 31 x 1-6g	39.70 1.563	31.75 1.250	29.36 1.156	3.25 .128	4.93 .194
23	H	20.10 .791	11.40 .449	3.20 .126	M 34x 1-6g	42.90 1.689	34.93 1.375	31.75 1.250	3.91 .154	6.15 .242
25	J	20.10 .791	11.40 .449	3.20 .126	M 37x 1-6g	46.00 1.811	38.10 1.500	34.93 1.375	3.91 .154	6.15 .242

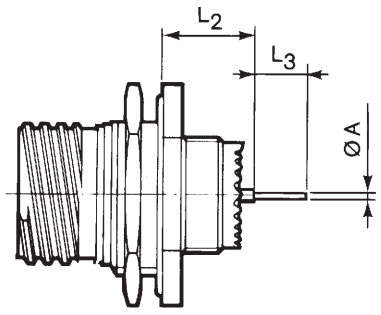
Receptacle type 7



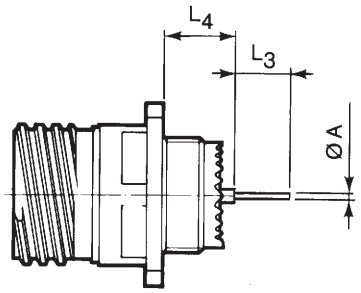
shell size	MS shell size	A	B Max	C Max	D Max	E Max	F	G Thread
9	A	16.53 .651	9.90 .390	3.20 .126	30.50 .126	24.00 .945	27.00 1.063	M 12x1-6g
11	B	19.07 .751	9.90 .390	3.20 .126	35.20 .126	27.00 1.063	31.80 1.252	M 15x 1-6g
13	C	23.82 .938	9.90 .390	3.20 .126	38.40 .126	32.00 1.260	34.90 1.374	M 18x1-6g
15	D	26.97 1.062	9.90 .390	3.20 .126	41.60 .126	36.00 1.417	38.10 1.500	M 22x1-6g
17	E	30.15 1.187	9.90 .390	3.20 .126	44.80 .126	37.00 1.457	41.30 1.626	M 25x1-6g
19	F	33.32 1.312	9.90 .390	3.20 .126	49.50 .126	41.00 1.614	46.00 1.811	M 28x1-6g
21	G	36.50 1.437	9.90 .390	3.20 .126	52.70 .126	46.00 1.811	49.20 1.937	M 31x1-6g
23	H	39.67 1.562	9.90 .390	3.20 .126	55.90 .126	50.00 1.969	52.40 2.063	M 34x1-6g
25	J	42.85 1.687	9.90 .390	3.20 .126	59.00 .126	51.23 2.017	55.60 2.189	M 37x1-6g

Receptacle with straight spill contacts

Receptacle type 7



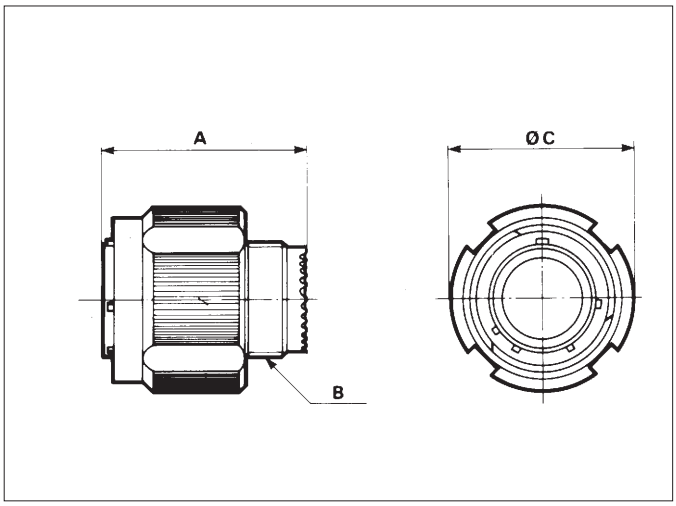
Receptacle type 0



Shell size			9	11	13	15	17	19	21	23	25
A		# 22D	0.70 .028	0.70 .028	0.70 .028	0.70 .028	0.70 .028	0.70 .028	0.70 .028	0.70 .028	0.70 .028
		# 20	0.50 .020	0.50 .020	0.50 .020	0.50 .020	0.50 .020	0.50 .020	0.50 .020	0.50 .020	0.50 .020
		# 16	1.15 .045	1.15 .045	1.15 .045	1.15 .045	1.15 .045	1.15 .045	1.15 .045	1.15 .045	1.15 .045
L2CM	#22D	min	10.52 .414	10.52 .414	10.34 .407	10.34 .407	10.34 .407	10.34 .407	10.34 .407	10.34 .407	10.34 .407
		Max	11.46 .451	11.46 .451	11.28 .444	11.28 .444	11.28 .444	11.28 .444	11.28 .444	11.28 .444	11.28 .444
L2CF	#22D	min	10.19 .401	10.19 .401	10.01 .394	10.01 .394	10.01 .394	10.01 .394	10.01 .394	10.01 .394	10.01 .394
		Max	11.46 .451	11.46 .451	11.28 .444	11.28 .444	11.28 .444	11.28 .444	11.28 .444	11.28 .444	11.28 .444
L2CM	#20	min	10.69 .421	10.69 .421	10.51 .414	10.51 .414	10.51 .414	10.51 .414	10.51 .414	10.51 .414	10.51 .414
		Max	11.63 .458	11.63 .458	11.45 .451	11.45 .451	11.45 .451	11.45 .451	11.45 .451	11.45 .451	11.45 .451
L2CF	#20	min	10.69 .421	10.69 .421	10.51 .414	10.51 .414	10.51 .414	10.51 .414	10.51 .414	10.51 .414	10.51 .414
		Max	11.63 .458	11.63 .458	11.45 .451	11.45 .451	11.45 .451	11.45 .451	11.45 .451	11.45 .451	11.45 .451
L2CM	#16	min	10.69 .421	10.69 .421	10.51 .414	10.51 .414	10.51 .414	10.51 .414	10.51 .414	10.51 .414	10.51 .414
		Max	11.63 .458	11.63 .458	11.45 .451	11.45 .451	11.45 .451	11.45 .451	11.45 .451	11.45 .451	11.45 .451
L2CF	#16	min	10.69 .421	10.69 .421	10.51 .414	10.51 .414	10.51 .414	10.51 .414	10.51 .414	10.51 .414	10.51 .414
		Max	11.63 .458	11.63 .458	11.45 .451	11.45 .451	11.45 .451	11.45 .451	11.45 .451	11.45 .451	11.45 .451
L3		PL #22D	8.50 .335	8.50 .335	8.50 .335	8.50 .335	8.50 .335	8.50 .335	8.50 .335	8.50 .335	8.50 .335
		PC #22D	4.00 .157	4.00 .157	4.00 .157	4.00 .157	4.00 .157	4.00 .157	4.00 .157	4.00 .157	4.00 .157
		PC #20	5.10 .201	5.10 .201	5.10 .201	5.10 .201	5.10 .201	5.10 .201	5.10 .201	5.10 .201	5.10 .201
		PC #16	5.10 .201	5.10 .201	5.10 .201	5.10 .201	5.10 .201	5.10 .201	5.10 .201	5.10 .201	5.10 .201
L4CM	#22D	min	9.48 .373	9.48 .373	9.48 .373	9.48 .373	9.48 .373	9.48 .373	9.59 .378	9.59 .378	9.59 .378
		Max	10.58 .417	10.58 .417	10.58 .417	10.58 .417	10.58 .417	10.58 .417	10.69 .421	10.69 .421	10.69 .421
L4CF	#22D	min	9.15 .360	9.15 .360	9.15 .360	9.15 .360	9.15 .360	9.15 .360	9.26 .365	9.26 .365	9.26 .365
		Max	10.58 .417	10.58 .417	10.58 .417	10.58 .417	10.58 .417	10.58 .417	10.69 .421	10.69 .421	10.69 .421
L4CM	#20	min	9.65 .380	9.65 .380	9.65 .380	9.65 .380	9.65 .380	9.65 .380	9.76 .384	9.76 .384	9.76 .384
		Max	10.75 .423	10.75 .423	10.75 .423	10.75 .423	10.75 .423	10.75 .423	10.86 .428	10.86 .428	10.86 .428
L4CF	#20	min	9.65 .380	9.65 .380	9.65 .380	9.65 .380	9.65 .380	9.65 .380	9.76 .384	9.76 .384	9.76 .384
		Max	10.75 .423	10.75 .423	10.75 .423	10.75 .423	10.75 .423	10.75 .423	10.86 .428	10.86 .428	10.86 .428
L4CM	#16	min	9.65 .380	9.65 .380	9.65 .380	9.65 .380	9.65 .380	9.65 .380	9.76 .384	9.76 .384	9.76 .384
		Max	10.75 .423	10.75 .423	10.75 .423	10.75 .423	10.75 .423	10.75 .423	10.86 .428	10.86 .428	10.86 .428
L4CF	#16	min	9.65 .380	9.65 .380	9.65 .380	9.65 .380	9.65 .380	9.65 .380	9.76 .384	9.76 .384	9.76 .384
		Max	10.75 .423	10.75 .423	10.75 .423	10.75 .423	10.75 .423	10.75 .423	10.86 .428	10.86 .428	10.86 .428

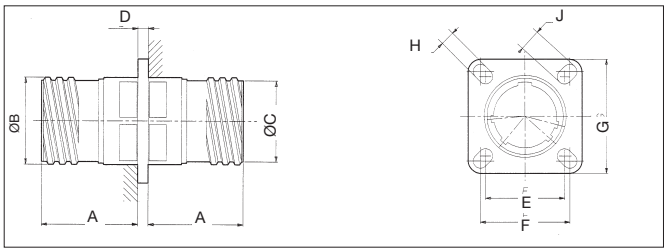
CM : male contact CF : female contact PL : long spill PC : short spill

Plug type 5



shell size	MS shell size	A Max	B Thread	C Max
9	A	31.00 1.220	M 12 x 1 - 6g	21.80 .858
11	B	31.00 1.220	M 15 x 1 - 6g	25.00 .984
13	C	31.00 1.220	M 18 x 1 - 6g	29.40 1.157
15	D	31.00 1.220	M 22 x 1 - 6g	32.50 1.280
17	E	31.00 1.220	M 25 x 1 - 6g	35.70 1.406
19	F	31.00 1.220	M 28 x 1 - 6g	38.50 1.516
21	G	31.00 1.220	M 31 x 1 - 6g	41.70 1.642
23	H	31.00 1.220	M 34 x 1 - 6g	44.90 1.768
25	J	31.00 1.220	M 37 x 1 - 6g	48.00 1.890

Through bulkhead receptacle (Special SHTP)



shell size	A Max	B	C	D Max	E	F	G	H	J
9	20.90 .823	15.72 .619	14.43 .568	2.26 .089	15.09 .594	18.26 .719	23.80 .937	3.25 .128	5.49 .216
11	20.90 .823	18.90 .744	17.60 .693	2.26 .089	18.26 .719	20.62 .812	26.20 1.031	3.25 .128	4.93 .194
13	20.90 .823	22.07 .869	20.78 .818	2.26 .089	20.62 .812	23.01 .906	28.60 1.126	3.25 .128	4.93 .194
15	20.90 .823	25.25 .994	23.95 .943	2.26 .089	23.01 .906	24.61 .969	31.00 1.220	3.25 .128	4.39 .173
17	20.90 .823	30.00 1.181	28.35 1.116	2.26 .089	24.61 .969	26.97 1.062	33.30 1.311	3.25 .128	4.93 .194
19	20.90 .823	31.57 1.243	29.95 1.179	2.26 .089	26.97 1.062	29.36 1.156	36.50 1.437	3.25 .128	4.93 .194
21	20.10 .791	34.75 1.368	33.12 1.304	2.97 .177	29.36 1.156	31.75 1.250	39.70 1.563	3.25 .128	4.93 .194
23	20.10 .791	37.92 1.193	36.30 1.429	2.97 .117	31.75 1.250	34.93 1.375	42.90 1.689	3.91 .154	6.15 .242
25	20.10 .791	41.10 1.678	39.47 1.554	2.97 .117	34.93 1.375	38.10 1.500	46.00 1.811	3.91 .154	6.15 .242

Part number

basic series **SN1843-** **13** **W** **••** **PS** **N**

shell size **09-11-13-15-17-19-21-23-25**

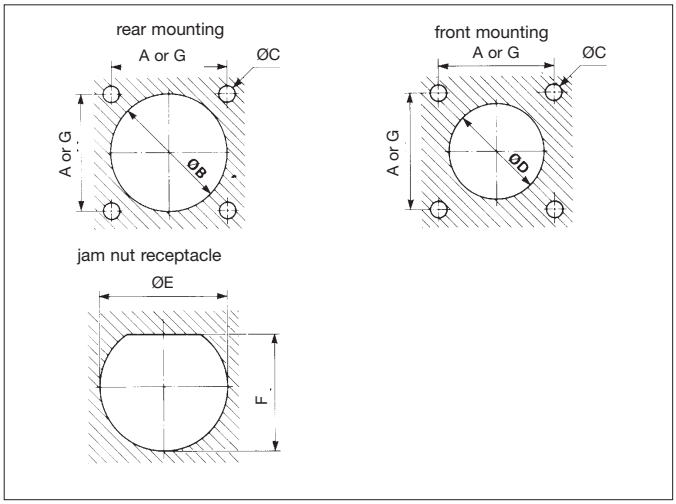
plating **W** - olive green cadmium

contact layout please consult us

contact type male/female contact

polarization

Panel cut-out



shell size	9 A	11 B	13 C	15 D	17 E	19 F	21 G	23 H	25 J
A	18.26 .719	20.62 .812	23.01 .906	24.61 .969	26.97 1.062	29.36 1.156	31.75 1.250	34.93 1.375	38.10 1.500
G	15.09 .594	18.26 .719	20.62 .812	23.01 .906	24.61 .969	26.97 1.062	29.36 1.156	31.75 1.250	34.94 1.376
B min	16.66 .656	20.22 .796	23.42 .922	26.59 1.047	30.96 1.219	32.94 1.297	36.12 1.422	39.29 1.547	42.47 1.672
C	3.25 .128	3.25 .128	3.25 .128	3.25 .128	3.25 .128	3.25 .128	3.25 .128	3.91 .154	3.91 .154
D min	13.11 .516	15.88 .625	19.05 .750	23.01 .906	25.81 1.016	28.98 1.141	32.16 1.266	34.93 1.375	37.69 1.484
E	17.78 .700	20.96 .825	25.65 1.010	28.83 1.135	32.01 1.260	35.18 1.385	38.35 1.510	41.53 1.635	44.70 1.760
F	17.02 .670	19.59 .771	24.26 .955	27.56 1.085	30.73 1.210	33.91 1.335	37.08 1.460	40.26 1.585	43.43 1.710

Maxi thickness of panel mounting for square flange receptacle - type 0
- front mounting : 3.2 mm Max.
- rear mounting : 2.5 mm Max.

8D composite Series

Applications

High density connectors for industrial, military and aeronautical purposes wherever weight savings and severe climatic or mechanical environment are targeted

Standards

En 3645 (under qualification)
MIL-C 38999 Series III - Issue J

Description

- High density connector from 1 to 128 contacts
- Sizes 22D, 20, 16, 12
- A quick screw coupling with self locking mechanism
- 100 % scoop proof
- EMI enhanced protection by shielding ring and shell to shell bottoming
- Resistance to salt spray > 2000 hours
- Endurance > 1500 cycles (mating/unmating)

Characteristics

Mechanical

- Weight : typically 25 % lighter than aluminium version
- Shell : carbon reinforced thermoplastic
- Plating : olive green cadmium (J)/nickel (M)
- Insulator : thermoplastic or thermoset
- Grommet and interfacial seal : silicone elastomer
- Contact : copper alloy
- Plating : gold over nickel
- Endurance : 1500 mating/unmating operations
- Shock : 300 g - 3 ms EN 2591 - D2 method A
- Vibration :
  - sine :
  10 to 2000 Hz, 3 x 12 hrs
  (60 g, 140 - 2000 Hz)
  with temperature cycling.
  - random :
  50 to 2000 Hz, 2 x 8 hrs
  ($1g^2$/Hz, 100 - 2000 Hz) at T Max.
  25 to 2000 Hz, 2 x 8 hrs
  ($5g^2$/Hz, 100 - 300 Hz) at T amb.
  test with accessories in accordance with EN2591-D3
- Contact retention :
  size 22 : 45 N size 20 : 67 N
  size 16 : 111 N size 12 : 111 N
  size 8 : 111 N

Electrical

- Test voltage rating (Vrms)

service	sea level	at 21 000 m
M	1300	800
N	1000	600
I	1800	1000
II	2300	1000

- Contact resistance :
  resistance of wire included in measurement
  size 22D : 14.6 mΩ size 20 : 7.3 mΩ
  size 16 : 3.8 mΩ size 12 : 1.7 mΩ
  size 8 : 3 mΩ
- Contact rating
  size 22D : 5 A size 20 : 7.5 A
  size 16 : 13 A size 12 : 23 A
  size 8 : 45 A
- Insulation resistance : ≥ 5000 MΩ (at 500 Vdc)
- Shell continuity :
  olive green plating : 3 mΩ
  nickel plating : 3 mΩ
- Shielding : 90 db at 100 GHz; 85 db at 1 GHz
- Triaxial contact # 8
  - bandwidth : 0 - 20 MHz
  - voltage rating :
  500 Vac Max. /125 Vac at 21 000 m
  - voltage drop :
  inner and middle contact ≤ 55 mV
  under 1A outer contact ≤ 75 mV under 12 A

Climatic

- Salt spray : 2000 hours
- Temperature range :
  - cadmium (J) : -65°C +175°C
  - nickel (M) : -65°C +200°C
  - without plating (x) : -65°C +175°C
- Fire resistance : Fire exposure during 30 sec. EN2591-C17 method A
- Damp heat :
  10 cycles in accordance with EN 2591 - C21
  altitude-low temperature :
  5 cycles (5x44 Hrs ; -65°C min ; -5,5KPa min)
  EN2591 - C3
- Sealing : 3 cycles (3x1 Hrs)
  Altitude immersion 1,1 KPa EN2591 - C14
- Moisture :
  exposure during 28 days EN2591 - C6

Resistance to fluids

To MIL-C 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 lubrificating : MIL-L 7870A (OTAN 0142)
- Synthetic lubrificating : MIL-L 23699 (OTAN 0156), MIL-L 7808
- Cleaning fluid : MIL-C 25769 diluted
- De-icing fluid : MIL-A 8243
- Extinguishing fluid : Chlorobromethane
- Cooling fluid : Coolanol

To NFC 93422
- F46, F54, 0/180, H515, H542, XH45

8D composite Series

Ordering information

FCI Souriau part numbers

basic series	8 D	0	-	11	J	35	P	N

style
0 - square flange receptacle
5 - plug with RFI shielding

type
- connectors with standard crimp contacts
L - receptacle with long spill (male and female # 22D)
C - receptacle with short spill (male and female # 22D # 20 # 16)
S - receptacle with specific spill (male and female # 22D)
W - receptacle with male contacts size 22D for wire wrap (3 wraps)
T - receptacle with male contacts size 20 for wire wrap (2 wraps)

shell size
09-11-13-15-17-19-21-23-25

plating
J - olive green cadmium
M - nickel
X - without plating

contact layout
- see table p 8

contact type
P - male
S - female
A - male connector supplied less contact or with specific contacts
B - female connector supplied less contact or with specific contacts

orientation*
N - normal
A

* For other orientations, please consult us.

MIL-C 38999 part numbers*

basic series	D 38999/	20	J	B	35	P	N

shell type
20 - square flange receptacle
24 - jam nut receptacle
26 - plug with RFI shielding

protection
J - olive green cadmium
M - nickel

shell size

09	11	13	15	17	19	21	23	25
A	B	C	D	E	F	G	H	J

contact layout
- see table p 8

contact type
P - male
S - female
A - male connector supplied less contact or with specific contacts
B - female connector supplied less contact or with specific contacts

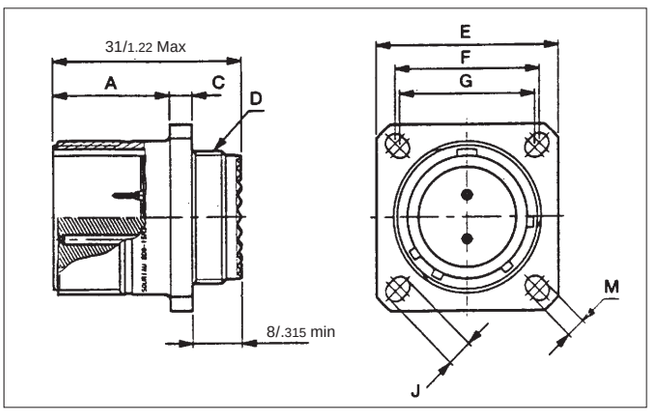
orientation
N - normal
A

* QPL in progress.

8D composite Series

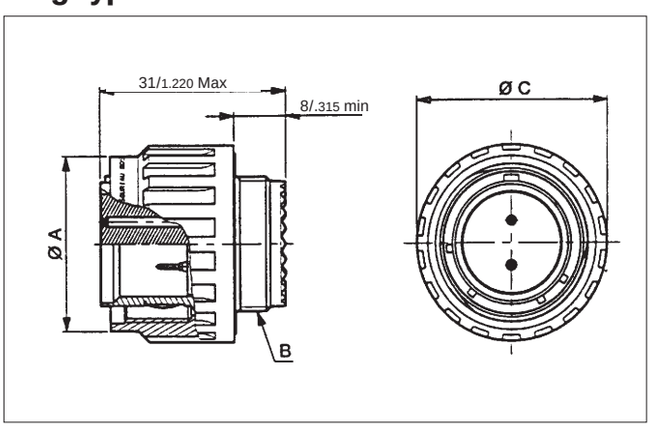
Dimensions

Receptacle type 0



shell size	MS shell	A	C Max	D Thread	E	F	G	H	J
09	A	19.50 .768	3.65 .144	M 12 x 1-6g	23.80 .937	18.26 .719	15.09 .594	3.25 .128	5.49 .216
11	B	19.50 .768	3.65 .144	M 15 x 1-6g	26.20 1.031	20.62 .812	18.26 .719	3.25 .128	4.93 .194
13	C	19.50 .768	3.65 .144	M 18 x 1-6g	28.60 1.126	23.01 .906	20.62 .812	3.25 .128	4.93 .194
15	D	19.50 .768	3.65 .144	M 22 x 1-6g	31.00 1.220	24.61 .969	23.01 .906	3.25 .128	4.93 .194
17	E	19.50 .768	3.65 .144	M 25 x 1-6g	33.30 1.311	26.97 1.062	24.61 .969	3.25 .128	4.93 .194
19	F	19.50 .768	3.65 .144	M 28 x 1-6g	36.50 1.437	29.36 1.156	26.97 1.062	3.25 .128	4.93 .194
21	G	18.70 .736	4.35 .171	M 31 x 1-6g	39.70 1.563	31.75 1.250	29.36 1.156	3.25 .128	4.93 .194
23	H	18.70 .736	4.35 .171	M 34 x 1-6g	42.90 1.689	34.93 1.375	31.75 1.250	3.91 .154	6.15 .242
25	J	18.70 .736	4.35 .171	M 37 x 1-6g	46.00 1.811	38.10 1.500	34.93 1.375	3.91 .154	6.15 .242

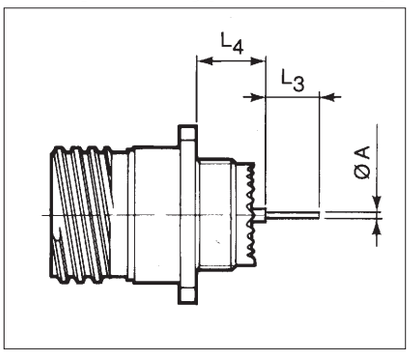
Plug type 5



shell size	MS shell size	A	B Thread	C
09	A	20.60 .811	M 12 x 1-6g	21.80 .858
11	B	23.60 .929	M 15 x 1-6g	25.00 .984
13	C	28.20 1.110	M 18 x 1-6g	29.40 1.157
15	D	31.30 1.232	M 22 x 1-6g	32.50 1.280
17	E	34.50 1.358	M 25 x 1-6g	35.70 1.406
19	F	37.30 1.469	M 28 x 1-6g	38.50 1.516
21	G	40.50 1.594	M 31 x 1-6g	41.70 1.642
23	H	43.70 1.720	M 34 x 1-6g	44.90 1.768
25	J	46.80 1.843	M 37 x 1-6g	48.00 1.890

8D composite Series

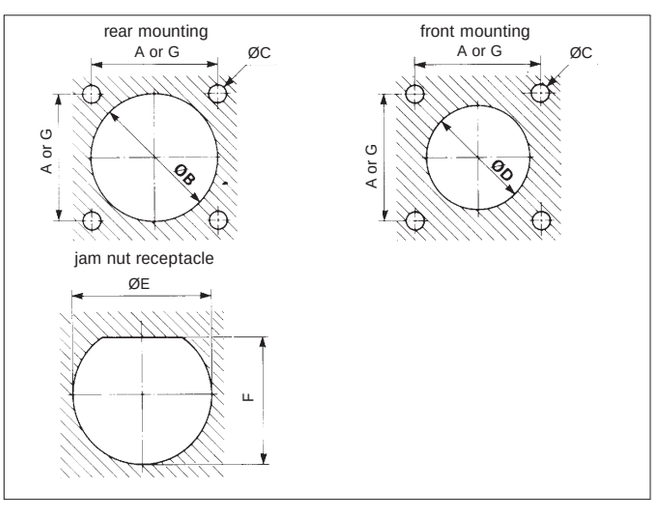
Receptacle type 0 - Receptacle with straight spill contacts



shell size			09	11	13	15	17	19	21	23	25
A CM & CF		PL&PC #22D	0.70 .028	0.70 .028	0.70 .028	0.70 .028	0.70 .028	0.70 .028	0.70 .028	0.70 .028	0.70 .028
		PS#22D	0.50 .020	0.50 .020	0.50 .020	0.50 .020	0.50 .020	0.50 .020	0.50 .020	0.50 .020	0.50 .020
		PC#20	0.70 .028	0.70 .028	0.70 .028	0.70 .028	0.70 .028	0.70 .028	0.70 .028	0.70 .028	0.70 .028
		PC#16	1.15 .045	1.15 .045	1.15 .045	1.15 .045	1.15 .045	1.15 .045	1.15 .045	1.15 .045	1.15 .045
L3 CM & CF		PL #22D	8.50 .335	8.50 .335	8.50 .335	8.50 .335	8.50 .335	8.50 .335	8.50 .335	8.50 .335	8.50 .335
		PC #22D	4.00 .157	4.00 .157	4.00 .157	4.00 .157	4.00 .157	4.00 .157	4.00 .157	4.00 .157	4.00 .157
		PS #22D	5.00 .197	5.00 .197	5.00 .197	5.00 .197	5.00 .197	5.00 .197	5.00 .197	5.00 .197	5.00 .197
		PC #20	5.00 .197	5.00 .197	5.00 .197	5.00 .197	5.00 .197	5.00 .197	5.00 .197	5.00 .197	5.00 .197
		PC #16	5.00 .197	5.00 .197	5.00 .197	5.00 .197	5.00 .197	5.00 .197	5.00 .197	5.00 .197	5.00 .197
L4CM	PL&PC#22D	mini	9.47 .373	9.47 .373	9.47 .373	9.47 .373	9.47 .373	9.47 .373	9.57 .377	9.57 .377	9.57 .377
		Max.	10.38 .409	10.38 .409	10.38 .409	10.38 .409	10.38 .409	10.38 .409	10.48 .413	10.48 .413	10.48 .413
	PS&22D	mini	9.64 .380	9.64 .380	9.64 .380	9.64 .380	9.64 .380	9.64 .380	9.740 .383	9.740 .383	9.740 .383
		Max.	10.55 .415	10.55 .415	10.55 .415	10.55 .415	10.55 .415	10.55 .415	10.650 .419	10.650 .419	10.650 .419
L4CF	PL&PC#22D	min.	9.14 .360	9.14 .360	9.14 .360	9.14 .360	9.14 .360	9.14 .360	9.24 .364	9.24 .364	9.24 .364
		Max.	10.38 .409	10.38 .409	10.38 .409	10.38 .409	10.38 .409	10.38 .409	10.48 .413	10.48 .413	10.48 .413
	PS#22D	min.	9.31 .367	9.31 .367	9.31 .367	9.31 .367	9.31 .367	9.31 .367	9.41 .370	9.41 .370	9.41 .370
		Max.	10.55 .415	10.55 .415	10.55 .415	10.55 .415	10.55 .415	10.55 .415	10.65 .419	10.65 .419	10.65 .419
L4CM	PC#20	min.	9.64 .380	9.64 .380	9.64 .380	9.64 .380	9.64 .380	9.64 .380	9.74 .383	9.74 .383	9.74 .383
		Max.	10.55 .415	10.55 .415	10.55 .415	10.55 .415	10.55 .415	10.55 .415	10.65 .419	10.65 .419	10.65 .419
L4CF	PC#20	min.	9.64 .380	9.64 .380	9.64 .380	9.64 .380	9.64 .380	9.64 .380	9.74 .383	9.74 .383	9.74 .383
		Max.	10.55 .415	10.55 .415	10.55 .415	10.55 .415	10.55 .415	10.55 .415	10.65 .419	10.65 .419	10.65 .419
L4CM	PC#16	min.	9.64 .380	9.64 .380	9.64 .380	9.64 .380	9.64 .380	9.64 .380	9.74 .383	9.74 .383	9.74 .383
		Max.	10.55 .415	10.55 .415	10.55 .415	10.55 .415	10.55 .415	10.55 .415	10.65 .419	10.65 .419	10.65 .419
L4CM	PC#16	min.	9.64 .380	9.64 .380	9.64 .380	9.64 .380	9.64 .380	9.64 .380	9.74 .383	9.74 .383	9.74 .383
		Max.	10.55 .415	10.55 .415	10.55 .415	10.55 .415	10.55 .415	10.55 .415	10.65 .419	10.65 .419	10.65 .419

CM : male contact CF : female contact PL : long spill PC : short spill PS : specific spill

Panel cut-out



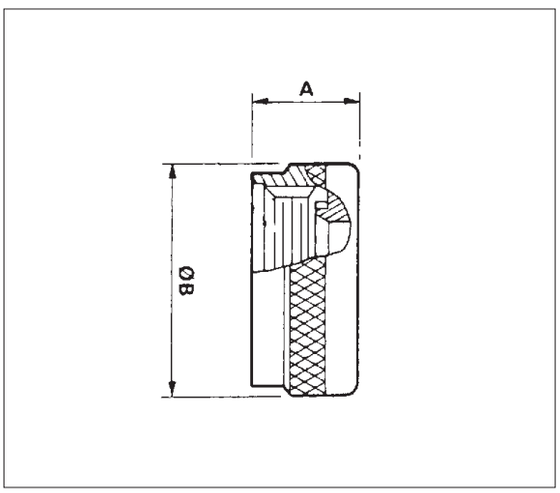
shell size	9 A	11 B	13 C	15 D	17 E	19 F	21 G	23 H	25 J
A	18.26 .719	20.62 .812	23.01 .906	24.61 .969	26.97 1.062	29.36 1.156	31.75 1.250	34.93 1.375	38.10 1.500
G	15.09 .594	18.26 .719	20.62 .812	23.01 .906	24.61 .969	26.97 1.062	29.36 1.156	31.75 1.250	34.94 1.376
B min	16.66 .656	20.22 .796	23.42 .922	26.59 1.047	30.96 1.219	32.94 1.297	36.12 1.422	39.29 1.547	42.47 1.672
C	3.25 .128	3.25 .128	3.25 .128	3.25 .128	3.25 .128	3.25 .128	3.25 .128	3.91 .154	3.91 .154
D min	13.11 .516	15.58 .625	19.05 .750	23.01 .906	25.81 1.016	28.98 1.141	32.16 1.266	34.93 1.375	37.69 1.484
E	17.78 .700	20.96 .825	25.65 1.010	28.83 1.135	32.01 1.260	35.18 1.385	38.35 1.510	41.53 1.635	44.70 1.760
F	17.02 .670	19.59 .771	24.26 .955	27.56 1.085	30.73 1.210	33.91 1.335	37.08 1.460	40.26 1.585	43.43 1.710

Maxi thickness of panel mounting for square flange receptacle - type 0
- front mounting : 3.2 mm Max.
- rear mounting : 2.5 mm Max.

8D Aluminium & Composite Series

Backshells

Backnut

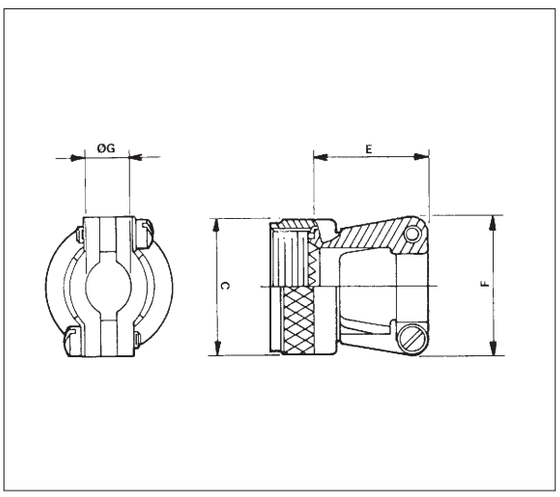


shell size	FCI Souriau P/N	Manufacturer P/N	A Max	B Max
09	8D 101 ❑ 01	S2707 - 64 - ■	16.20 .638	19.05 .750
11	8D 102 ❑ 01	S2707 - 65 - ■	16.20 .638	21.59 .850
13	8D 103 ❑ 01	S2707 - 67 - ■	16.20 .638	25.40 1.000
15	8D 104 ❑ 01	S2707 - 69 - ■	16.20 .638	27.94 1.100
17	8D 105 ❑ 01	S2707 - 70 - ■	16.20 .638	31.75 1.250
19	8D 106 ❑ 01	S2707 - 71 - ■	16.20 .638	35.56 1.400
21	8D 107 ❑ 01	S2707 - 72 - ■	16.20 .638	38.10 1.500
23	8D 108 ❑ 01	S2707 - 74 - ■	16.20 .638	41.91 1.650
25	8D 109 ❑ 01	S2707 - 77 - ■	16.20 .638	44.45 1.750

❑ = B : olive green cadmium
= F : nickel

■ = 34 : olive green cadmium
= 12 : nickel

Straight cable-clamp

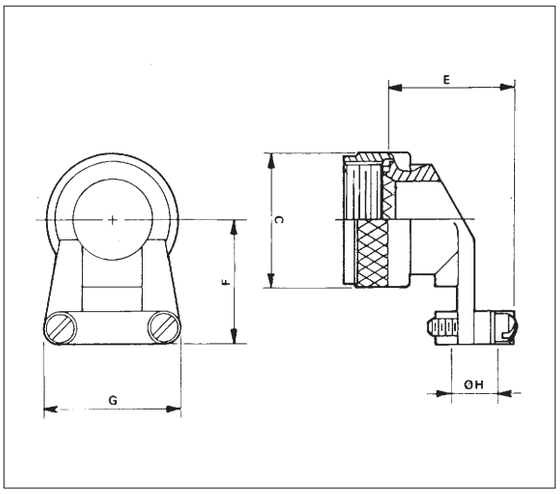


shell size	FCI Souriau P/N	MIL-C85049 P/N	C Max	E Max	F Max	G closed	G open
09	8D 101 ❑ 02	M85049/38-09■	19.60 .772	14.10 .555	19.10 .752	3.20 .126	5.20 .205
11	8D 102 ❑ 02	M85049/38-11■	20.80 .819	16.90 .665	21.10 .831	4.70 .185	7.30 .287
13	8D 103 ❑ 02	M85049/38-13■	23.90 .941	20.10 .791	25.10 .988	7.40 .291	10.60 .417
15	8D 104 ❑ 02	M85049/38-15■	27.20 1.071	20.10 .791	26.60 1.047	8.90 .350	12.10 .476
17	8D 105 ❑ 02	M85049/38-17■	30.70 1.209	23.20 .913	33.50 1.319	12.70 .500	15.90 .626
19	8D 106 ❑ 02	M85049/38-19■	34.50 1.358	29.60 1.165	36.90 1.453	13.20 .520	17.90 .705
21	8D 107 ❑ 02	M85049/38-21■	37.60 1.480	32.80 1.291	39.50 1.555	14.80 .583	21.10 .831
23	8D 108 ❑ 02	M85049/38-23■	40.60 1.598	35.90 1.413	42.00 1.654	16.40 .646	24.30 .957
25	8D 109 ❑ 02	M85049/38-25■	43.20 1.701	47.70 1.878	45.70 1.799	22.20 .874	31.80 1.252

❑ = B : olive green cadmium
= F : nickel

■ = A : black anodized
= W : olive green cadmium

Elbow cable clamp



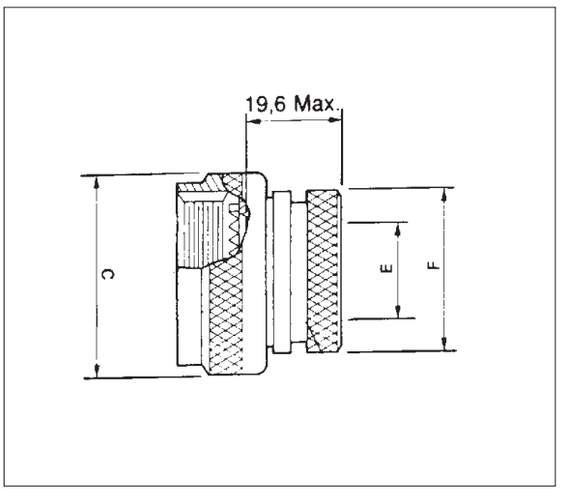
shell size	FCI Souriau P/N	MIL-C85049 P/N	C Max	E Max	F Max	G Max	H closed	H open
09	8D 101 ❑ 03	M85049/39-09■	19.60 .772	17.90 .705	20.60 .811	19.20 .756	3.20 .126	5.20 .205
11	8D 102 ❑ 03	M85049/39-11■	20.80 .819	20.00 .787	22.00 .866	21.10 .831	4.70 .185	7.30 .287
13	8D 103 ❑ 03	M85649/39-13■	23.90 .941	24.90 .980	23.60 .929	25.10 .988	7.40 .291	10.60 .417
15	8D 104 ❑ 03	M85049/39-15■	27.20 1.071	26.40 1.039	25.20 .992	26.60 1.047	8.90 .350	12.10 .476
17	8D 105 ❑ 03	M85049/39-17■	30.70 1.209	30.20 1.189	26.80 1.055	33.50 1.319	12.70 .500	15.90 .626
18	8D 106 ❑ 03	M85049/39-19■	34.50 1.358	33.00 1.299	31.30 1.232	36.90 1.453	13.20 .520	17.90 .705
21	8D 107 ❑ 03	M85049/39-21■	37.60 1.480	36.20 1.425	32.90 1.295	39.40 1.551	14.80 .583	21.10 .831
23	8D 108 ❑ 03	M85049/39-23■	40.60 1.598	39.40 1.551	34.50 1.358	42.00 1.654	16.40 .646	24.30 .957
25	8D 109 ❑ 03	M85049/39-25■	43.20 1.701	42.50 1.673	36.10 1.421	45.10 1.776	17.90 .705	27.50 1.083

❑ = B : olive green cadmium
= F : nickel

■ = A : black anodized
= W : olive green cadmium

8D Aluminium & Composite Series

Backshell for heat shrink boot



shell size	FCI Souriau P/N	MIL-C85049 P/N	c Max	e Max	f Max
09	8D 101 ❑ 13	M85049/69-09 A	19.60 .772	6.80 .268	13.50 .531
11	8D 102 ❑ 13	M85049/69-11 A	20.80 .819	10.10 .398	15.40 .606
13	8D 103 ❑ 13	M85049/69-13 A	23.90 .941	13.00 .512	19.70 .776
15	8D 104 ❑ 13	M85049/69-15 A	27.20 1.071	16.20 .638	21.30 .839
17	8D 105 ❑ 13	M85049/69-17 A	30.70 1.209	19.30 .760	24.50 .965
19	8D 106 ❑ 13	M85049/69-19 A	34.50 1.358	21.60 .850	26.50 1.043
21	8D 107 ❑ 13	M85049/69-21 A	37.60 1.480	24.80 .976	30.90 1.217
23	8D 108 ❑ 13	M85049/69-23 A	40.60 1.598	27.90 1.098	34.40 1.354
25	8D 109 ❑ 13	M85049/69-25 A	43.20 1.701	31.10 1.224	36.70 1.445

❑ = B : olive green cadmium A : black anodized
= F : nickel

Backshell for screen termination and cable clamp

basic series	M85049/19	11	W	03
shell size	09-11-13-15-17-19-21-23-25			
plating	W - olive green cadmium N - nickel			
clamp size indicator	- see table 1 and 2			

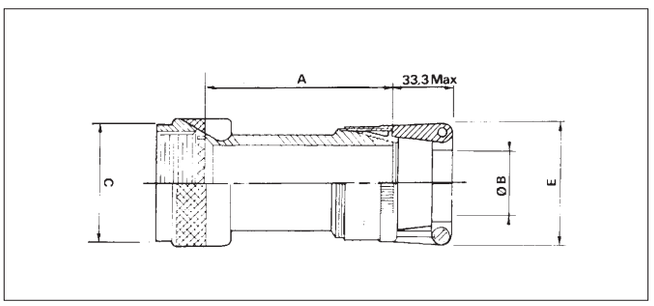


Table 1

shell size	A Max	C Max	clamp size indicator
9	38.10 1.500	19.60 .772	01-02
11	38.10 1.500	20.80 .819	01-02-03
13	38.10 1.500	23.90 .941	02-03-04
15	38.10 1.539	27.20 1.071	02-03-04-05
17	38.10 1.500	30.70 1.209	02-03-04-05-06
19	38.10 1.500	34.50 1.358	03-04-05-06-07
21	38.10 1.500	37.60 1.480	03-04-05-06-07-08
23	38.10 1.500	40.60 1.598	03-04-05-06-07-08
25	38.10	43.20	04-05-06-07-08-09-10

Nota : for other backshell type see catalogue M85049, STS and SE uni adaptor.

Table 2

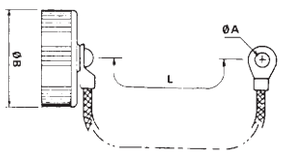
clamp size indicator	B min	B Max	E Max
01	1.60 .063	3.20 .126	19.80 .780
02	3.20 .126	6.40 .252	24.60 .969
03	6.40 .252	9.50 .374	27.00 1.063
04	7.90 .311	12.70 .500	29.40 1.157
05	11.10 .437	15.90 .626	31.80 1.252
06	14.30 .563	19.10 .752	34.90 1.374
07	17.40 .685	22.20 .874	38.10 1.500
08	20.60 .811	25.40 1.000	41.30 1.626
09	23.80 .937	28.60 1.126	44.50 1.752
10	27.00 1.063	31.80 1.252	47.60 1.874

8D Aluminium & Composite Series

Caps

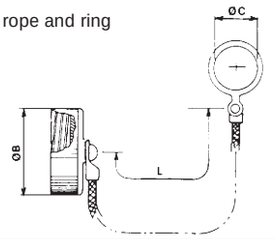
caps for receptacle

with stainless steel rope and eyelet



shell size	part numbers SUNBANK	part numbers MIL-C38999*	A min	B Max	L
09	S2453-09W-■	D38999/33 W 09R	3.90 .154	22.86 .900	127.00 5.000
11	S2453-11W-■	D38999/33 W 11R	3.90 .154	27.96 1.101	127.00 5.000
13	S2453-13W-■	D38999/33 W 13R	3.90 .154	30.48 1.200	127.00 5.000
15	S2453-15W-■	D38999/33 W 15R	3.90 .154	31.75 1.250	127.00 5.000
17	S2453-17W-■	D38999/33 W 17R	3.90 .154	36.83 1.450	127.00 5.000
19	S2453-19W-■	D38999/33 W 19R	3.90 .154	38.10 1.500	127.00 5.000
21	S2453-21W-■	D38999/33 W 21R	3.90 .154	41.91 1.650	127.00 5.000
23	S2453-23W-■	D38999/33 W 23R	3.90 .154	44.45 1.750	127.00 5.000
25	S2453-25W-■	D38999/33 W 25R	3.90 .154	48.26 1.900	127.00 5.000

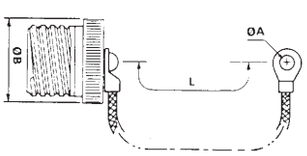
with stainless steel rope and ring



shell size	part numbers SUNBANK	part numbers MIL-C38999*	C min	B Max	L
09	S2453-09W-■-1	D38999/33 W 09N	17.64 .6.94	22.86 .900	127.00 5.000
11	S2453-11W-■-1	D38999/33 W 11N	21.97 .865	27.96 1.101	127.00 5.000
13	S2453-13W-■-1	D38999/33 W 13N	25.12 .989	30.48 1.200	127.00 5.000
15	S2453-15W-■-1	D38999/33 W 15N	29.92 1.178	31.75 1.250	127.00 5.000
17	S2453-17W-■-1	D38999/33 W 17N	32 1.260	36.83 1.450	127.00 5.000
19	S2453-19W-■-1	D38999/33 W 19N	36.27 1.428	38.10 1.500	127.00 5.000
21	S2453-21W-■-1	D38999/33 W 21N	38.25 1.506	41.91 1.650	127.00 5.000
23	S2453-23W-■-1	D38999/33 W 23N	42.62 1.679	44.45 1.750	127.00 5.000
25	S2453-25W-■-1	D38999/33 W 25N	44.45 1.750	48.26 1.900	127.00 5.000

caps for plug

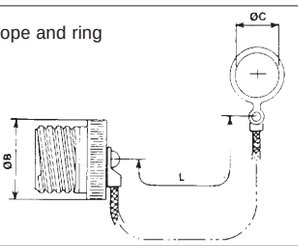
with stainless steel rope and eyelet



shell size	Part numbers SUNBANK	Part numbers MIL-C38999*	A min	B Max	L
09	S2454-09F-■ S	D38999/32 W 09R	3.90 .154	22.86 .900	127.00 5.000
11	S2454-11F-■ S	D38999/32 W 11R	3.90 .154	27.96 1.101	127.00 5.000
13	S2454-13F-■ S	D38999/32 W 13R	3.90 .154	30.48 1.200	127.00 5.000
15	S2454-15F-■ S	D38999/32 W 15R	3.90 .154	31.75 1.250	127.00 5.000
17	S2454-17F-■ S	D38999/32 W 17R	3.90 .154	36.83 1.450	127.00 5.000
19	S2454-19F-■ S	D38999/32 W 19R	3.90 .154	38.10 1.500	127.00 5.000
21	S2454-21F-■ S	D38999/32 W 21R	3.90 .154	41.91 1.650	127.00 5.000
23	S2454-23F-■ S	D38999/32 W 23R	3.90 .154	44.45 1.750	127.00 5.000
25	S2454-25F-■ S	D38999/32 W 25R	3.90 .154	48.26 1.900	127.00 5.000

■ : Plating - 34 : Olive green cadmium - 12 : Nickel

with stainless steel rope and ring



shell size	Part numbers SUNBANK	Part numbers MIL-C38999*	C min	B Max	L
09	S2454-09W-■ S	D38999/32 W 09N	12.92 .509	22.86 .900	127.00 5.000
11	S2454-11W-■ S	D38999/32 W 11N	17.78 .700	27.96 1.101	127.00 5.000
13	S2454-13W-■ S	D38999/32 W 13N	19.27 .759	30.48 1.200	127.00 5.000
15	S2454-15W-■ S	D38999/32 W 15N	22.60 .890	31.75 1.250	127.00 5.000
17	S2454-17W-■ S	D38999/32 W 17N	25.62 1.009	36.83 1.450	127.00 5.000
19	S2454-19W-■ S	D38999/32 W 19N	28.95 1.140	38.10 1.500	127.00 5.000
21	S2454-21W-■ S	D38999/32 W 21N	31.97 1.259	41.91 1.650	127.00 5.000
23	S2454-23W-■ S	D38999/32 W 23N	34.03 1.340	44.45 1.750	127.00 5.000
25	S2454-25W-■ S	D38999/32 W 25N	38.32 1.509	48.26 1.900	127.00 5.000

* For MIL-C P/N : W : Olive green

MIL-DTL-38999K Serie III

8D - D38999 Inox / *Stainless steel*

Références connecteurs / *Connector part numbers*

Racine / *Basic series* :	**8D**	**0**	**-**	**11**	**K**	**35**	**P**	**N**	******

Type de boîtier / *Shell style* :
0 Embase à collerette carrée / *Square flange receptacle*
7 Embase à fixation par écrou / *Jam nut receptacle*
5 Fiche avec bracelet de blindage / *Plug with RFI shielding.*

Indice / *Type* :
- : Connecteurs avec contact à sertir
Connectors with standard crimp contacts.
L : Embase avec picot long (male ou femelle #22)
Receptacle with long spill (male and female size 22D).
C : Embase avec picot court (male et femelle #22D, #20, # 16)
Receptacle with short spill (male and female #22D, #20, #16).
S : Embase avec picot spécifique (male et femelle #22D)
Receptacle with specific spill (male et female #22D)
W : Embase avec contacts male #22D pour connections enroulées (3 enroulements)
Receptacle with male contacts #22D for wire wrap (3 wraps)
T : Embase avec contacts males #20 pour connections enroulées (2 enroulements)
Receptacle with male contacts #20 for wire wrap (2 wraps)

Taille du boîtier / *Shell size* : 09 – 11 – 13 – 15 – 17 – 19 – 21 – 23 - 25

Protection / *Plating* :
K : Passivée/*passivated* **S** : Nickelée/*nickel*

Arrangement /*contact layout* : Voir page 10 à 13 / *see page10 to 13*

Type de contact / *contact type* :
P : Male **A** : Connecteur livré sans contact mâle ou avec contact spécifiques (Marquage connecteur : A+ positionnement)
Pin *Connector supplied less pin contact or with specific contacts (Connector marking : A+ orientation)*
S : Femelle **B** : Connecteur livré sans contact femelle ou avec contacts spécifiques (Marquage connecteur : B+ positionnement)
Socket *Connector supplied less socket contact or with specific contacts (Connector marking : B+ orientation)*

Positionnement / *Orientation* : N, A, B, C, D & E (Voir page 60 / *see page 60*)

Spécification :
046 : picots étamés/*tinned straight spills*
251 : Connecteur fournit avec contacts de puissance (arrangements avec contacts # 8)
Connector provided with power contacts (layouts with contacts #8)
022 : Résistant aux caburants /*Fuel tank*
326 : Étanchéité renforcée pour environnement sévère (voir page 85)
Reinforced sealing for harsh environment (see page 85)
L : Pour type de contact P ou S uniquement, connecteurs livrés sans contacts, marquage connecteurs P ou S plus positionnement.
For P or S contact type only, connectors delivered without contacts, connectors marking P or S plus orientation.

Références MIL-DTL 38999 / MIL-DTL 38999 *part numbers**

Racine / *Basic series* :	**D38999**	**20**	**K**	**J**	**35**	**P**	**N**

Type de boîtier / *Shell style* :
20 Embase à collerette carrée / *Square flange receptacle*
24 Embase à fixation par écrou / *Jam nut receptacle*
26 Fiche avec bracelet de blindage / *Plug with RFI shielding*

Protection / *Plating* :
K : Passivée/*passivated* **S** : Nickelée/*nickel*

Taille du boîtier / *Shell size* : A – B – C – D – E – F –G –H – J

Arrangement /*contact layout* : (Voir page 10 à 13 / *see page 10 to 13*)

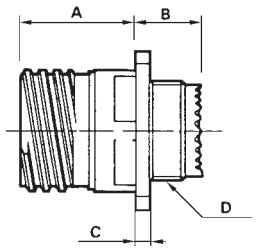
Type de contact / *contact type* :
P : Male **A** : Connecteur livré sans contact mâle ou avec contacts spécifiques (Marquage connecteur : A+ positionnement)
Pin. *Connector supplied less pin contact or with specific contacts (Connector marking : A+ orientation)*
S : Femelle **B** : Connecteur livré sans contact femelle ou avec contacts spécifiques (Marquage connecteur : B+ positionnement)
Socket. *Connector supplied less socket contact or with specific contacts (Connector marking : B+ orientation)*

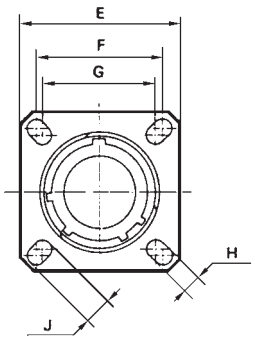
Positionnement / *Orientation* : N, A, B, C, D & E (Voir page 60 / *see page 60*)

** Nota : Pour passer une commande de connecteurs MIL livrés sans contacts démontables à sertir MIL et conserver le marquage P ou S plus positionnement, il faut le spécifier clairement sur la commande (en ajoutant un suffixe L à la fin de la référence ou précisé en commentaire).*
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).

Encombrement / *Dimensions*

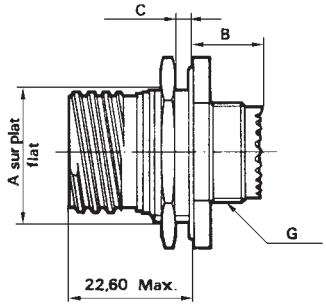
Embase type 0 / *Receptacle type 0*

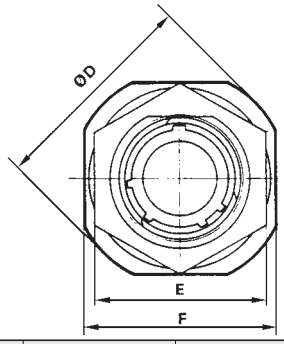




Taille de Boitier / Shell size	A Max	B Max	C Max	D Filetage/ *thread*	E ± 0.30	F	G	H ± 0.20	J ± 0.20
09 (A)	20.90	10.60	2.50	M12 x 1-6g	23.80	18.26	15.09	3.25	5.49
11 (B)	20.90	10.60	2.50	M15 x 1-6g	26.20	20.62	18.26	3.25	4.93
13 (C)	20.90	10.60	2.50	M18 x 1-6g	28.60	23.01	20.62	3.25	4.93
15 (D)	20.90	10.60	2.50	M22 x 1-6g	31.00	24.61	23.01	3.25	4.93
17 (E)	20.90	10.60	2.50	M25 x 1-6g	33.30	26.97	24.61	3.25	4.93
19 (F)	20.90	10.60	2.50	M28 x 1-6g	36.50	29.36	26.97	3.25	4.93
21 (G)	20.10	11.40	3.20	M31 x 1-6g	39.70	31.75	29.36	3.25	4.93
23 (H)	20.10	11.40	3.20	M34 x 1-6g	42.90	34.93	31.75	3.91	6.15
25 (I)	20.10	11.40	3.20	M37 x 1-6g	46.00	38.10	34.93	3.91	6.15

Embase type 7 / *Receptacle type 7*





Taille de Boitier / Shell size	A +0.10 -0.15	B Max	C Max	D Max	E Max	F ± 0.4	G Filetage/ *thread*
09 (A)	16.53	9.90	3.20	30.50	23.00	27.00	M12 x 1-6g
11 (B)	19.07	9.90	3.20	35.20	26.00	31.8	M15 x 1-6g
13 (C)	23.82	9.90	3.20	38.40	31.00	34.90	M18 x 1-6g
15 (D)	26.97	9.90	3.20	41.60	34.00	38.10	M22 x 1-6g
17 (E)	30.15	9.90	3.20	44.80	37.00	41.30	M25 x 1-6g
19 (F)	33.32	9.90	3.20	49.50	41.00	46.00	M28 x 1-6g
21 (G)	36.50	9.90	3.20	52.70	46.00	49.20	M31 x 1-6g
23 (H)	39.67	9.90	3.20	55.90	47.00	52.40	M34 x 1-6g
25 (I)	42.85	9.90	3.20	59.00	52.00	55.60	M37 x 1-6g

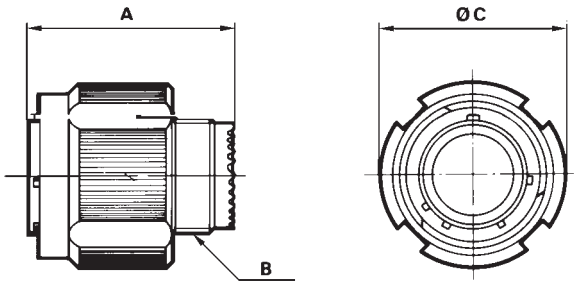
(Dimensions en millimètres / Dimensions in millimeters)

8D - D38999 Inox / *Stainless steel*

Couple de serrage maximum de l'écrou de panneau pour embase à fixation par écrou (type 7) / *Maximum coupling torque on panel for jam nut receptacle* (type 7)

Boîtier *Shell*	09 (A)	11 (B)	13 (C)	15 (D)	17 (E)	19 (F)	21 (G)	23 (H)	25 (J)
Couple de serrage / *Coupling Torque*	6	8	10	13	20	23	25	26	28

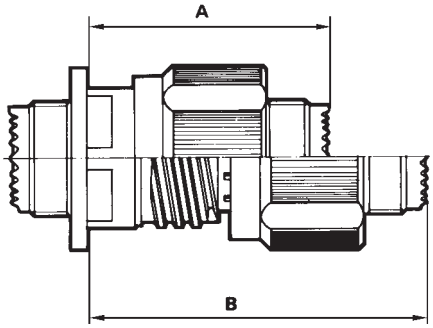
Fiche type 5 / *plug type 5*



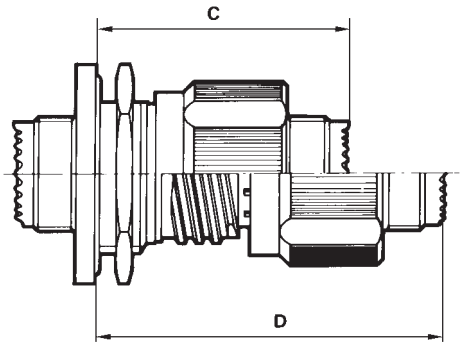
Taille de boîtier / *Shell size*	A Max	B Filetage/ *thread*	C Max
09 (A)	31.00	M12 x 1-6g	21.80
11 (B)	31.00	M15 x 1-6g	25.00
13 (C)	31.00	M18 x 1-6g	29.40
15 (D)	31.00	M22 x 1-6g	32.50
17 (E)	31.00	M25 x 1-6g	35.70
19 (F)	31.00	M28 x 1-6g	38.50
21 (G)	31.00	M31 x 1-6g	41.70
23 (H)	31.00	M34 x 1-6g	44.90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

Encombrement connecteurs accouplés/ *Mated connectors dimensions*

Type 0 avec fiche / *type 0 with plug*



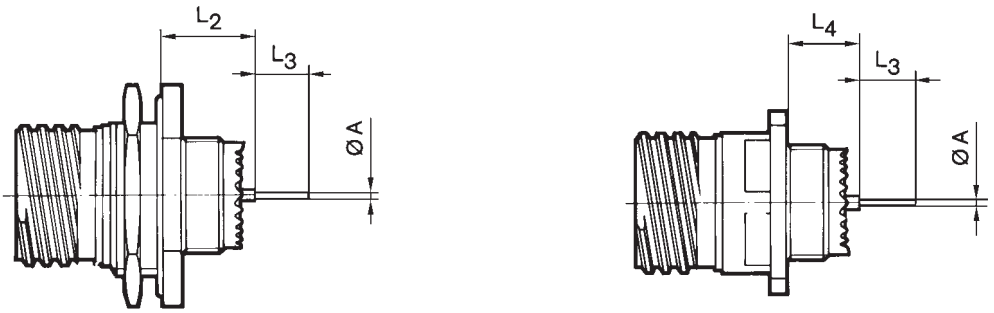
Type 7 avec fiche / *type 7 with plug*



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

8D - D38999 Inox / *Stainless steel*

Embase avec contact à picot droit / *Receptacle with straight spill contacts*



Taille de boîtier / *Shell size*					09 (A)	11 (B)	13 (C)	15 (D)	17 (E)	19 (F)	21 (G)	23 (H)	25 (J)
		Taille de contact *Contact size*	Type de contact *Contact type*	Type de picot *Spill 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				
L2	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	10.69		10.51						
	Max.	# 22D	M	S	11.63		11.45						
	Min.	# 22D	F	S	10.36		10.18						
	Max.	# 22D	F	S	11.63		11.45						
	Min.	# 20	M	C	10.69		10.51						
	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						
L3		# 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					5.10				
L4	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				9.65				9.76	
	Max.	# 16	M	C				10.75				10.86	
	Min.	# 16	F	C				9.65				9.76	
	Max.	# 16	F	C				10.75				10.86	

M : contact mâle/ *male contact* F : contact femelle/ *female contact* L : Picot long / *long spill* C: Picot court / *short spill* S: Picot spécifique / *specific spill*
(Dimensions en millimètres / Dimensions in millimeters)

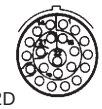
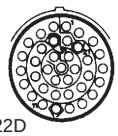
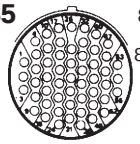
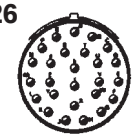
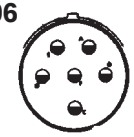
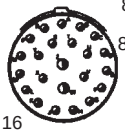
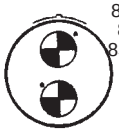
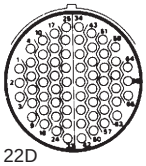
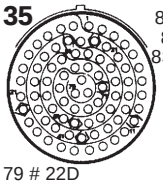
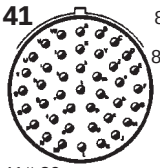
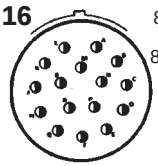
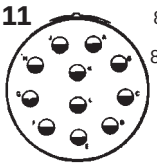
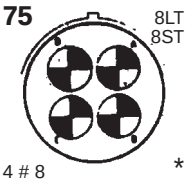
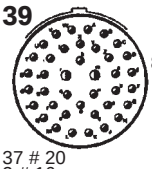
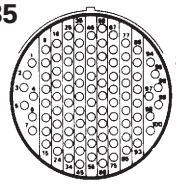
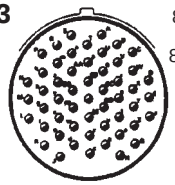
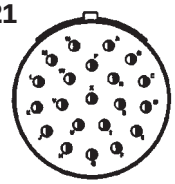
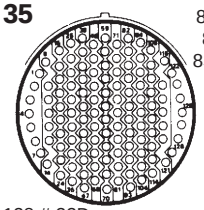
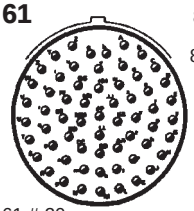
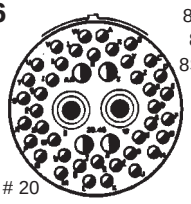
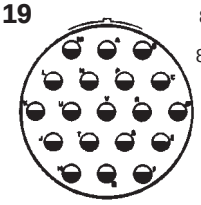
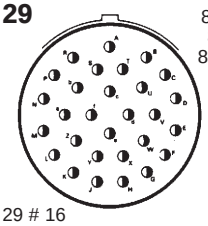
Masse des connecteurs – *Connectors weight*

	Avec contacts / *With contacts*						Sans contact / *Without contact*					
	Fiche *Plug* (type 5)		Embase *Receptacle* (type 0)		Embase *Receptacle* (type 7)		Fiche *Plug* (type 5)		Embase *Receptacle* (type 0)		Embase *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

Masse en gramme / *Weight in gram*

8LT-8D-8ST-8T

Contact layouts for 8LT-8D-8ST-8T - viewed from front face of male insulator

shell size 8LT-8D	shell size 8ST-8T						
09	08	**35** 6 # 22D — 8LT 8D 8ST 8T 	**98** 3 # 20 — 8LT 8D 8ST 				
11	10	**35** 13 # 22D — 8LT 8D 8ST 8T 	**98** 6 # 20 — 8LT 8D 8ST 	**01** 1 # 12 — 8LT 8D 8ST 	**05** 5 # 20 * — 8LT 8D 8ST 	**04** 4 # 20 — 8LT 8D 8ST 	
13	12	**35** 22 # 22D — 8LT 8D 8ST 8T 	**98** 10 # 20 — 8LT 8D 8ST 	**08** 8 # 20 — 8LT 8D 8ST 	**26** 2 # 12 6 # 22D * — 8D 	**04** 4 # 16 — 8D 8ST 8LT 	
15	14	**35** 37 # 22D — 8LT 8D 8ST 8T 	**19** 19 # 20 — 8LT 8D 8ST 	**05** 5 # 16 — 8LT 8D 8ST 	**97** 8 # 20 4 # 16 — 8LT 8D 8ST 	**18** 18 # 20 * — 8LT 8D 8ST 8T 	
17	16	**35** 55 # 22D — 8LT 8D 8ST 8T 	**26** 26 # 20 — 8LT 8D 8ST 	**06** 6 # 12 — 8LT 8D 8ST 8T 	**08** 8 # 16 — 8LT 8D 8ST 8T 	**99** 2 # 16 21 # 20 — 8LT 8D 8ST 8T 	**75** 2 # 8 * — 8LT 8D 8ST 
19	18	**35** 66 # 22D — 8LT 8D 8ST 8T 	**32** 32 # 20 — 8LT 8D 8ST 	**11** 11 # 16 — 8LT 8D 8ST 			
21	20	**35** 79 # 22D — 8LT 8D 8ST 8T 	**41** 41# 20 — 8LT 8D 8ST 8T 	**16** 16 # 16 — 8LT 8D 8ST 8T 	**11** 11 # 12 — 8LT 8D 8ST 8T 	**75** 4 # 8 * — 8LT 8ST 	**39** 37 # 20 2 # 16 — 8LT 8D 8ST 
23	22	**35** 100 # 22D — 8LT 8D 8ST 8T 	**53** 53 # 20 — 8LT 8D 8ST 	**21** 21 # 16 — 8LT 8D 8ST 			
25	24	**35** 128 # 22D — 8LT 8D 8ST 8T 	**61** 61 # 20 — 8LT 8D 8ST 8T 	**46** 40 # 20 4 # 16 - 2 # 8 * — 8LT 8D 8ST 	**19** 19 # 12 — 8LT 8D 8ST 		
25	24	**29** 29 # 16 — 8LT 8D 8ST 8T 	**43** 23 # 20 20 # 16 — 8LT 8D 8ST	**24** 12 # 16 12 # 12 — 8LT 8D 8ST 8T	**08** 8 # 8 triaxial * — 8D	**04** 48 # 20 8 # 16 — 8D	

size 22 contacts
size 20 contacts
size 16 contacts
size 12 contacts
size 8 triaxial contacts
size 8 coaxial contacts
* not QPL approved to date
• *contact layouts available with receptacle type 2*

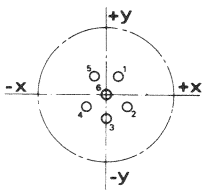
Please consult us for the composite version

Schémas d'implantation pour circuits imprimés
Co-ordinates for straight spill terminations

Repères des contacts – Vue face avant isolant mâle
Cavity identification – Viewed from front face of male insulator

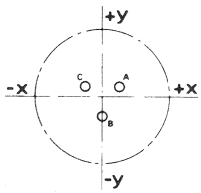
Ø des trous de perçages 1 mm mini. (contacts # 22 et 20) et 1,3 mm mini. (contact # 16) coordonnées en mm.
Hole sizes: 1 mm min. (#22 and 20 contacts) and 1,3 mm min. (# 16 contact) coordinates in mm.

9-35



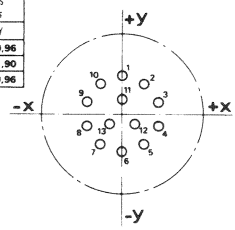
Contact Contact	Coordonnees Coordinates X	Y
1	+ 1,14	+ 1,98
2	+ 1,98	- 1,14
3	0,00	- 2,28
4	- 1,98	- 1,14
5	- 1,14	+ 1,98
6	0,00	0,00

9-98



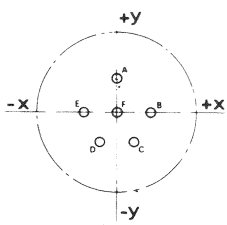
Contact Contact	Coordonnees Coordinates X	Y
A	+ 1,65	+ 0,96
B	0,00	- 1,90
C	- 1,65	+ 0,96

11-35



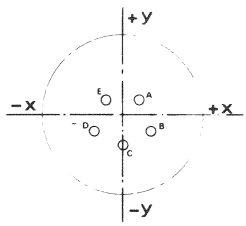
Contact Contact	Coordonnees Coordinates X	Y	Contact Contact	Coordonnees Coordinates X	Y
1	0,00	+ 3,71	8	- 3,50	- 1,14
2	+ 2,16	+ 2,99	9	- 3,50	+ 1,14
3	+ 3,50	+ 1,14	10	- 2,16	+ 2,99
4	+ 3,50	- 1,14	11	0,00	+ 1,42
5	+ 2,16	- 2,99	12	+ 1,24	- 0,89
6	0,00	- 3,71	13	- 1,24	- 0,89
7	- 2,16	- 2,99			

11-98



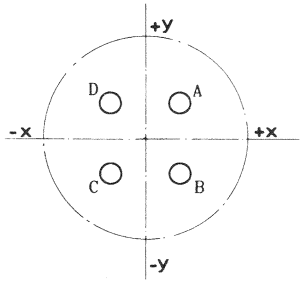
Contact Contact	Coordonnees Coordinates X	Y
A	0,00	+ 3,30
B	+ 3,30	0,00
C	- 1,65	- 2,87
D	- 1,65	- 2,87
E	- 3,30	0,00
F	0,00	0,00

11-05



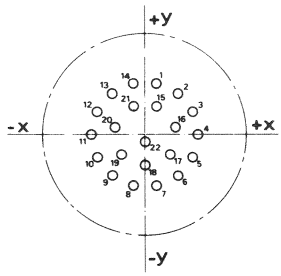
Contact Contact	Coordonnees Coordinates X	Y
A	+1,65	+1,42
B	+2,86	-1,65
C	0,00	-3,30
D	-2,86	-1,65
E	-1,65	+1,42

11-04



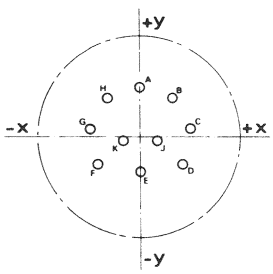
Contact Contact	Coordonnées Coordinates X	Y
A	+ 1,65	+ 1,65
B	+ 1,65	- 1,65
C	- 1,65	- 1,65
D	- 1,65	+ 1,65

13-35



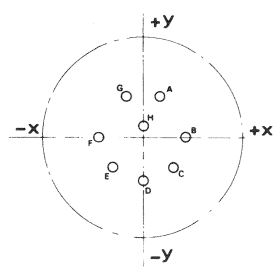
Contact Contact	Coordonnees Coordinates X	Y	Contact Contact	Coordonnees Coordinates X	Y
1	+ 1,14	+ 5,00	12	- 4,62	+ 2,23
2	+ 3,20	+ 4,01	13	- 3,20	+ 4,01
3	+ 4,62	+ 2,23	14	- 1,14	+ 5,00
4	+ 5,15	0,00	15	+ 1,14	+ 2,72
5	+ 4,62	- 2,23	16	+ 2,97	+ 0,66
6	+ 3,20	- 4,01	17	+ 2,36	- 1,91
7	+ 1,14	- 5,00	18	0,00	- 3,05
8	- 1,14	- 5,00	19	- 2,36	- 1,91
9	- 3,20	- 4,01	20	- 2,97	- 0,66
10	- 4,62	- 2,23	21	- 1,14	+ 2,72
11	- 5,15	0,00	22	0,00	- 0,76

13-98



Contact Contact	Coordonnees Coordinates X	Y
A	0,00	+ 4,95
B	+ 3,17	+ 3,80
C	+ 4,90	+ 0,76
D	+ 4,16	- 2,67
E	0,00	- 3,43
F	- 4,16	- 2,67
G	- 4,90	+ 0,76
H	- 3,17	+ 3,80
J	+ 1,65	- 0,38
K	- 1,65	- 0,38

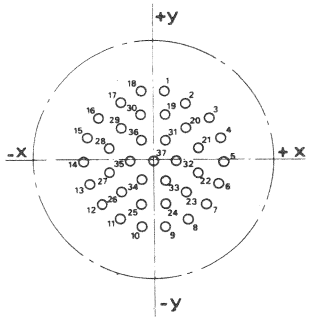
13-08



Contact Contact	Coordonnées Coordinates 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

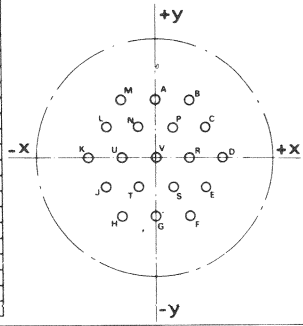
SOURIAU
8 D aluminum & composite

15-35



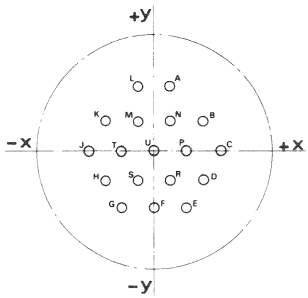
Contact Contact	Coordonnees Coordinates X	Y	Contact Contact	Coordonnees Coordinates X	Y
1	+ 1,14	+ 6,65	20	+ 3,12	+ 3,02
2	+ 3,12	+ 5,51	21	+ 4,32	+ 1,02
3	+ 5,36	+ 4,06	22	+ 4,32	- 1,27
4	+ 6,45	+ 2,03	23	+ 3,12	- 3,23
5	+ 6,76	- 0,25	24	+ 1,14	- 4,37
6	+ 6,27	- 2,49	25	- 1,14	- 4,37
7	+ 5,08	- 4,44	26	- 3,12	- 3,23
8	+ 3,30	- 5,89	27	- 4,32	- 1,27
9	+ 1,14	- 6,65	28	- 4,32	+ 1,02
10	- 1,14	- 6,65	29	- 3,12	+ 3,02
11	- 3,30	- 5,89	30	- 1,14	+ 4,37
12	- 5,08	- 4,44	31	+ 1,14	+ 1,88
13	- 6,27	- 2,49	32	+ 2,29	- 0,10
14	- 6,76	- 0,25	33	+ 1,14	- 2,08
15	- 6,45	+ 2,03	34	- 1,14	- 2,08
16	- 5,36	+ 4,06	35	- 2,29	- 0,10
17	- 3,12	+ 5,51	36	- 1,14	+ 1,88
18	- 1,14	+ 6,65	37	0,00	- 0,10
19	+ 1,14	+ 4,37			

15-19



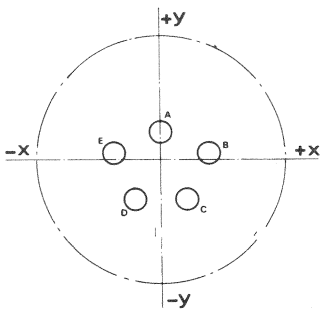
Contact Contact	Coordonnees Coordinates X	Y	Contact Contact	Coordonnees Coordinates X	Y
A	0,00	+ 5,71	L	- 4,95	+ 2,87
B	+ 3,30	+ 5,71	M	- 3,30	+ 5,71
C	+ 4,95	+ 2,87	N	- 1,65	+ 2,87
D	+ 6,60	0,00	P	+ 1,65	+ 2,87
E	+ 4,95	- 2,87	R	+ 3,30	0,00
F	+ 3,30	- 5,71	S	+ 1,65	- 2,87
G	0,00	- 5,71	T	- 1,65	- 2,87
H	- 3,30	- 5,71	U	- 3,30	0,00
J	- 4,95	- 2,87	V	0,00	0,00
K	- 6,60	0,00			

15-18



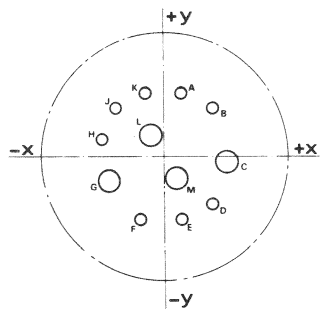
Contact Contact	Coordonnées Coordinates X	Y
A	+1,65	+6,40
B	+4,95	+2,87
C	+6,60	0,00
D	+4,95	−2,87
E	+3,30	−5,72
F	0,00	−5,72
G	−3,30	−5,72
H	−4,95	−2,87
J	−6,30	0,00
K	−4,95	+2,87
L	−1,65	+6,40
M	−1,65	+2,87
N	+1,65	+2,87
P	+3,30	0,00
R	+1,65	−2,87
S	−1,65	−2,87
T	−3,30	0,00
U	0,00	0,00

15-05



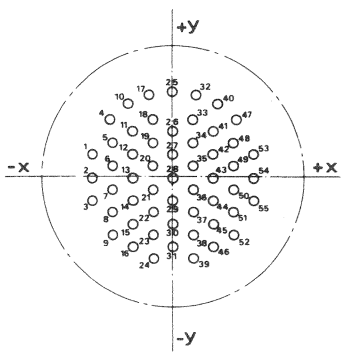
Contact Contact	Coordonnees Coordinates X	Y
A	0	+ 2,54
B	+ 4,42	+ 0,61
C	+ 2,39	+ 3,76
D	- 2,39	- 3,76
E	- 4,42	+ 0,61

15-97



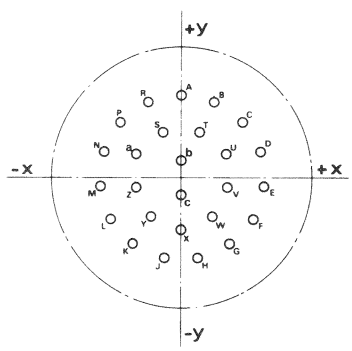
Contact Contact	Coordonnees Coordinates X	Y
A	+ 1,65	+ 5,94
B	+ 4,52	+ 4,52
C	+ 5,84	- 0,58
D	+ 4,52	- 4,52
E	+ 1,65	- 5,94
F	- 2,26	- 5,97
G	- 5,26	- 2,41
H	- 5,94	+ 1,65
J	- 4,52	+ 4,52
K	- 1,65	+ 5,94
L	- 1,19	+ 2,06
M	+ 1,19	- 2,06

17-35



Contact Contact	Coordonnees Coordinates X	Y	Contact Contact	Coordonnees Coordinates X	Y
1	- 7,92	+ 2,18	29	0,00	- 2,39
2	- 7,92	- 0,10	30	0,00	- 4,67
3	- 7,92	- 2,39	31	0,00	- 6,96
4	- 6,15	+ 5,61	32	+ 2,26	+ 8,03
5	- 5,94	+ 3,33	33	+ 1,98	+ 5,61
6	- 5,94	+ 1,04	34	+ 1,98	+ 3,33
7	- 5,94	+ 1,24	35	+ 1,98	+ 1,04
8	- 5,94	- 3,53	36	+ 1,98	- 1,24
9	- 5,94	- 5,82	37	+ 1,98	- 3,53
10	- 4,37	+ 7,09	38	+ 1,98	- 5,82
11	- 3,96	+ 4,47	39	+ 1,98	- 8,10
12	- 3,96	+ 2,18	40	+ 4,37	+ 7,09
13	- 3,96	- 0,10	41	+ 3,96	+ 4,47
14	- 3,96	- 2,39	42	+ 3,96	+ 2,18
15	- 3,96	- 4,67	43	+ 3,96	- 0,10
16	- 3,96	- 6,96	44	+ 3,96	- 2,39
17	- 2,26	+ 8,03	45	+ 3,96	- 4,67
18	- 1,98	+ 5,61	46	+ 3,96	- 6,96
19	- 1,98	+ 3,33	47	+ 6,15	+ 5,61
20	- 1,98	+ 1,04	48	+ 5,94	+ 3,33
21	- 1,98	- 1,24	49	+ 5,94	+ 1,04
22	- 1,98	- 3,53	50	+ 5,94	- 1,24
23	- 1,98	- 5,82	51	+ 5,94	- 3,53
24	- 1,98	+ 8,10	52	+ 5,94	- 5,82
25	0,00	+ 8,36	53	+ 7,92	+ 2,18
26	0,00	+ 4,47	54	+ 7,92	- 0,10
27	0,00	+ 2,18	55	+ 7,92	- 2,39
28	0,00	- 0,10			

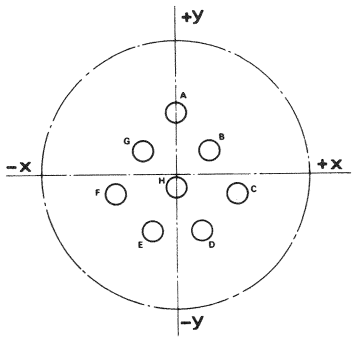
17-26



Contact Contact	Coordonnees Coordinates 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
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	+ 4,44	+ 2,39
V	+ 4,52	+ 0,91
W	+ 3,02	- 3,84
X	0,00	- 5,16
Y	- 3,02	- 3,84
Z	- 4,52	- 0,91
a	- 4,44	+ 2,39
b	0,00	+ 1,65
c	0,00	- 1,65

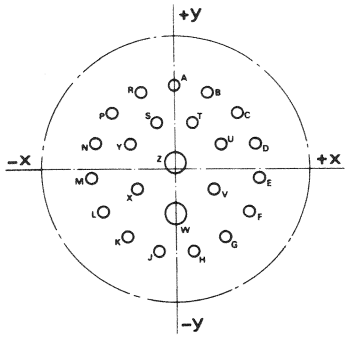
SOURIAU
8 D aluminum & composite

17-08



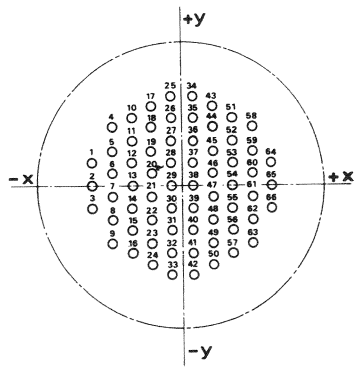
Contact Contact	Coordonnees Coordinates	
	X	Y
A	0,00	+ 5,99
B	+ 3,25	+ 2,18
C	+ 5,84	- 1,96
D	+ 2,39	- 5,49
E	- 2,39	- 5,49
F	- 5,84	- 1,96
G	- 3,25	+ 2,18
H	0,00	- 1,32

17-99



Contact Contact	Coordonnees Coordinates	
	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	+ 7,08	- 4,09
G	+ 4,80	- 6,60
H	+ 1,70	- 7,98
J	- 1,70	- 7,98
K	- 4,80	- 6,60
L	- 7,08	- 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	+ 3,81	- 1,91
W	0,00	- 4,09
X	- 3,81	- 1,91
Y	- 4,45	+ 2,39
Z	0,00	+ 0,84

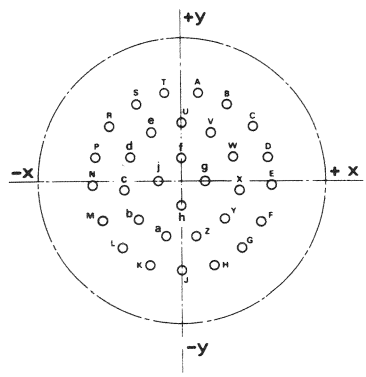
19-35



Contact Contact	Coordonnees Coordinates	
	X	Y
1	- 9,07	+ 2,29
2	- 9,07	0,00
3	- 9,07	- 2,29
4	- 7,09	+ 5,71
5	- 7,09	+ 3,43
6	- 7,09	+ 1,14
7	- 7,09	- 1,14
8	- 7,09	- 3,43
9	- 7,09	- 5,71
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
15	- 5,11	- 4,57
16	- 5,11	- 6,86
17	- 3,12	+ 8,00
18	+ 3,12	+ 5,71
19	- 3,12	+ 3,43
20	- 3,12	+ 1,14
21	- 3,12	- 1,14
22	- 3,12	- 3,43
23	- 3,12	- 5,71
24	- 3,12	- 8,00
25	- 1,14	+ 9,14
26	- 1,14	+ 6,86
27	- 1,14	+ 4,57
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

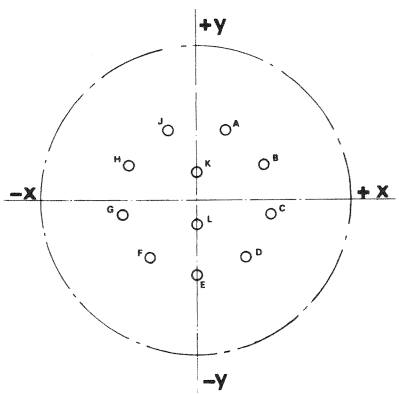
Contact Contact	Coordonnees Coordinates	
	X	Y
34	+ 1,14	+ 9,14
35	+ 1,14	+ 6,86
36	+ 1,14	+ 4,57
37	+ 1,14	+ 2,29
38	+ 1,14	0,00
39	+ 1,14	- 2,29
40	+ 1,14	- 4,57
41	+ 1,14	- 6,86
42	+ 1,14	- 9,14
43	+ 3,12	+ 8,00
44	+ 3,12	+ 5,71
45	+ 3,12	+ 3,43
46	+ 3,12	+ 1,14
47	+ 3,12	- 1,14
48	+ 3,12	- 3,43
49	+ 3,12	- 5,71
50	+ 3,12	- 8,00
51	+ 5,11	+ 6,86
52	+ 5,11	+ 4,57
53	+ 5,11	+ 2,29
54	+ 5,11	0,00
55	+ 5,11	- 2,29
56	+ 5,11	- 4,57
57	+ 5,11	- 6,86
58	+ 7,09	+ 5,71
59	+ 7,09	+ 3,43
60	+ 7,09	+ 1,14
61	+ 7,09	- 1,14
62	+ 7,09	- 3,43
63	+ 7,09	- 5,71
64	+ 9,07	+ 2,29
65	+ 9,07	0,00
66	+ 9,07	- 2,29

19-32



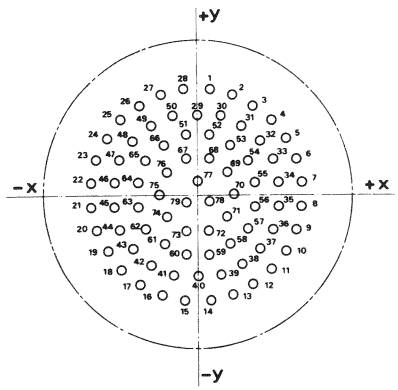
Contact Contact	Coordonnees Coordinates	
	X	Y
A	+ 1,68	+ 8,97
B	+ 4,80	+ 7,75
C	+ 7,26	+ 5,51
D	+ 8,76	+ 2,49
E	+ 9,07	- 0,84
F	+ 8,15	- 4,06
G	+ 6,15	- 6,73
H	+ 3,30	- 8,51
J	0,00	- 9,12
K	- 3,30	- 8,51
L	- 6,15	- 6,73
M	- 8,15	- 4,06
N	- 9,07	- 0,84
P	- 8,76	+ 2,49
R	- 7,26	+ 5,51
S	- 4,80	+ 7,75
T	- 1,68	+ 8,97
U	0,00	+ 8,84
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

19-11



Contact Contact	Coordonnées Cordinates	
	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

21-35



Contact Contact	Coordonnees Coordinates	
	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

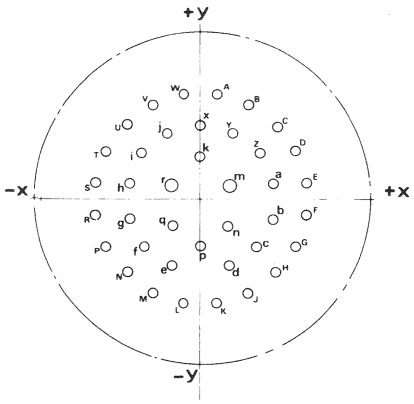
Contact Contact	Coordonnees Coordinates	
	X	Y
14	+ 1,35	- 10,82
15	- 1,35	- 10,82
16	- 3,71	- 10,26
17	- 5,89	- 9,19
18	- 7,77	- 7,67
19	- 9,27	- 5,77
20	- 10,31	- 3,58
21	- 10,85	- 1,22
22	- 10,85	+ 1,22
23	- 10,31	+ 3,58
24	- 9,27	+ 5,77
25	- 7,77	+ 7,67
26	- 5,89	+ 9,19

Contact Contact	Coordonnees Coordinates	
	X	Y
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
36	+ 7,90	- 3,58
37	+ 6,55	- 5,59
38	+ 4,67	- 7,11
39	+ 2,49	- 8,18

Contact Contact	Coordonnees Coordinates	
	X	Y
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	+ 5,06
54	+ 5,28	+ 3,53
55	+ 6,02	+ 1,22
56	+ 6,02	- 1,22
57	+ 5,28	- 3,53
58	+ 3,40	- 5,06
59	+ 1,22	- 6,12
60	- 1,22	- 6,12
61	- 3,40	- 5,06
62	- 5,28	- 3,53
63	- 6,02	- 1,22
64	- 6,02	+ 1,22
65	- 5,28	+ 3,53
66	- 3,40	+ 5,06
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

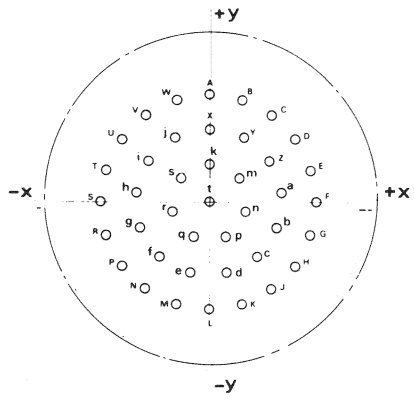
SOURIAU
8 D aluminum & composite

21-39



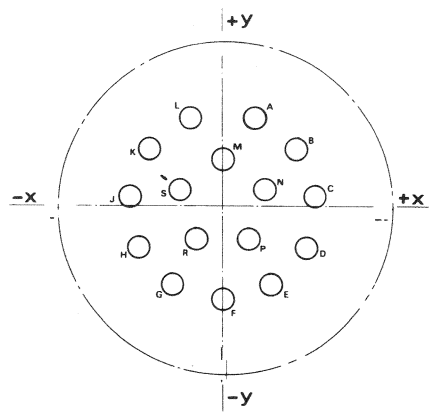
Contact Contact	Coordonnées Coordinates X	Y	Contact Contact	Coordonnées Coordinates X	Y
A	+1,65	+10,44	X	0,00	+7,49
B	+4,80	+9,42	Y	+3,20	+6,50
C	+7,47	+7,47	Z	+5,89	+4,55
D	+9,42	+4,80	a	+7,11	+1,45
E	+10,44	+1,65	b	+7,11	−1,88
F	+10,44	−1,65	c	+5,51	−4,80
G	+9,42	−4,80	d	+2,84	−6,73
H	+7,47	−7,47	e	−2,84	−6,73
J	+4,80	−9,42	f	−5,51	−4,80
K	+1,65	−10,44	g	−7,11	−1,88
L	−1,65	−10,44	h	−7,11	+1,45
M	−4,80	−9,42	i	−5,89	+4,55
N	−7,47	−7,47	j	−3,20	+6,50
P	−9,42	−4,80	k	0,00	+4,17
R	−10,44	−1,65	m	+2,90	+1,22
S	−10,44	+1,65	n	+2,69	−2,72
T	−9,42	+4,80	p	0,00	−4,80
U	−7,47	+7,47	q	−2,69	−2,72
V	−4,80	+9,42	r	−2,90	+1,22
W	−1,65	+10,44			

21-41



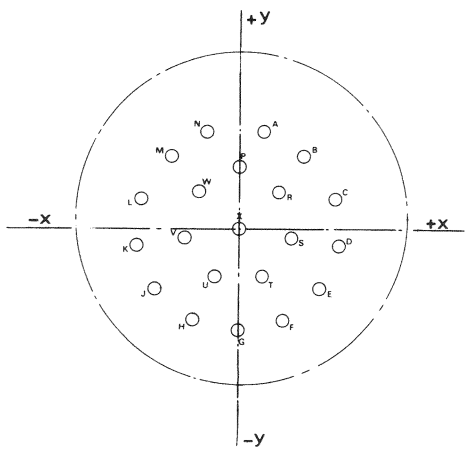
Contact Contact	Coordonnees Coordinates X	Y
A	0,00	+ 10,60
B	- 3,28	+ 10,09
C	- 6,23	+ 8,58
D	- 8,58	+ 6,23
E	- 10,09	+ 3,28
F	- 10,60	0,00
G	- 10,09	- 3,28
H	- 8,58	- 6,23
J	- 6,23	- 8,58
K	- 3,28	- 10,09
L	0,00	- 10,60
M	+ 3,28	- 10,09
N	+ 6,23	- 8,58
P	+ 8,58	- 6,23
R	+ 10,09	- 3,28
S	+ 10,60	0,00
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
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

21-16



Contact Contact	Coordonnees Coordinates X	Y	Contact Contact	Coordonnees Coordinates X	Y
A	+ 3,00	+ 8,18	J	- 8,66	+ 0,91
B	+ 6,88	+ 5,36	K	- 6,88	+ 5,36
C	+ 8,66	+ 0,91	L	- 3,00	+ 8,18
D	+ 7,82	- 3,81	M	0,00	+ 4,45
E	+ 4,82	- 7,37	N	+ 3,91	+ 1,57
F	0,00	- 8,71	P	+ 2,39	- 3,10
G	- 4,82	- 7,37	R	- 2,39	- 3,10
H	- 7,82	- 3,81	S	- 3,91	+ 1,57

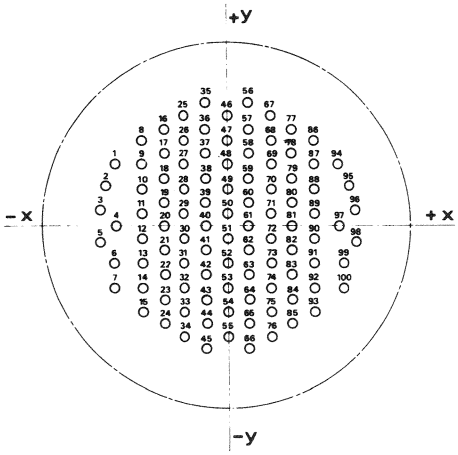
23-21



Contact Contact	Coordonnées Coordinates X	Y	Contact Contact	Coordonnées Coordinates X	Y
A	+3,25	+9,78	M	−7,34	+7,24
B	+7,34	+7,24	N	−3,25	+9,78
C	+9,80	+3,12	P	0,00	+6,22
D	+10,16	−1,65	R	+4,06	+3,71
E	+8,33	−6,07	S	+5,44	−0,89
F	+4,65	−9,19	T	+2,39	−4,93
G	0,00	−10,31	U	−2,39	−4,93
H	−4,65	−9,19	V	−5,44	−0,89
J	−8,33	−6,07	W	−4,06	+3,71
K	−10,16	−1,65	X	0,00	0,00
L	−9,80	+3,12			

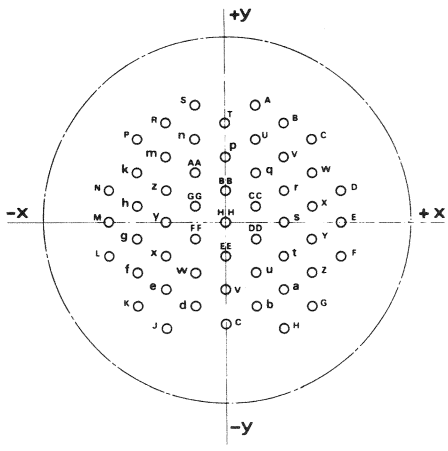
SOURIAU
8 D aluminum & composite

23-35



Contact Contact	Coordonnees Coordinates X	Y
1	- 10,87	+ 6,12
2	- 11,86	+ 3,91
3	- 12,40	+ 1,55
4	- 10,54	0,00
5	- 12,40	- 1,55
6	- 10,87	+ 3,61
7	- 10,87	- 6,02
8	- 8,43	+ 8,46
9	- 8,43	+ 6,05
10	- 8,43	+ 3,63
11	- 8,43	+ 1,22
12	- 8,43	- 1,19
13	- 8,43	- 3,61
14	- 8,43	- 6,02
15	- 8,43	- 8,43
16	- 6,32	+ 9,65
17	- 6,32	+ 7,24
18	- 6,32	+ 4,83
19	- 6,32	+ 2,41
20	- 6,32	0,00
21	- 6,32	- 2,41
22	- 6,32	- 4,83
23	- 6,32	- 7,24
24	- 6,32	- 9,65
25	- 4,22	+ 10,87
26	- 4,22	+ 8,46
27	- 4,22	+ 6,05
28	- 4,22	+ 3,63
29	- 4,22	+ 1,22
30	- 4,22	- 1,19
31	- 4,22	- 3,61
32	- 4,22	- 6,02
33	- 4,22	- 8,43
34	- 4,22	- 10,85
35	- 2,11	+ 12,06
36	- 2,11	+ 9,65
37	- 2,11	+ 7,24
38	- 2,11	+ 4,83
39	- 2,11	+ 2,41
40	- 2,11	0,00
41	- 2,11	- 2,41
42	- 2,11	- 4,83
43	- 2,11	- 7,24
44	- 2,11	- 9,65
45	- 2,11	- 12,06
46	0,00	+ 10,87
47	0,00	+ 8,46
48	0,00	+ 6,05
49	0,00	+ 3,63
50	0,00	+ 1,22
51	0,00	- 1,19
52	0,00	- 3,61
53	0,00	- 6,02
54	0,00	- 8,43
55	0,00	- 10,85
56	+ 2,11	+ 12,06
57	+ 2,11	+ 9,65
58	+ 2,11	+ 7,24
59	+ 2,11	+ 4,83
60	+ 2,11	+ 2,41
61	+ 2,11	0,00
62	+ 2,11	- 2,41
63	+ 2,11	- 4,83
64	+ 2,11	- 7,24
65	+ 2,11	- 9,65
66	+ 2,11	- 12,06
67	+ 4,22	+ 10,87
68	+ 4,22	+ 8,46
69	+ 4,22	+ 6,05
70	+ 4,22	+ 3,63
71	+ 4,22	+ 1,22
72	+ 4,22	- 1,19
73	+ 4,22	- 3,61
74	+ 4,22	- 6,02
75	+ 4,22	- 8,43
76	+ 4,22	- 10,85
77	+ 6,32	+ 9,65
78	+ 6,32	+ 7,24
79	+ 6,32	+ 4,83
80	+ 6,32	+ 2,41
81	+ 6,32	0,00
82	+ 6,32	- 2,41
83	+ 6,32	- 4,83
84	+ 6,32	- 7,24
85	+ 6,32	- 9,65
86	+ 8,43	+ 8,46
87	+ 8,43	+ 6,05
88	+ 8,43	+ 3,63
89	+ 8,43	+ 1,22
90	+ 8,43	- 1,19
91	+ 8,43	- 3,61
92	+ 8,43	- 6,02
93	+ 8,43	- 8,43
94	+ 10,87	+ 6,12
95	+ 11,86	+ 3,91
96	+ 12,40	+ 1,55
97	+ 10,54	0,00
98	+ 12,40	- 1,55
99	+ 10,87	- 3,61
100	+ 10,87	- 6,02

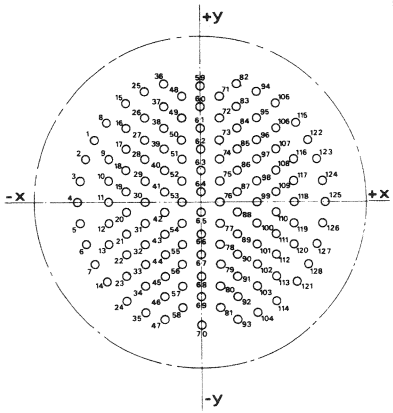
23-53



Contact Contact	Coordonnees Coordinates 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
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
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
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

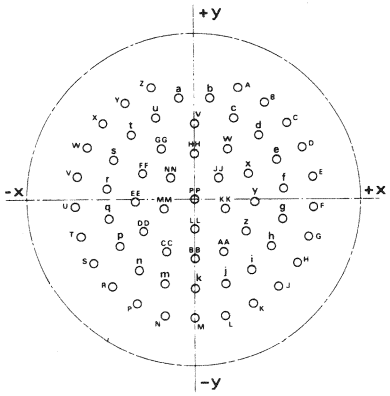
SOURIAU
8 D aluminum & composite

25-35



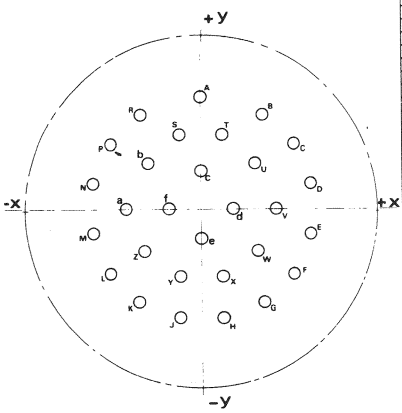
Contact Contact	Coordonnees Coordinates X	Y
1	- 12,17	+ 7,09
2	- 13,21	+ 4,83
3	- 13,87	+ 2,41
4	- 14,10	0,00
5	- 13,87	- 2,41
6	- 13,21	- 4,83
7	- 12,17	- 7,09
8	- 10,77	+ 9,07
9	- 10,54	+ 4,83
10	- 10,54	+ 2,41
11	- 10,54	0,00
12	- 10,54	- 2,41
13	- 10,54	- 4,83
14	- 10,77	- 9,07
15	- 8,43	+ 11,28
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
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
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	+ 7,24
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
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
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

25-61



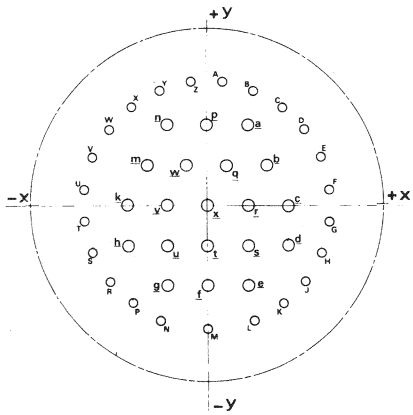
Contact Contact	Coordonnees Coordinates X	Y
A	- 4,98	-12,70
B	- 7,98	-11,05
C	- 10,49	- 8,71
D	- 12,32	- 5,84
E	- 13,39	- 2,57
F	- 13,61	- 0,76
G	- 12,98	- 4,17
H	- 11,53	- 7,29
J	- 9,35	9,93
K	- 6,58	-11,94
L	+ 3,40	-13,18
M	0,00	-13,64
N	- 3,40	-13,18
P	- 6,58	-11,94
R	- 9,35	- 9,93
S	- 11,53	- 7,29
T	- 12,98	- 4,17
U	- 13,61	- 0,76
V	- 13,39	+ 2,57
W	- 12,32	+ 5,84
X	- 10,49	+ 8,71
Y	- 7,98	+11,05
Z	- 4,98	+12,70
a	- 1,73	+11,53
b	+ 1,73	+11,53
c	+ 4,39	+ 9,22
d	+ 7,24	+ 7,19
e	+ 9,19	+ 4,45
f	+ 10,13	+ 1,17
g	+ 9,96	- 2,24
h	+ 8,66	- 5,41
i	+ 6,38	- 7,98
j	+ 3,38	- 9,63
k	0,00	10,21
m	- 3,38	- 9,63
n	- 6,38	- 7,98
p	- 8,66	- 5,41
q	- 9,96	- 2,24
r	- 10,13	+ 1,17
s	- 9,19	+ 4,45
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

25-29



Contact Contact	Coordonnées Coordinates 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
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	+8,10	−4,60
X	+2,31	−7,37
Y	−2,31	−7,37
Z	−8,10	−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

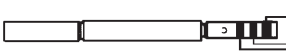
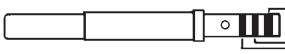
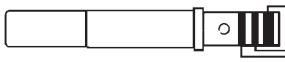
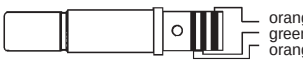
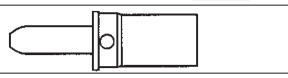
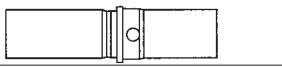
25-43



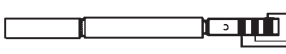
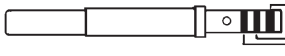
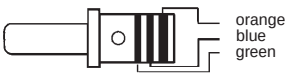
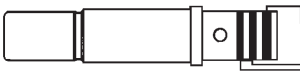
Contact Contact	Coordonnées Coordinates X	Y
A	+1,75	+13,49
B	+5,16	+12,57
C	+8,23	+10,80
D	+10,77	+8,28
E	+12,52	+5,21
F	+13,49	+1,75
G	+13,49	−1,75
H	+12,52	−5,21
J	+10,77	−8,28
K	+8,23	−10,80
L	+5,16	−12,57
M	0,00	−13,49
N	−5,16	−12,57
P	−8,23	−10,80
R	−10,77	−8,28
S	−12,52	−5,21
T	−13,49	−1,75
U	−13,49	+1,75
V	−12,52	+5,21
W	−10,77	+8,28
X	−8,23	+10,80
Y	−5,16	+12,57
Z	−1,75	+13,49
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

8LT-8D-8ST-8T

Standard contacts for 8LT-8D-8ST

		standard contacts	MIL - C contacts	
contact size	**contact type**	**part numbers without colour code**	**part numbers**	**profile and colour code**
# 22D	male	8599-0702	M39029/58.360	 orange blue black
	female	8599-0706	M39029/56.348	 orange yellow grey
# 20	male	8599-0703	M39029/58.363	 orange blue orange
	female	8599-0707	M39029/56.351	 orange green brown
# 16	male	8599-0704	M39029/58.364	 orange blue yellow
	female	8599-0708	M39029/56.352	 orange green red
# 12	male	8599-0705	M39029/58.365	 orange blue green
	female	8599-0709	M39029/56.353	 orange green orange
# 8	male	8599-7740	_	
	female	8599-7741	_	
	boot	8590-4571	_	

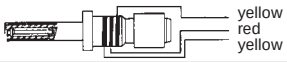
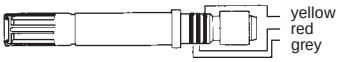
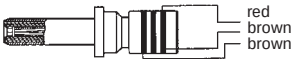
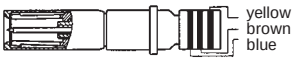
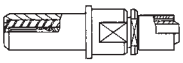
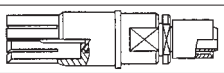
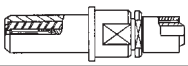
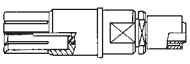
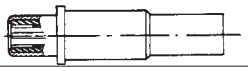
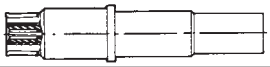
Standard contacts for 8T

		standard contacts	MIL - C contacts	
contact size	**contact type**	**part numbers without colour code**	**part numbers**	**profile and colour code**
# **22D**	male	8599-0702	M39029/58.360	 orange blue black
	female	8599-0710	M39029/57.354	 orange green yellow
# **20**	male	8599-0703	M39029/58.363	 orange blue orange
	female	8599-0711	M39029/57.357	 orange green purple
# **16**	male	8599-0704	M39029/58.364	 orange blue yellow
	female	8599-0712	M39029/57.358	 orange green grey
# **12**	male	8599-0705	M39029/58.365	 orange blue green
	female	8599-0713	M39029/57.359	 orange green white

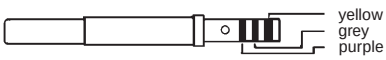
NOTES : (1) Boots for sealing to be ordered separatly

8LT-8D-8ST-8T

Coaxial and triaxial contacts for 8LT-8D-8ST

		standard contacts	MIL - C contacts	
contact size	**contact type**	**part numbers without colour code**	**part numbers**	**profile and colour code**
# 16 coaxial contact	male	8599-0916		 yellow red yellow
	female	8599-0920		 yellow red grey
# 12 coaxial contact	male	8599-0980 (2) (SN 1891K-0980) (2)	M39029/28.211 (2)	 red brown brown
	female	8599-0990 (2) (SN 1891K-0990) (2)	M39029/75.416 (2)	 yellow brown blue
# 8 coaxial contact	male	SN 1891K-0810	M39029/59.366	
	female	SN 1891K-0820	M39029/60.367	
	boot	8590-4571 (2)	–	
# 8 coaxial contact	male	SN 1891K-0811 (2)	–	
	female	SN 1891K-0821 (2)	–	
	boot	8977-343A (1) (2)	–	
# 8 triaxial contact	male	8599-0988	M39029/90.529	
	female	8599-0998	M39029/91.530	
	boot	8590-4571 (1)	–	

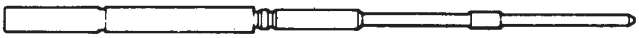
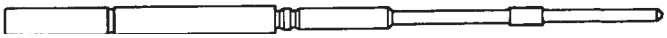
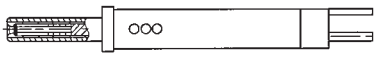
Thermocouple contacts for 8LT-8D-8ST

		standard contacts	MIL - C contacts	
contact size	**contact type**	**part numbers without colour code**	**part numbers**	**profile and colour code**
# 20 chromel	male	8599-0749 yellow dot	8599-0949	 yellow purple blue
	female	8599-0753 yellow dot	8599-0953	 yellow grey grey
# 20 alumel	male	8599-0761 black dot	8599-0961	 yellow purple green
	female	8599-0765 black dot	8599-0965	 yellow grey purple

NOTES : (1) Boots for sealing to be ordered separatly - (2) Please consult us.

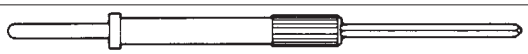
8LT-8D-8ST-8T

Straight spill contacts for 8LT - 8D

contact size	contact type	part number	profile
# 22D	male long spill	8599-0720	
	male short spill	8599-0730	
	male specific spill	8599-0796	
	female long spill	8599-0721	
	female short spill	8599-0731	
	female specific spill	8599-0797	
# 20	male short spill	8599-0724	
	female short spill	8599-0725	
# 16	male short spill	8599-0726	
	male short spill	8599-0727	
# 16 coaxial contact	male	SN1891K16-050M (2)	

(2) Please consult us.

Wire wrap for 8D

contact size	contact type	part number	profile
# 22D	male	8599-0790	
# 22D	male	8599-0791	

Dimensions - crimp contacts

contact size	contact type	contact ∅	conductor section AWG min	conductor section AWG Max.	conductor section mm min	conductor section mm Max.	external ∅ over insulation min	external ∅ over insulation Max.
# 22D	male/female	0.76	28	22	0.095	0.34	0.76	1.37
# 20	male/female	1	24	20	0.21	0.60	1.02	2.11
# 16	male/female	1.6	20	16	0.60	1.34	1.65	2.77
# 12	male/female	2.4	14	12	1.91	3.18	2.46	3.61
# 8	male/female	3.64	_	8	-	8.98	4.50	6.50
# 16 coaxial contact	male/female	1.6	RG 174 - RG 179 - RG 316				1.65	2.60
# 12 coaxial contact	male/female	2.4	RG 174 - RG 179 - RG 316				2.40	2.60
# 8 coaxial contact	male/female	5.5	RG 188A/U				_	2.80
# 8 (1) coaxial contact	male/female	5.5	NRFC - 50 - COAX 3 - SSQ 21 653				4.6	4.80
# 8 triaxial contact	male/female	5.5	MIL-C 17/176.00002 - FILECA F. 2703/14 RAYCHEM CHEMINAX 10612 - FILOTEX M 17/176.00002				3.15	3.40

Note : (1) SN1891K - 0811/0821 : please consult us.

straight spill contacts

contact size	contact type	contact Ø (mm)	spill Ø (mm)
# 22D	male long spill	0.76	0.70
	male short spill	0.76	0.70
	female long spill	0.76	0.70
	female short spill	0.76	0.70
	male specif spill	0.76	0.50
	female specif spill	0.76	0.50
# 20	male short spill	1	0.70
	female short spill	1	0.70
# 16	male short spill	1.6	1
	female short spill	1.6	1

wire wrap contact

contact size	contact type	contact ∅	(mm)
# **22D**	male	0.76	0.86
# **22**	male	1	0.86

8LT-8D-8ST-8T

Tooling for 8LT-8D-8ST-8T
crimping

contact size	wire size		type	part number plier M22520 / 1-01 (FCI Souriau 8365)		part number plier M22520 / 2-01 (FCI Souriau 8476-01)	
				part number turret		part number locator	
	mm²	AWG		NORME/SPEC	FCI Souriau	NORME/SPEC	FCI Souriau
22D	0.38 0.21 0.15 0.095	22 24 26 28	male	—	—	M22520/2-09	8476-09
			female	—	—	M22520/2-07	8476-07
20	0.60 0.38 0.21	20 22 24	male	M22520/1-04	8365-04	M22520/2-10	8476-10
			female	M22520/1-04	8365-04	M22520/2-10	8476-10
16	1.34 0.93 0.60	16 18 20	male	M22520/1-04	8365-04	—	—
			female	M22520/1-04	8365-04	—	—
12	3.18 1.91	12 14	male	M22520/1-04	8365-04	—	—
			female	M22520/1-04	8365-04	—	—
8	8.98	8	male		JAT M810G	—	JAT T810G
			female		JAT M810G	—	JAT T810G

Coaxial contact # 16

contact type	pliers	locators
inner contact	M22520/2.01	M22520/2.35
outer contact	M22520/4.01	M22520/4.02

Coaxial contact # 8
(SN 1891K-0810 and SN 1891K-0820)

contact type	pliers	locators	stripping tool
inner contact	M22520/2.01	SN 1891 K 101	SN 1891 K 102
outer contact	M22520/5.01	Y 248	SN 1891 K 102

Coaxial contact # 8
(SN 1891K-0811 and SN 1891K-0821)

contact type	pliers	locators	stripping tool
inner contact	M22520/2.01	SN 1891 K 101	(1)
outer contact	(1)	(1)	(1)

Coaxial contact # 12
(SN1891K-0980 and SN1891K-0990)

contact type	pliers	locators
outer contact (male and female)	M22520/5.01	8976-730
inner contact (male)	M22520/2.01	8976-720
inner contact (female)	M22520/2.01	8972-710

Triaxial contact # 8
(8599-0988 and 8599-0998)

contact type	pliers	locators
middle contact	M22520/2.01	M22520/2.37
inner contact	M22520/2.01	SN 1767 K 100
ferrule	M22520/5.01	Y631

(1) Please consult us.

8LT-8D-8ST-8T

Insertion and extraction of wired contacts for 8LT-8D-8ST-8T

contact size	part numbers		colour	
	SPEC	FCI Souriau	insert.	extract
# 22D	M81969/14-01	_	green	white
# **20**	M81969/14-10	_	red	white
# 16 standard & coaxial	M81969/14-03	_	blue	white
# 12 standard & coaxial	M81969/14-04	_	yellow	white
# 8	_	_	manual insertion	steel
# **8 coaxial & triaxial**	_	8660-197	manual insertion	steel

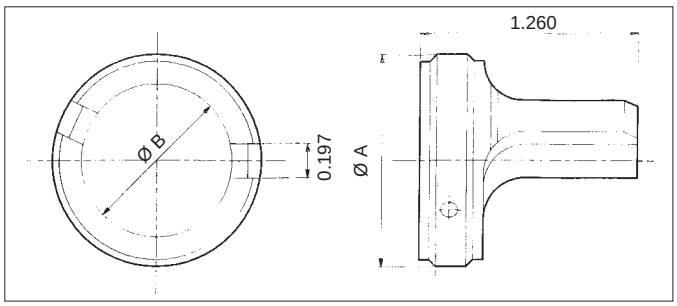
Filler plugs

contact size	part numbers		Colour
	SPEC	FCI Souriau	
# **22D**	MS27488-22	8660-212	black
# **20**	MS27488-20	8522-389A	red
# **16 standard & coaxial**	MS27488-16	8522-390A	blue
# **12 standard & coaxial**	MS27488-12	8522-391A	yellow

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

Dummy contact for cavity of triaxial and coaxial contacts # 8 : 8599-0308.

Coupling ring adaptor for 8T-8LT (SHTP)



basic series	**SN1097**	•• • **A**
size		
plating	-	olive green cadmium
	F -	nickel (for 8T only)
suffix		

part number		A Max	B
HE 308 (8LT)	HE 309 (8T)		
	SN1097-08-*A	28 1.102	19.70 0.776
SN1097-09 A	SN1097-10-*A	30.8 1.213	22.20 0.874
SN1097-11 A	SN1097-12-*A	35.1 1.382	26.60 1.047
SN1097-13 A	SN1097-14-*A	38.3 1.508	29.80 1.173
SN1097-15 A	SN1097-16-*A	41.5 1.634	32.90 1.295
SN1097-17 A	SN1097-18-*A	44.7 1.760	36.10 1.421
SN1097-19 A	SN1097-20-*A	47.5 1.870	39.30 1.547
SN1097-21 A	SN1097-22-*A	50.6 1.992	42.10 1.657
SN1097-23 A	SN1097-24-*A	53.8 2.118	45.10 1.776
SN1097-25 A		57.10 2.248	48.40 1.906

* Plating type

Reusable fixing plate

Two, three or four holes self-locking fixing plates are available at SHTP, see page 126.

38999 Bulkhead Feed-throughs

Contents

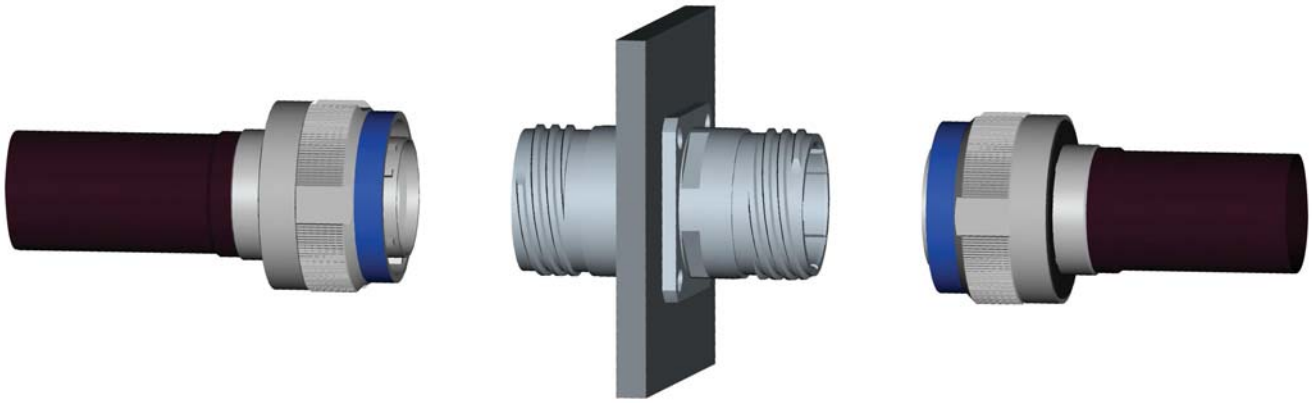
Standard reinforced sealing
38999 series III
Bulkhead Feed-throughs

38999 Bulkhead Feed-throughs

Product range presentation

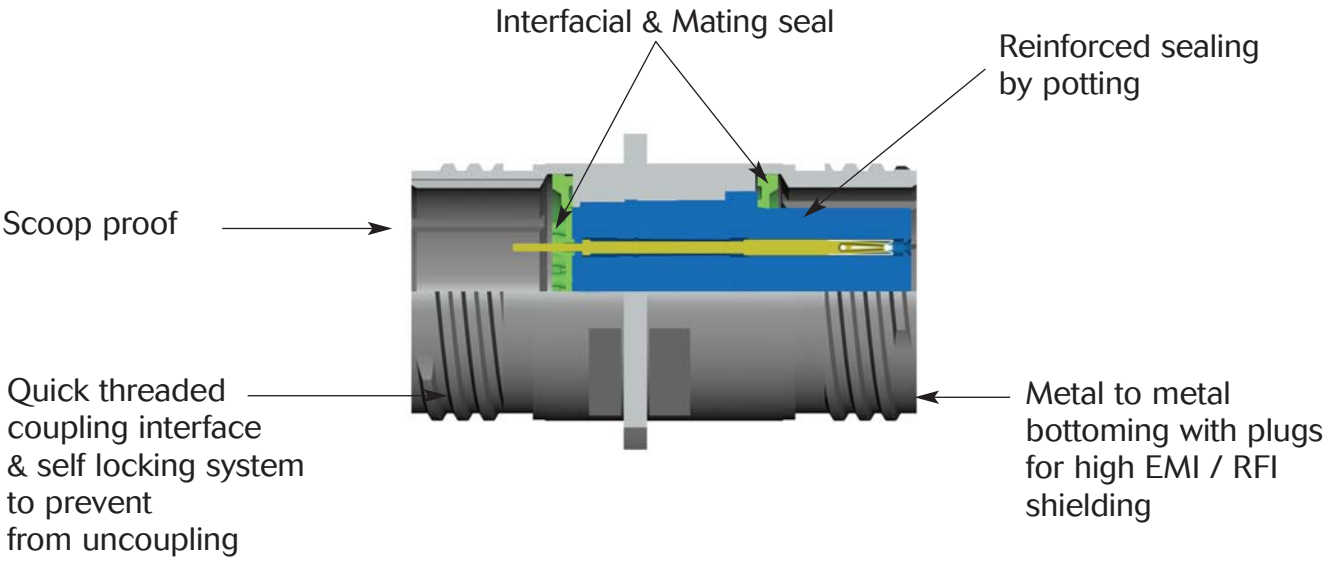
General characteristics

"Double Receptacle" mounted on panel allows cable plug connexion on both sides of the bulkhead:



- Male / female contacts Feed-through
- Standard 38999 sIII mating interface
- Standard 38999 sIII layouts: Contacts from #22 to #8
- Aluminium / Stainless steel / Titanium / Bronze shells
- Standard 38999 mounting interface (Square Flange, Jam Nut)

All 38999 sIII features integrated in Feed-through design

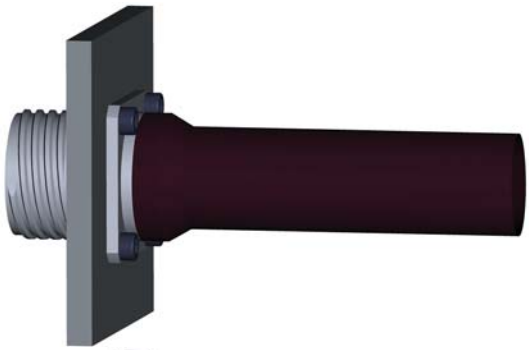


38999 Bulkhead Feed-throughs

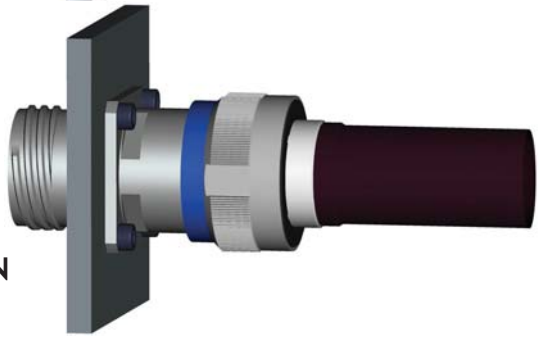
Features & Benefits

Easy integration

Standard Receptacle configuration:
- Receptacles and harness have to be mounted onboard the application
- Difficult operation when limited access area



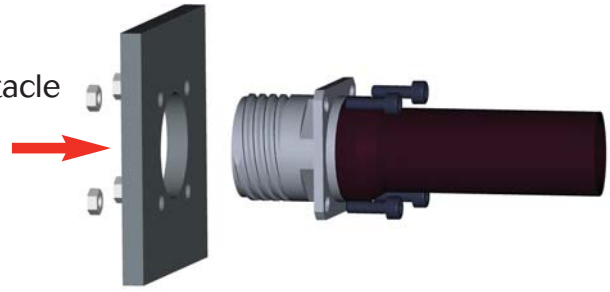
Feed-through premounted on Panel:
- Simply mate the cabled plugs
- No fixing operations onboard
- No associated controls onboard (Torque measurement)



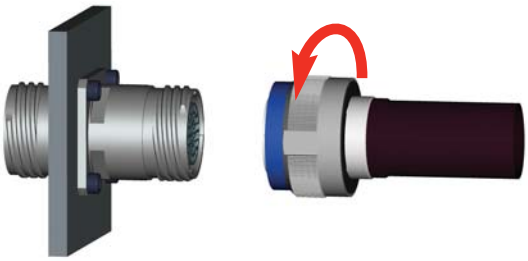
→ **LARGE TIME SAVING DURING INTEGRATION**

Easy and reliable maintenance

Receptacle and cable plug configuration:
- To dismount harnesses, need to remove receptacle from panel (4 screws or fixing nut)



Feed-through configuration:
- To dismount harnesses, only unmate cabled plug
- No mechanical operation on panel: Ensures structure mechanical integrity



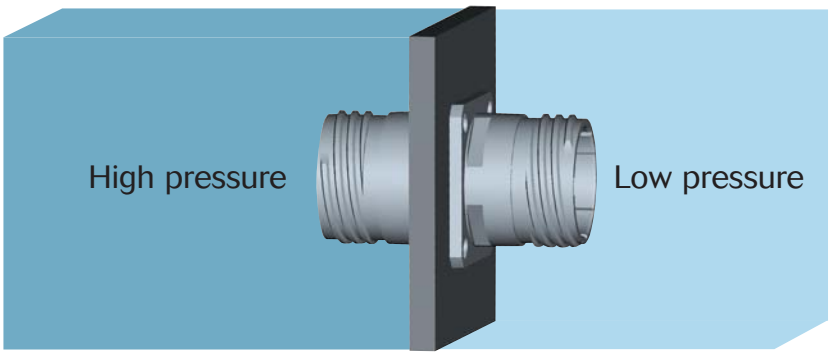
→ **TIME SAVING & LOW RISK DURING MAINTENANCE**

38999 Bulkhead Feed-throughs

Features & Benefits

Sealing barrier on panel

Souriau feed-throughs create a permanent sealed barrier on your panel:
- "Inside potting" ensures Feed-through sealing even when unmated
- Pressure difference up to 1 bar

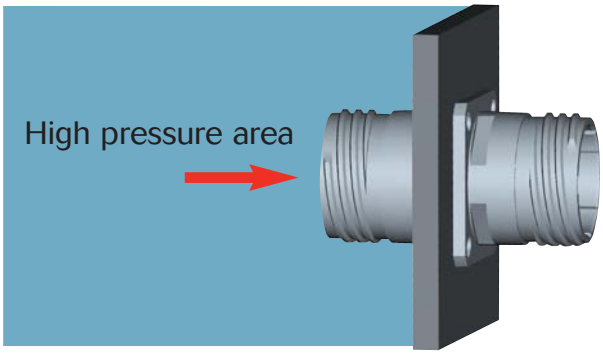


→ **SUITABLE FOR PRESSURIZED OR DEPRESSURIZED AREAS**

Reinforced sealing

Thanks to a special insulator design:
- Sealing increases with pressure

Sealing reaches hermeticity level of 10^{-6} atm x cm^3/s:
- 100 times higher than standard sealing at 10^{-4}



→ **A SMART ALTERNATIVE TO STAINLESS STEEL GLASS FUSED FEED-THROUGHS: WEIGHT SAVING**

Standard reinforced sealing

38999 Bulkhead Feed-throughs

Description

Main performances

- 38999 Series electric performances
- Vibration: 60 G sine
  44 G random
- Temperature range: -65 to +200°C
- Standard reinforced sealing:
  $< 10^{-6}$ atm x cm^3 / s
- High corrosion resistance on demand

Technical features

Mechanical

- Shell: Aluminum alloy
  Stainless steel
  Titanium
  Marine bronze
- Shell plating: Nickel
  Olive drab cadmium
  Green zinc colbalt
  Black zinc nickel
- Insulator: Thermoplastic or thermoset
- Grommet and interfacial seal: Silicone elastomer
- Contacts: Copper alloy
- Contacts plating: Gold over nickel plated
- Endurance: 500 mating/unmating operations
- Shock: High impact as per MIL-S901,
  300 G, 3 ms
  according EN 2591-D2 method A
- Vibration:
  Sine: 10 to 2000 Hz, 3x12 hrs
  (60 G, 140 - 2000 Hz)
  with temperature cycling
  Random: 50 to 2000 Hz, 2x8 h
  1 G^2/Hz, 100 - 2000 Hz) at T° max.
  25 to 2000 Hz, 2x8 h
  (5 G^2/Hz, 100 - 300 Hz) at ambiant T°
  Test with accessories in acc with
  EN 2591-D3

Resistance to fluids

To MIL-DTL-38999 standard:

- Gazoline: JP5 (OTAN F44)
- Mineral hydraulic fluid: MIL-H-5606 (OTAN H515)
- Synthetic hydraulic fluid: Skydrol 500 B4

LD4 (SAE AS 1241)

- Mineral lubrificating: MIL-L-7870A (OTAN 0142)
- Synthetic lubrificating: 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

Electrical

- Test Voltage rating (Vrms)

Service	Sea level	At 21 000 m
M	1 300 V	800 V
N	1 000 V	600 V
I	1 800 V	1 000 V
II	2 300 V	1 000 V

- Insulation resistance: > 5000 MΩ (at 500 Vdc)
- EMI enhanced protection by shielding ring
- Contact resistance (as per SAE AS39029): Wire resistance included in measurement:

Size	
22D	14,6 mΩ
20	7,5 mΩ
16	3,8 mΩ
12	3,5 mΩ
8	3 mΩ

- Contact rating (as per SAE AS39029):

Size	
22D	5 A
20	7,5 A
16	13 A
12	23 A
8	45 A

38999 Bulkhead Feed-throughs

Technical features (continued)

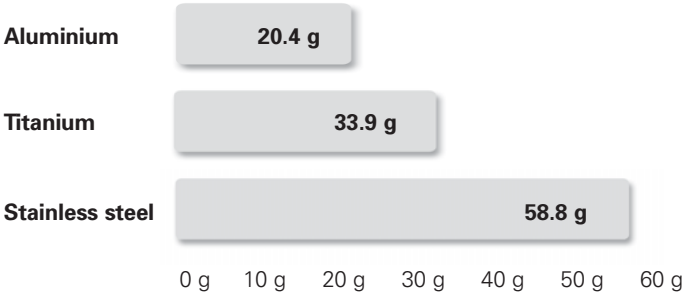
Electrical & Environmental material and protection properties

	Electrical		Environmental	
	Shell continuity	Shielding	Temperature range	Salt spray
Nickel over Aluminium (F), Nickel over Stainless steel (S), Nickel over Titanium (TF)	1mΩ	65 dB at 10 GHz (for Aluminium (F): 85 dB at 1 GHz)	-65°C + 200°C	48 hours
Green zinc colbalt (Z), Black zinc nickel (L)	Consult us	Consult us	-65°C + 200°C	500 hours
Olive drab cadmium over Aluminium (W)	2,5mΩ	50 dB at 10 GHz	-65°C + 175°C	500 hours
Passivated Stainless steel (K), Titanium Without plating (TT)	10mΩ	45 dB at 10 GHz	-65°C + 200°C	500 hours
Marine Bronze (MB)	5mΩ	85 dB at 10 GHz	-65°C + 175°C	500 hours

- Sealing: mated connectors meet altitude immersion requirements of MIL-DTL-38999
- Uncoupled connector: water proof
- Salt spray: MIL-STD 1344 method 1001
- Damp heat: MIL-DTL 38999 (10 cycles of 24 hours)

Weight comparison

Example for a 38999 plug shell size 15



Connector Part Number / Ordering information

Basic series	8DB	0	-	15	W	35	PS	N	...

Style
0: Square Flange
7: Jam Nut

Type*
-: Signal and power contacts only (#22D, #20, #16, #12, #10, #8)
For layouts including coax, triax & quadrax contacts, please consult us

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

Plating and shell material
Aluminium shell: **W:** Olive drab cadmium **F:** Nickel **Z:** Green zinc colbalt **L:** Black zinc nickel
Stainless steel shell: **K:** Passivated (High corrosion resistance) **S:** Nickel
Titanium shell: **TT:** Without plating **TF:** Nickel
Marine Bronze shell: **MB**

Contact layouts
See pages 13, 14, 15

Contact type
PS: Male - female bulkhead
PP*: Male - male bulkhead

Key polarisation
N: Normal
A - B - C - D - E (see table page 17, Key Polarisation)

Specification

* For PP type, please consult us.

38999 Bulkhead Feed-throughs

Applications

Civil aircrafts

Thanks to Martin Alexander and Airbus for pictures authorization.

- In between aircraft compartments, with or without pressure difference
- Aircraft racks

Military vehicles

- Rugged applications

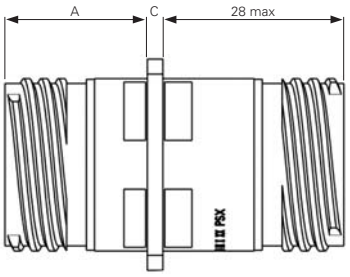
Laboratories, industrial glove boxes

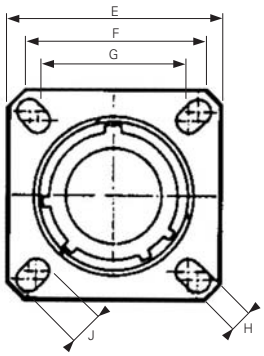
- High level of sealing for glove box applications

38999 Bulkhead Feed-throughs

Physical dimensions

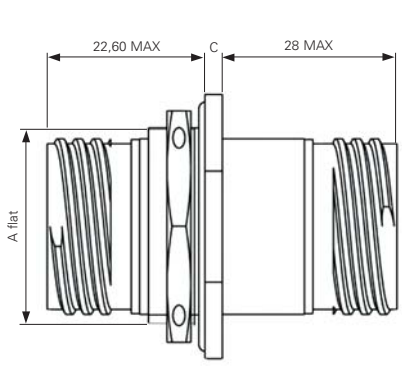
Square Flange version

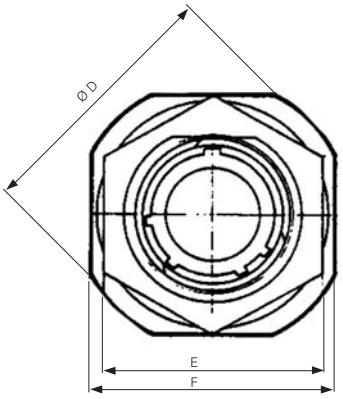




Shell size	A Max	C Max	E ± 0,30	F	G	H ± 0,20	J ± 0,20
9 (A)	20.90	2.50	23.80	18.26	15.09	3.25	5.49
11 (B)	20.90	2.50	26.20	20.62	18.26	3.25	4.93
13 (C)	20.90	2.50	28.60	23.01	20.62	3.25	4.93
15 (D)	20.90	2.50	31.00	24.61	23.01	3.25	4.93
17 (E)	20.90	2.50	33.30	26.97	24.61	3.25	4.93
19 (F)	20.90	2.50	36.50	26.36	26.97	3.25	4.93
21 (G)	20.10	3.20	39.70	31.75	29.36	3.25	4.93
23 (H)	20.10	3.20	42.90	34.93	31.75	3.91	6.15
25 (J)	20.10	3.20	46.00	38.10	34.93	3.91	6.15

Jam Nut version



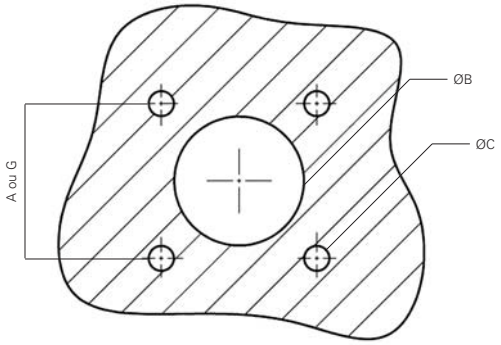


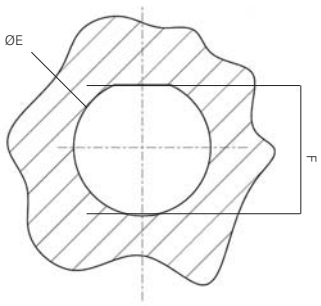
Shell size	A ± 0,15	C Max	D Max	E Max	F ± 0,40
9 (A)	16.53	2.80	30.50	23.00	27.00
11 (B)	19.07	2.80	35.20	26.00	31.80
13 (C)	23.82	2.80	38.40	31.00	34.90
15 (D)	26.97	2.80	41.60	34.00	38.10
17 (E)	30.15	2.80	44.80	37.00	41.30
19 (F)	33.32	3.50	49.50	41.00	46.00
21 (G)	36.50	3.50	52.70	46.00	49.20
23 (H)	39.67	3.50	55.90	47.00	52.40
25 (J)	42.85	3.50	59.00	52.00	55.60

38999 Bulkhead Feed-throughs

Mounting information

Panel cut-out





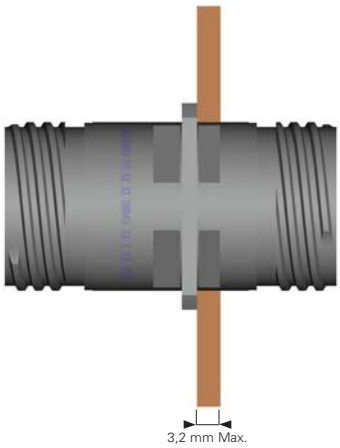
Square Flange version

Shell size	A ± 0.25	G	B min.	C ± 0.13
09 (A)	18.26	15.09	16.66	3.25
11 (B)	20.62	18.26	20.22	3.25
13 (C)	23.01	20.62	23.42	3.25
15 (D)	24.61	23.01	26.59	3.25
17 (E)	26.97	24.61	30.96	3.25
19 (F)	29.36	26.97	32.94	3.25
21 (G)	31.75	29.36	36.12	3.25
23 (H)	34.93	31.75	39.29	3.91
25 (J)	38.10	34.94	42.47	3.91

Jam Nut version

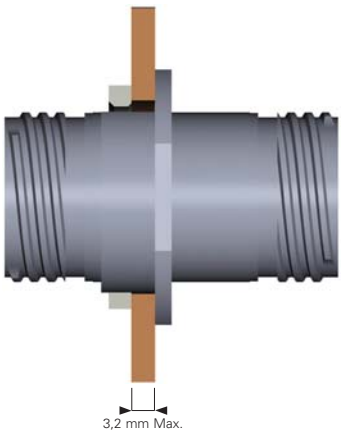
Shell size	E + 0.25	F
09 (A)	17.78	17.02
11 (B)	20.96	19.59
13 (C)	25.65	24.26
15 (D)	28.83	27.56
17 (E)	32.01	30.73
19 (F)	35.18	33.91
21 (G)	38.35	37.08
23 (H)	41.53	40.26
25 (J)	44.;70	43.43

Maximum wall thickness



Square Flange :
Rear mounting

Square Flange :
Front mounting



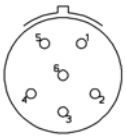
Jam Nut

38999 Bulkhead Feed-throughs

Available layouts

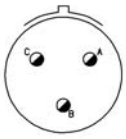
09 (A)

35

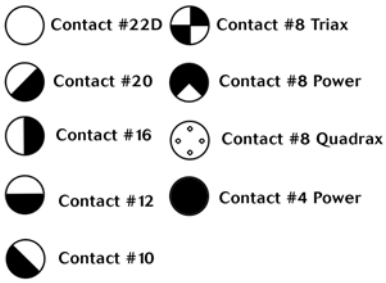


6#22D
Service M

98



3#20
Service I

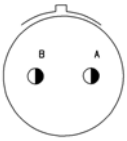


11 (B)

01

1#12
Service II

02



2#16
Service I

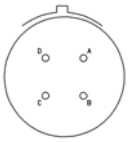
04

4#20
Service I

05

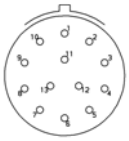
5#20
Service I

22



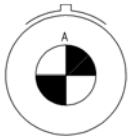
4#22D
Service M

35



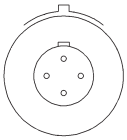
13#22D
Service M

80*



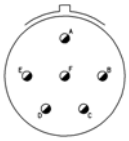
1#8 Triax
Service I

81*



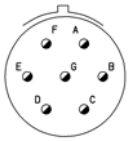
1#8 Quadrax
Service I

98



6#20
Service I

99



7#20
Service I

13 (C)

04

4#16

Service I

08

8#20

Service I

26

2#12
6#22D
Service M

35

22#22D

Service M

98

10#20

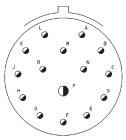
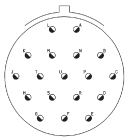
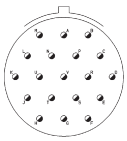
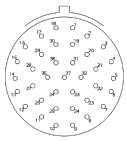
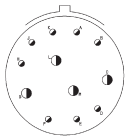
Service I

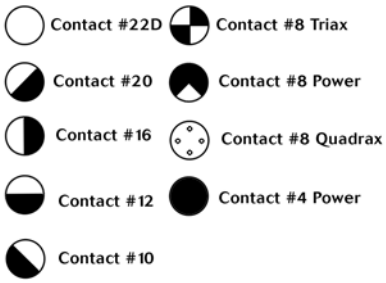
* For these layouts, please consult us.

38999 Bulkhead Feed-throughs

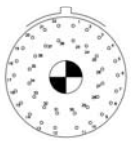
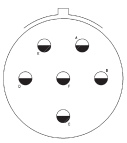
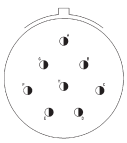
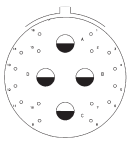
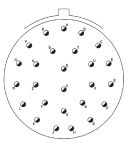
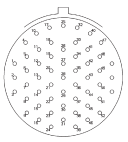
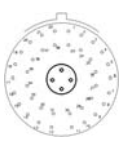
Available layouts

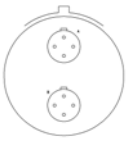
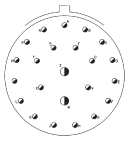
15 (D)

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

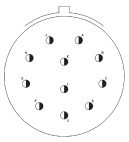
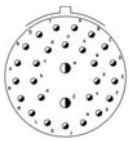


17 (E)

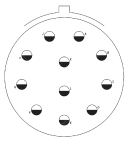
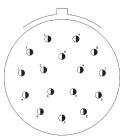
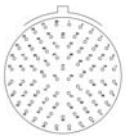
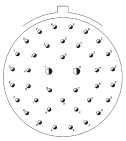
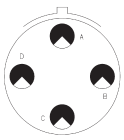
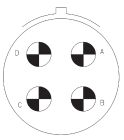
02	06*	08	20	26	35	75	75	81
								
38#22D 1#8 Triax Service M	6#12 or 6#12 Coax Service I	8#16 Service II	4#12 16#22D Service M	26#20 Service II	55#22D Service M	2#8 Power Service M	2#8 Triax Service M	32#22D 1#8 Quadrax

82	99
	
2 Quadrax	2#16 21#20 Service I

19 (F)

11	28	32	35
			
11#16 Service II	26#20 2#16 Service I	32#20 Service I	66#22D Service M

21 (G)

11	16	35	39	41	48	75*	84*
							
11#12 Service I	16#16 Service II	79#22D Service M	2#16 37#20 Service I	41#20 Service I	4#8 Power Service I	4#8 Triax Service M	4 Quadrax

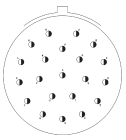
* For these layouts, please consult us.

38999 Bulkhead Feed-throughs

Available layouts

23 (H)

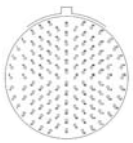
21



21#16

Service II

35



100#22D

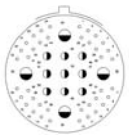
Service M

53

53#20

Service I

54

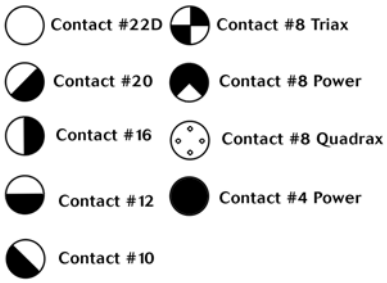


4#12
9#16
40#22D
Service M

55

55#20

Service I



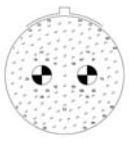
25 (J)

04

8#16
48#20

Service I

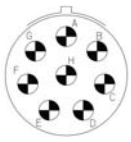
07*



2#8 Triax
97#22D

Service M

08*



8#8 Triax

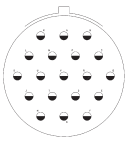
Service M

11

2#20
9#10

Service N

19



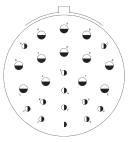
19#12

Service I

20*

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

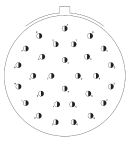
24



12#16
12#12

Service II

29



29#16

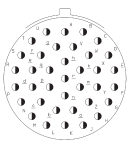
Service I

35

128#22D

Service M

37



37#16

Service I

41

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

43

23#20
20#16

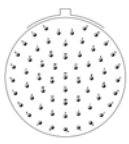
Service I

46*

40#20
4#16
2#8 Triax

Service I

61



61#20

Service I

80*

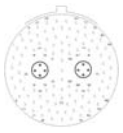
10#20
13#16
4#12
3#8 Quadrax

Service N

81*

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

82*

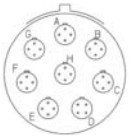


97#22D
2#8 Quadrax

86*

40#20
4#16
2#8 Quadrax

88*



8 Quadrax

* For these layouts, please consult us.

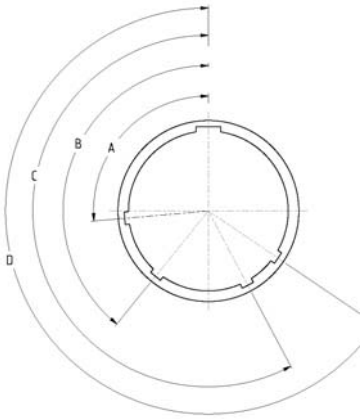
Contact layouts matrix

Shell Size	Layout	Service	Number of contacts	#22D	#20	#16	#12	#10	#8
09 (A)	09 - 35	M	6	6					
	09 - 98	I	3		3				
11 (B)	11 - 01	II	1				1		
	11 - 01	II	1						1 Coax
	11 - 02	I	2			2			
	11 - 04	I	4		4				
	11 - 05	I	5		5				
	11 - 12	I	1				1		
	11 - 22	M	4	4					
	11 - 35	M	13	13					
	11 - 80	I	1						1 Triax
	11 - 81	-	1						1 Quadrax
	11 - 98	I	6	6					
	11 - 99	I	7	7					
13 (C)	13 - 04	I	4			4			
	13 - 08	I	8		8				
	13 - 26	M	8	6			2		
	13 - 35	M	22	22					
	13 - 98	I	10		10				
15 (D)	15 - 05	II	5			5			
	15 - 15	I	15		14	1			
	15 - 18	I	18		18				
	15 - 19	I	19		19				
	15 - 35	M	37	37					
	15 - 97	I	12		8	4			
17 (E)	17 - 02	M	39	38					1 Triax
	17 - 06	I	6				6		
	17 - 08	II	8			8			
	17 - 20	M	20	16			4		
	17 - 26	I	26		26				
	17 - 35	M	55	55					
	17 - 75	M	2						2 or 2 Triax
	17 - 81	-	33	32					1 Quadrax
	17 - 82	-	2						2 Quadrax
	17 - 99	I	23		21	2			
19 (F)	19 - 11	II	11			11			
	19 - 28	I	28		26	2			
	19 - 32	I	32		32				
	19 - 35	M	66	66					
21 (G)	21 - 11	I	11				11		
	21 - 16	II	16			16			
	21 - 35	M	79	79					
	21 - 39	I	39		37	2			
	21 - 41	I	41		41				
	21 - 48	I	4						4 Power
	21 - 75	-	4						4 Triax
	21 - 84	-	4						4 Quadrax
23 (H)	23 - 21	II	21			21			
	23 - 35	M	100	100					
	23 - 53	I	53		53				
	23 - 54	M	53	40		9	4		
	23 - 55	I	55		55				
25 (E)	25 - 04	I	56		48	8			
	25 - 07	M	99	97					2 Triax
	25 - 08	-	8						8 Triax
	25 - 11	N	11		2			9	
	25 - 19	I	19				19		
	25 - 20	N	30		10	13	4 Coax		3 Triax
	25 - 24	II	24			12	12		
	25 - 29	I	29			29			
	25 - 35	M	128	128					
	25 - 37	I	37			37			
	25 - 41	N	41	22	3	11	2		3 Triax
	25 - 43	I	43		23	20			
	25 - 46	I	46		40	4			2 Coax
	25 - 61	I	61		61				
	25 - 80	N	30		10	13	4		3 Quadrax
	25 - 81	N	41	22	3	11	2		3 Quadrax
	25 - 82	M	99	97					2 Quadrax
	25 - 86	I	46		40	4			2 Quadrax
	25 - 88	-	8						8 Quadrax

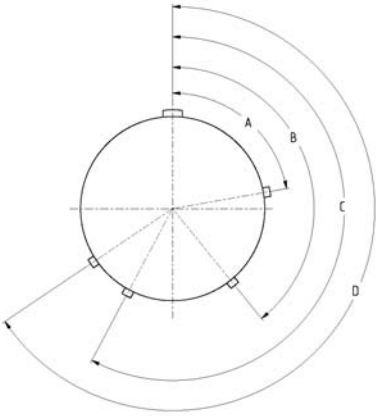
38999 Bulkhead Feed-throughs

Key polarisation

Male & female sides of feed-through



Standard 38999 corresponding plug
(Souriau part number 8D5*******)



Contact size	MS Shell size	Angles	N	A	B	C	D
09	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
11	B	A° B° C° D°	95 141 208 236	113 156 182 292	90 145 195 252	53 156 220 255	119 146 176 298
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
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
17	E	A° B° C° D°	80 142 196 293	135 170 200 310	49 169 200 244	66 140 200 257	62 145 180 280
19	F	A° B° C° D°	80 142 196 293	135 170 200 310	49 169 200 244	66 140 200 257	62 145 180 280
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
23	H	A° B° C° D°	80 142 196 293	135 170 200 310	49 169 200 244	66 140 200 257	62 145 180 280
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

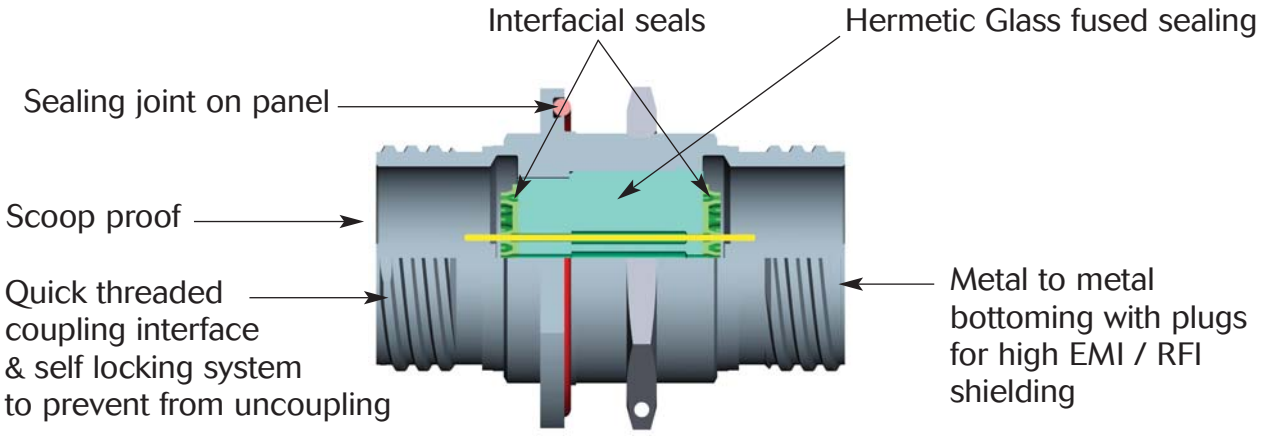
Hermetic Glass fused
38999 series III
Bulkhead Feed-throughs

Hermetic Glass fused
38999 Bulkhead Feed-throughs

Product range presentation

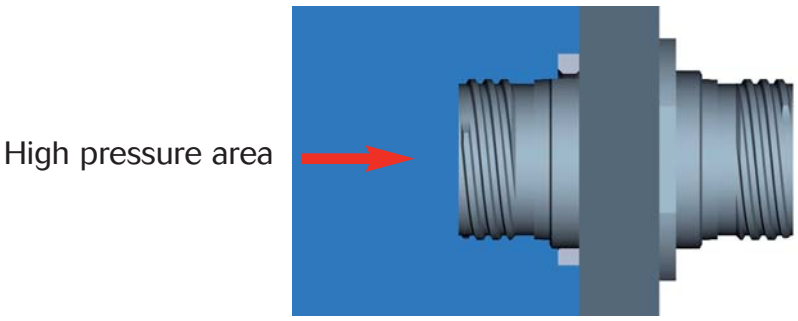
General characteristics

- Male / male contacts Feed-through
- Standard 38999 sIII mating interface
- Standard 38999 sIII layouts: Contacts from #22 to #8
- Stainless steel shell
- Standard 38999 Jam Nut mounting interface
- Same electric, vibration and environment performances as standard reinforced sealing version



Highest level hermetic glass fused sealing

- Sealing reaches hermeticity level of 10^{-8} atm x cm^3 / s (10^4 times higher than standard sealing !)
- O-ring design ensures panel sealing



→ **SUITABLE FOR VACUUM CHAMBERS**

Hermetic Glass fused
38999 Bulkhead Feed-throughs

Description

Main performances

- 38999 Series electric performances
- Vibration: 44 G random
- Temperature range: -65 to +200°C
- Hermetic Glass fused:
  $< 10^{-8}$ atm x cm^3 / s
- High corrosion resistance on demand

Technical features

Mechanical

- Shell: Stainless steel
- Protection:
  Passivated for high corrosion resistance
  or Nickel shell plating
- Insulator: Glass fused
- Interfacial seal: Silicone elastomer
- Contacts: Nickel iron alloy
- Contacts plating: Gold over nickel plated
- Endurance: 500 mating/unmating operations
- Shock: Half sine wave of 75 G, 3 ms
- Vibration:
  Random: 20 to 100 Hz at 6dB per octave
  100 to 2000 Hz constant at 1 G^2/Hz
  3 axes, 3.5 minutes per axis

Resistance to fluids

To MIL-DTL-38999 standard:

- Gazoline: JP5 (OTAN F44)
- Mineral hydraulic fluid: MIL-H-5606 (OTAN H515)
- Synthetic hydraulic fluid: Skydrol 500 B4

LD4 (SAE AS 1241)

- Mineral lubrificating: MIL-L-7870A (OTAN 0142)
- Synthetic lubrificating: 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

Electrical

- Test Voltage rating (Vrms)

Service	Sea level	At 33 000 m
M	1 300 V	250 V
I	1 800 V	Consult us
II	2 300 V	Consult us

- Insulation resistance (at 500 Vdc):
  $>$ 5000 MΩ at 25°C
  $>$ 1000 MΩ at 200°C
- EMI enhanced protection by shielding ring
- Contact resistance (as per SAE AS39029):
  Wire resistance included in measurement:

Size	
22D	60 mΩ
20	30 mΩ
16	15 mΩ
12	8 mΩ
8	3 mΩ

- Contact rating (as per SAE AS39029):

Size	
22D	3 A
20	5 A
16	10 A
12	17 A
8	33 A

Hermetic Glass fused
38999 Bulkhead Feed-throughs

Technical Features (continued)

Electrical & Environmental material and protection properties

	Electrical		Environmental	
	Shell continuity	Shielding	Temperature range	Salt spray
Nickel over Stainless steel (S)	1mΩ	65 dB at 10 GHz	-65°C + 200°C	48 hours
Passivated Stainless steel (K)	10mΩ	45 dB at 10 GHz	-65°C + 200°C	500 hours

- Sealing: mated connectors meet altitude immersion requirements of MIL-DTL-38999
- Uncoupled connector: water proof
- Salt spray: MIL-STD 1344 method 1001
- Damp heat: MIL-DTL 38999 (10 cycles of 24 hours)

Connector Part Number / Ordering Information

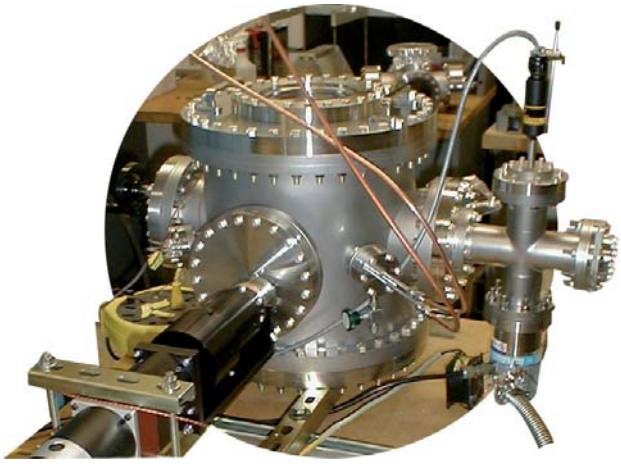
Basic series	**8DB**	**7**	**H**	**15**	**K**	**35**	**PP**	**N**	**...**
Style	**7:** Jam Nut								
Type	Hermectic: Signal and power contacts (#22, #20, #16, #12, #10, #8) For layouts including coax, triax & quadrax contacts, please consult us								
Shell size	09 - 11 - 13 - 15 - 17 - 19 - 21 - 23 - 25								
Plating and shell material **Stainless Steel shell:**	**K:** Passivated (High corrosion resistance) **S:** Nickel								
Contact layouts	See pages 13, 14, 15								
Contact type	**PP:** Male - male bulkhead								
Key polarisation	**N:** normal **A - B - C - D - E** (see table page 17)								
Specification									

Applications

Critical glove boxes

• High level of sealing
for nuclear glove box applications

Laboratories, vacuum chambers

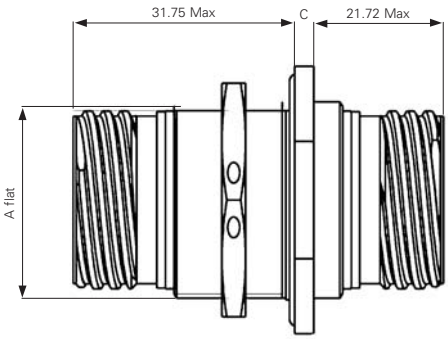


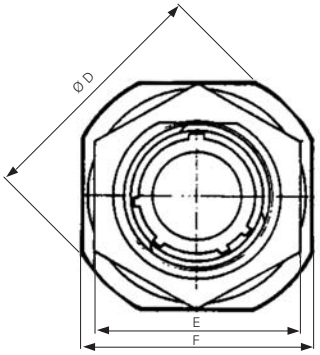
• High level of sealing for vacuum applications

Hermetic Glass fused
38999 Bulkhead Feed-throughs

Physical dimensions

Standard 38999 sIII dimensions

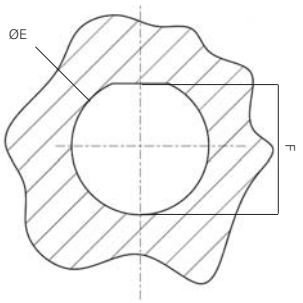




Shell size	A ± 0,15	C Max	D Max	E Max	F ± 0,40
9 (A)	16.53	2.80	30.50	23.00	27.00
11 (B)	19.07	2.80	35.20	26.00	31.80
13 (C)	23.82	2.80	38.40	31.00	34.90
15 (D)	26.97	2.80	41.60	34.00	38.10
17 (E)	30.15	2.80	44.80	37.00	41.30
19 (F)	33.32	3.50	49.50	41.00	46.00
21 (G)	36.50	3.50	52.70	46.00	49.20
23 (H)	39.67	3.50	55.90	47.00	52.40
25 (J)	42.85	3.50	59.00	52.00	55.60

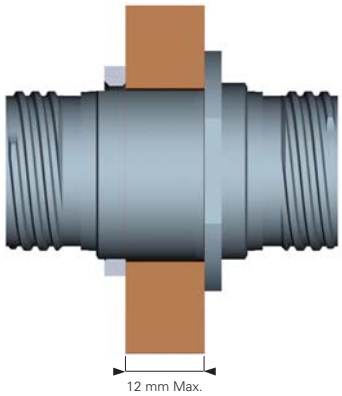
Mouting information

Panel cut-out



Shell Size	E + 0.25	F
09 (A)	17.78	17.02
11 (B)	20.96	19.59
13 (C)	25.65	24.26
15 (D)	28.83	27.56
17 (E)	32.01	30.73
19 (F)	35.18	33.91
21 (G)	38.35	37.08
23 (H)	41.53	40.26
25 (J)	44.70	43.43

Maximum wall thickness



Available layouts
Key polarisation
refer to pages 13-17

Range extension: 38999 series I & II Bulkhead Feed-throughs

Please consult us

Notes

Connector for ELIO™ Termini: ELIO™ C

1 - CHARACTERISTICS

- Standard MIL-DTL-38999 Series III composite shell
- Compatible with ELIO™ termini
- Light and robust connector
- Environmental performance as per MIL-DTL-38999 and EN 3645 standard
- Temperature range: -65° C, +150° C

Applications

Fiber optic connector for industrial, military and aeronautical purposes wherever weight savings and severe climatic or mechanical environment are targeted

Mechanical

- Shell: carbon reinforced thermoplastic
- Shell plating: olive green cadmium (J) / nickel (M) / without plating (X)
- Endurance: 500 mating / unmating operations
- Shocks: 300 g, 3 ms as per EN 2591-6402 method A and MIL-STD-1344
- Vibrations:
  - random 50 to 2000 Hz, 3 x 8 hours – 1 g^2/Hz, as per EN 2591-6403 and MIL-STD-1344
  - sine 1 to 16 Hz amplitude 2 mm, 16 to 55 Hz - 2g
- Contact retention: minimum 11 daN

Environmental

- Salt spray: 2000 hours
- Temperature range: -65° C, +125° C long term (1000 hours), +150°C short term (100 hours)
- Sealing:
  3 cycles (3 x 1 hours) altitude immersion 1,1 kPa in accordance with EN 2591-314 and MIL-STD-1344
  IP 68
- Damp heat: 10 cycles of 24 hours in accordance with EN 2591-321 and MIL-STD-1344
- Fire resistant:
  30 seconds fire exposure as per EN 2591-317 and MIL-STD-1344 and MIL-STD-1344
  UL94-V0

Resistance to fluids as per 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-C-25769 diluted
- De-icing fluid: MIL-A-8243
- Extinguishing fluid: Chlorobromethane
- Cooling fluid: Coolanol
- As per NFC 93422: F46, F54, 0/180, H515, H542, XH 45

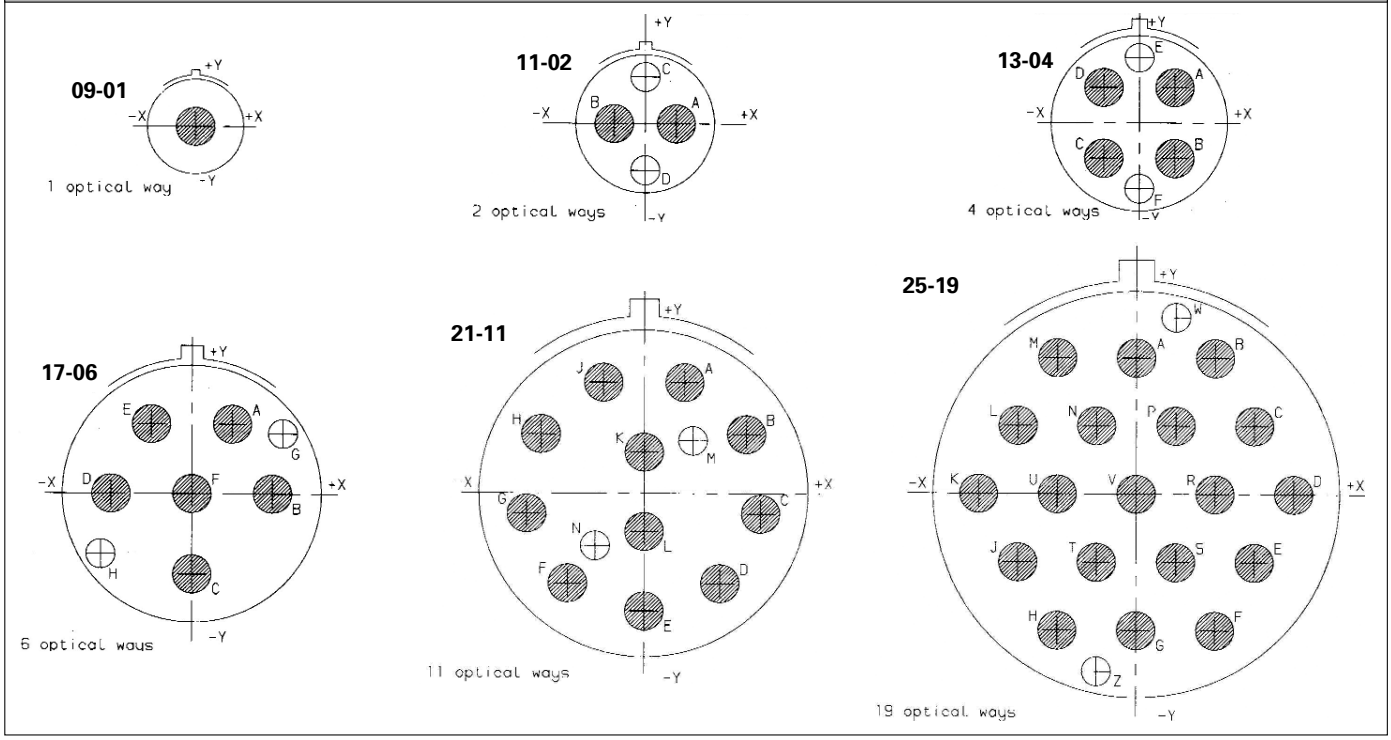
Optical

- Compatible with ELIO™ termini
- Typical Insertion Loss
  Singlemode: 0.3 dB @ 1300 nm
  Multimode: 0.2 dB @ 1300 nm
- Typical Return Loss
  Singlemode: -30dB @ 1300 nm
  Multimode: -30dB @ 1300 nm
- Maximum IL during and after climatic tests: 0.7 dB at 1300 nm and 850 nm for multimode 62.5/125 fiber

Connector for ELIO™ Termini: ELIO™ C

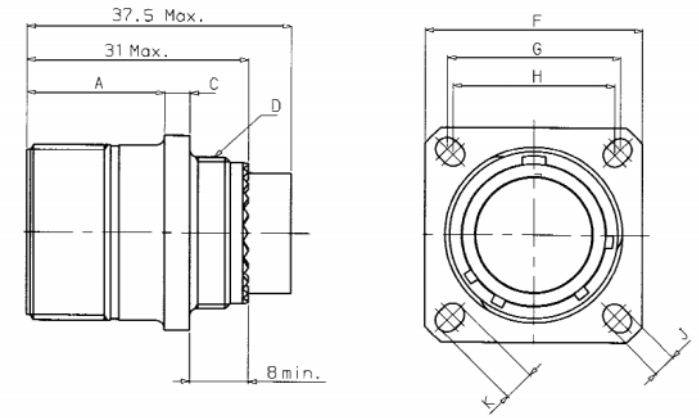
2 - INSERT ARRANGEMENTS

Insert arrangement (table 1) - Front face of male insert



3 - DIMENSIONS

ELIO™ C – Receptacle type 0

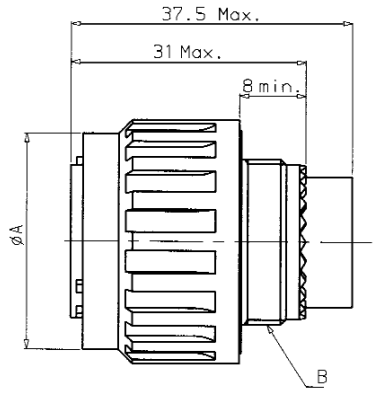


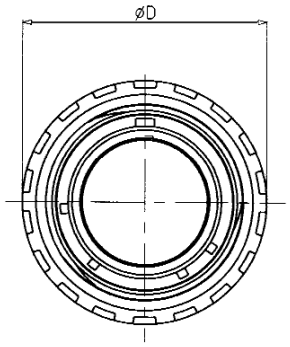
Shell Size	A Max.	B Max.	C Max.	D Thread	F ± 0.30	G	H	J ± 0.20	K ± 0.20
09	20.90	3.65	3.65	M12 x 1-6g	23.80	18.26	15.09	3.25	5.49
11	20.90	3.65	3.65	M15 x 1-6g	26.20	20.62	18.26	3.25	4.93
13	20.90	3.65	3.65	M18 x 1-6g	28.60	23.01	20.62	3.25	4.93
17	20.90	3.65	3.65	M25 x 1-6g	33.30	26.97	24.61	3.25	4.93
21	20.10	4.35	4.35	M31 x 1-6g	39.70	31.75	29.36	3.25	4.93
25	20.10	4.35	4.35	M37 x 1-6g	46.00	38.10	34.93	3.91	6,15

Dimensions in millimeters

Connector for ELIO™ Termini: ELIO™ C

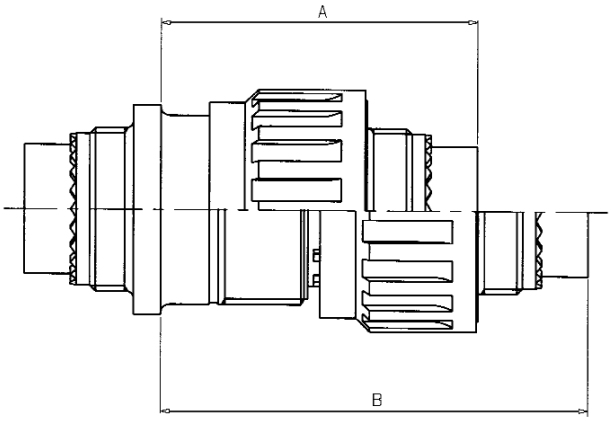
ELIO™ C - Plug type 5





Shell Size	A Max.	B Thread	D Max.
09	20.60	M12 x 1-6g	21.80
11	23.60	M15 x 1-6g	25.00
13	28.20	M18 x 1-6g	29.40
17	34.50	M25 x 1-6g	35.70
21	40.50	M31 x 1-6g	41.70
25	46.80	M37 x 1-6g	48.00

ELIO™ C – Mated connectors dimensions



Shell Size	A Max.	B Max.
09	43.50	58.80
11	43.50	58.80
13	43.50	58.80
17	43.50	58.80
21	42.50	57.80
25	42.50	57.80

Dimensions in millimeters

Connector for ELIO™ Termini: ELIO™ C

4 - ORDERING INFORMATION

8 D	5	E	11	J	02	A	N

Shell Type

5 - Plug
0 - Receptacle with 4 hole square flange fixing

Designation

E - ELIO™ optical connector

Shell Size

see table 1

Plating

J - Olive green cadmium
M - Nickel
X - Without plating

Insert Arrangement

see table 1

Male/Female insert

A - Male insert
B - Female insert with ceramic alignment sleeves
C - Female insert with phophor bronze alignment sleeves*

Polarization N, A, B, C, D, E

** Recommended for fiber starting from 200/230 µm*

Connector for ELIO™ Termini: ELIO™ MINUM

1 - CHARACTERISTICS

- Standard MIL-DTL-38999 Series III aluminum shell
- Compatible with ELIO™ termini
- Light and robust connector
- Environmental performance as per MIL-DTL-38999 and EN 3645 standard
- Temperature range: -65° C, +150° C

Applications

Fiber optic connector for all military and aeronautical purposes with severe vibration environment.

Mechanical

- Shell: aluminum alloy
- Shell plating: olive green cadmium (W) / nickel (F)
- Endurance: 500 mating / unmating operations
- Shocks: 300 g, 3 ms as per EN 2591-6402 method A and MIL-STD-1344
- Vibrations:
  - random 50 to 2000 Hz, 3 x 8 hours – 1 g^2/Hz, as per EN 2591-6403 and MIL-STD-1344
  - sine 1 to 16 Hz amplitude 2 mm, 16 to 55 Hz - 2g
- Contact retention: minimum 110 daN

Environmental

- Salt spray: 500 hours
- Temperature range: -65° C, +125° C long term (1000 hours), +150° C short term (100 hours)
- Sealing:
  3 cycles (3 x 1 hours) altitude immersion 1,1 kPa in accordance with EN 2591-314 and MIL-STD-1344
  IP 68
- Damp heat: 10 cycles of 24 hours in accordance with EN 2591-321 and MIL-STD-1344
- Fire resistant:
  30 seconds fire exposure as per EN 2591-317 and MIL-STD-1344 UL94-V0

Resistance to fluids as per 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-C-25769 diluted
- De-icing fluid: MIL-A-8243
- Extinguishing fluid: Chlorobromethane
- Cooling fluid: Coolanol

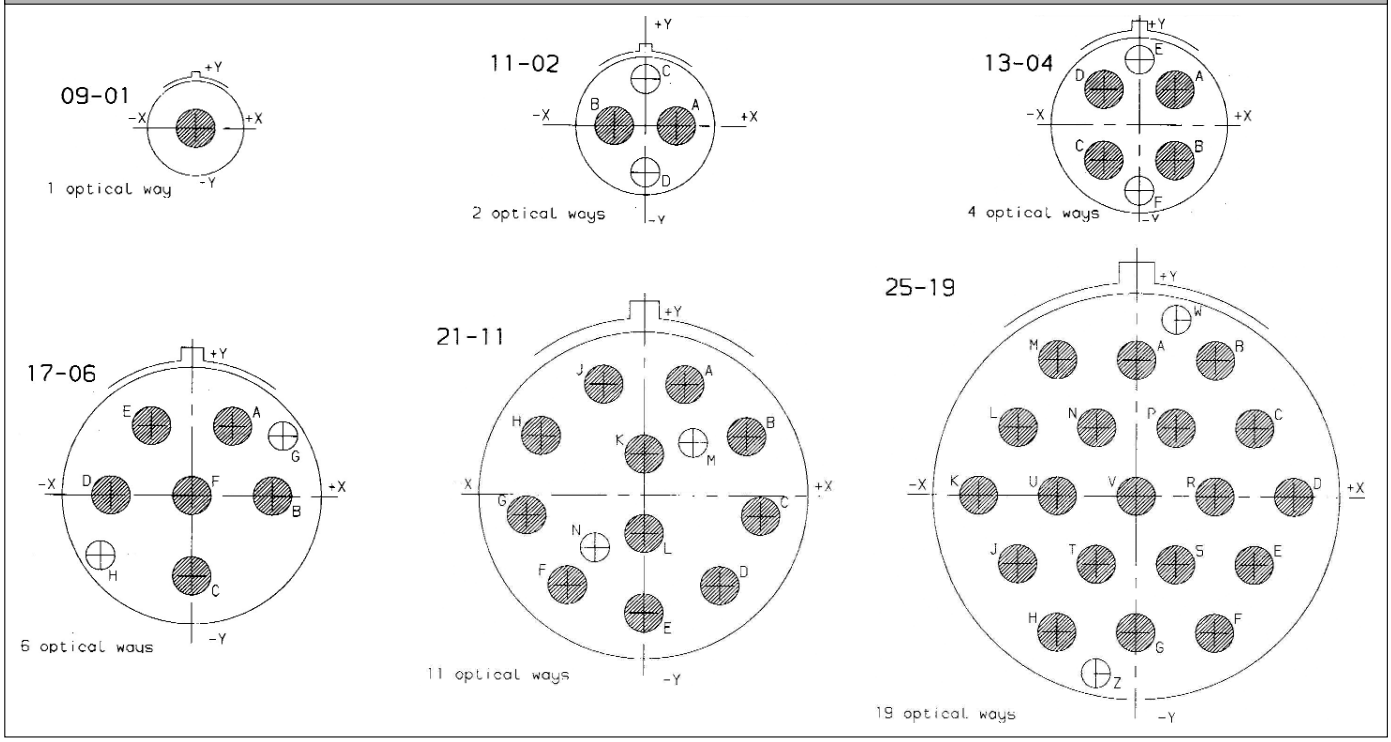
Optical

- Compatible with ELIO™ termini
- Typical Insertion Loss
  - Singlemode: 0.3 dB @ 1300 nm
  - Multimode: 0.1 dB @ 1300 nm
- Typical Return Loss
  - Singlemode: -30 dB @ 1300 nm
  - Multimode: -30 dB @ 1300 nm
- Maximum IL during and after climatic tests: 0.7 dB at 1300 nm and 850 nm for multimode 62.5/125 fiber

Connector for ELIO™ Termini: ELIO™ MINUM

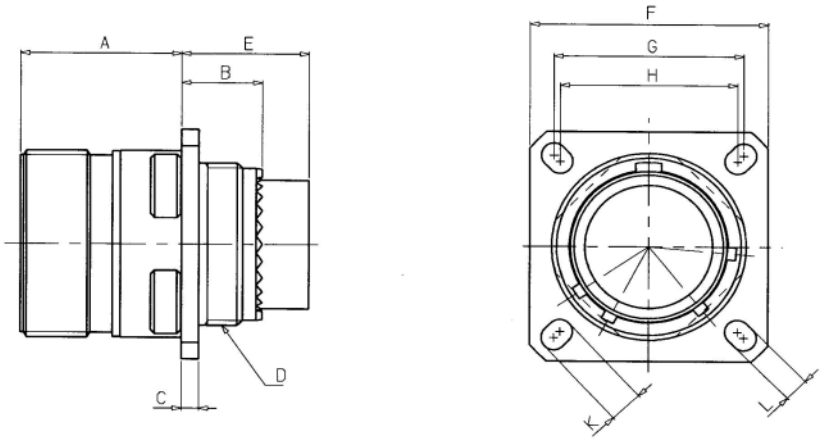
2 - INSERT ARRANGEMENTS

Insert arrangement (table 1) - Front face of male insert



3 - DIMENSIONS

ELIO™ MINUM – Receptacle type 0

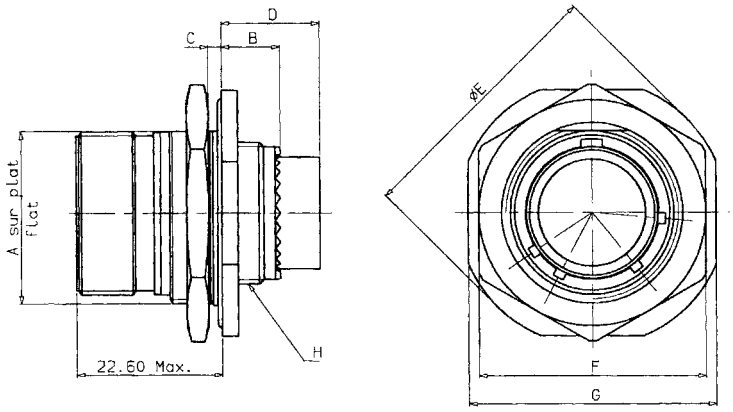


Shell Size	A Max.	B Max.	C Max.	D Thread	E Max.	F ± 0.30	G	H	K ± 0.20	L ± 0.20
09	20.90	10.60	2.50	M12 x 1-6g	17.10	23.80	18.26	15.09	5.49	3.25
11	20.90	10.60	2.50	M15 x 1-6g	17.10	26.20	20.62	18.26	4.93	3.25
13	20.90	10.60	2.50	M18 x 1-6g	17.10	28.60	23.01	20.62	4.93	3.25
17	20.90	10.60	2.50	M25 x 1-6g	17.10	33.30	26.97	24.61	4.93	3.25
21	20.10	11.40	3.20	M31 x 1-6g	17.90	39.70	31.75	29.36	4.93	3.25
25	20.10	11.40	3.20	M37 x 1-6g	17.90	46.00	38.10	34.93	6.15	3.91

Dimensions in millimeters

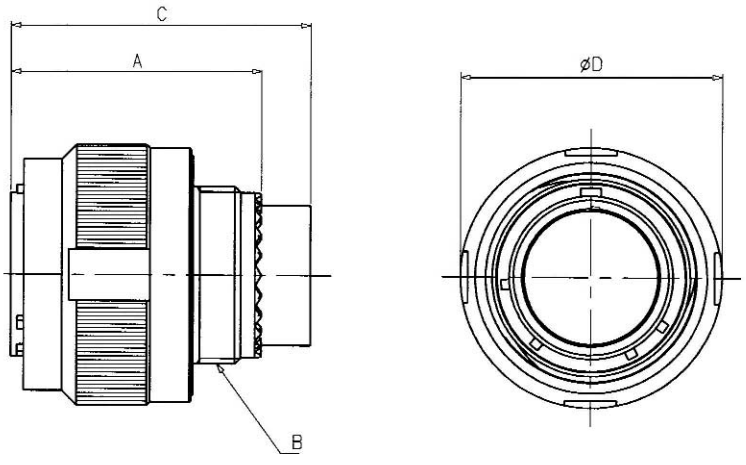
Connector for ELIO™ Termini: ELIO™ MINUM

ELIO™ MINUM - Receptacle type 7



Shell Size	A Max.	B Max.	C Max.	D Max.	E Max.	F Max.	G ± 0.40	H Thread
09	16.53	9.90	3.20	16.40	30.50	24.00	27.00	M12 x 1-6g
11	19.07	9.90	3.20	16.40	35.20	27.00	31.80	M15 x 1-6g
13	23.82	9.90	3.20	16.40	38.40	32,00	34.90	M18 x 1-6g
17	30.15	9.90	3.20	16.40	44.80	41.30	41.30	M25 x 1-6g
21	36.50	9.90	3.20	16.40	52.70	49.20	49.20	M31 x 1-6g
25	42.85	9.90	3.20	16.40	59.00	55.60	55.60	M37 x 1-6g

ELIO™ MINUM - Plug type 5

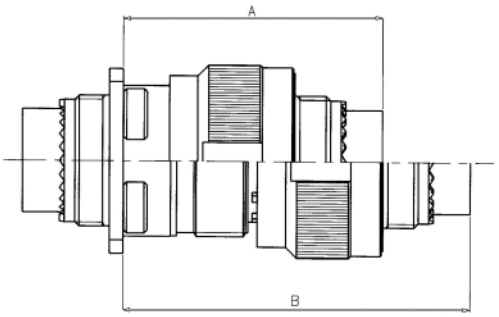


Shell Size	A Max.	B Thread	C Max.	D Max.
09	31.00	M12 x 1-6g	37.50	21.80
11	31.00	M15 x 1-6g	37.50	25.00
13	31.00	M18 x 1-6g	37.50	29.40
17	31.00	M25 x 1-6g	37.50	35.70
21	31.00	M31 x 1-6g	37.50	41.70
25	31.00	M37 x 1-6g	37.50	48.00

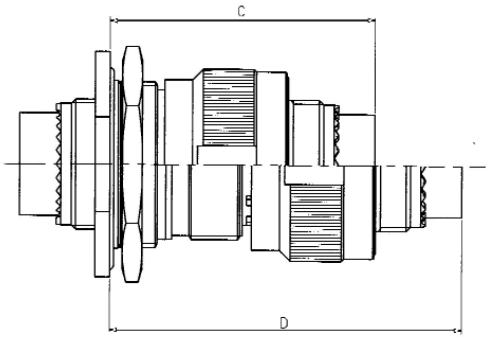
Dimensions in millimeters

Connector for ELIO™ Termini: ELIO™ MINUM

ELIO™ MINUM - Mated connectors dimensions



Square flange receptacle type 0 with plug



Jam nut receptacle type 7 with plug

Shell Size	A Max.	B Max	C Max.	D Max.
09	43.50	58.80	44.80	60.10
11	43.50	58.80	44.80	60.10
13	43.50	58.80	45.00	60.30
17	43.50	58.80	45.00	60.30
21	42.50	57.80	45.00	60.30
25	42.50	57.80	45.00	60.30

Dimensions in millimeters

4 - ORDERING INFORMATION

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

Designation

E - ELIO™ optical connector

Shell Size

see table 1

Plating

W - olive green cadmium
F - nickel

Insert Arrangement

see table 1

Male/Female insert

A - Male insert
B - Female insert with ceramic alignment sleeves
C - female insert with phosphor bronze alignment sleeves*

Polarization N, A, B, C, D, E

** Recommended for fiber starting from 200/230 µm*

Connector for ELIO™ Termini: ELIO™ STEEL

1 - CHARACTERISTICS

- Standard MIL-DTL-38999 Series III stainless steel shell
- Compatible with ELIO™ termini
- Very robust connector
- Environmental performance as per MIL-DTL-38999 and EN 3645 standard
- Temperature range: -65° C, +150° C

Applications

Fiber optic connector for all military and aeronautical purposes wherever robustness and high temperature range are targeted

Mechanical

- Shell: stainless steel
- Shell plating: Nickel / Passivated
- Endurance: 500 mating / unmating operations
- Shocks: 300 g, 3 ms as per EN 2591-6402 method A and MIL-STD-1344
- Vibrations:
  - random 50 to 2000 Hz, 3 x 8 hours
    – 1 g^2/Hz, as per EN 2591-6403 and MIL-STD-1344
  - sine 1 to 16 Hz amplitude 2 mm, 16 to 55 Hz - 2g
- Contact retention: minimum 11 daN

Environmental

- Salt spray: 500 hours
- Temperature range: -65°C, +125°C long term (1000 hours), +150°C short term (100 hours)
- Sealing:
  3 cycles (3 x 1 hours) altitude
  immersion 1,1 kPa in accordance with EN 2591-314 and MIL-STD-1344
  IP 68
- Damp heat: 10 cycles of 24 hours in accordance with EN 2591-321 and MIL-STD-1344
- Fire resistant:
  30 seconds fire exposure as per EN 2591-317 and MIL-STD-1344
  UL94-V0

Resistance to fluids as per 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-C-25769 diluted
- De-icing fluid: MIL-A-8243
- Extinguishing fluid: Chlorobromethane
- Cooling fluid: Coolanol

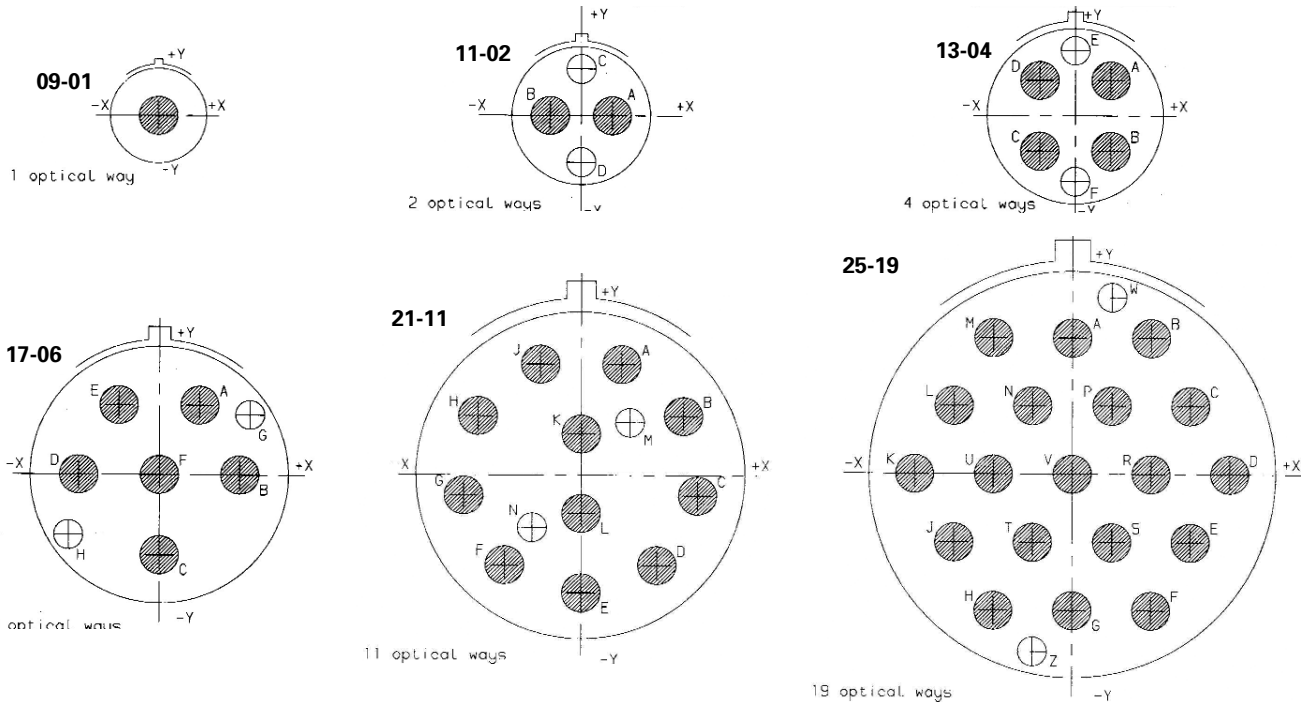
Optical

- Compatible with ELIO™ termini
- Typical Insertion Loss
  Singlemode: 0.3 dB @ 1300 nm
  Multimode: 0.1 dB @ 1300 nm
- Typical Return Loss
  Singlemode: -30 dB @ 1300 nm
  Multimode: -30 dB @ 1300 nm
- Maximum IL during and after climatic tests: 0.7 dB at 1300 nm and 850 nm for multimode 62.5/125 fiber

Connector for ELIO™ Termini: ELIO™ STEEL

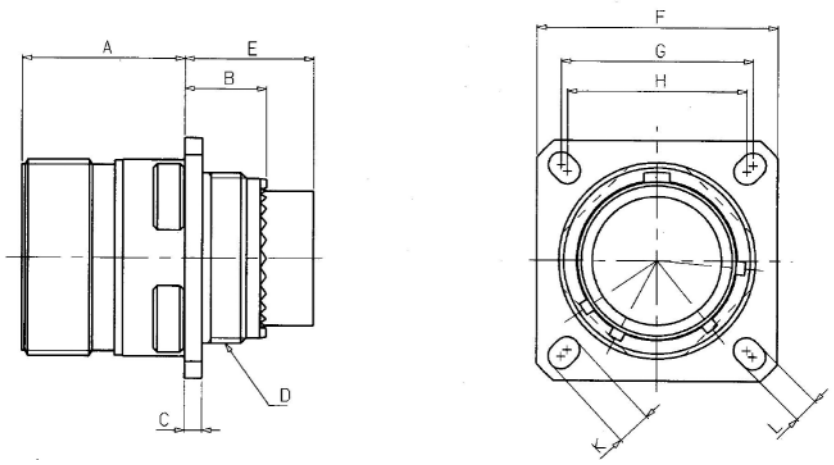
2 - INSERT ARRANGEMENTS

Insert arrangement (table 1) - Front face of male inserts



3 - DIMENSIONS

ELIO™ STEEL - Receptacle type 20

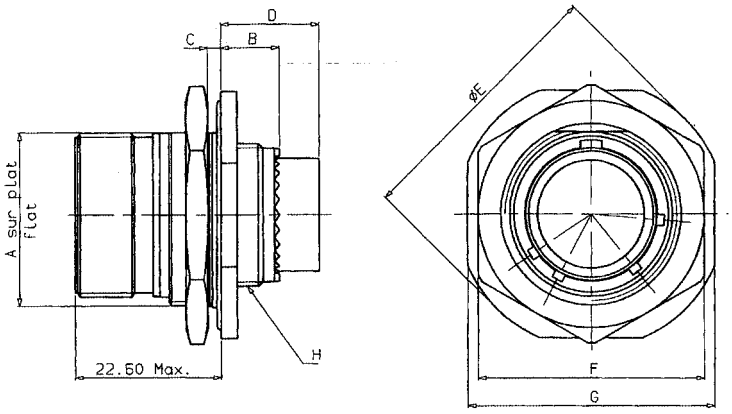


Shell Size	A Max.	B Max.	C Max.	D Thread	E Max.	F ± 0.30	G	H	K ± 0.20	L ± 0.20
09	20.90	11.60	2.50	M12 x 1-6g	17.10	23.80	18.26	15.09	5.49	3.25
11	20.90	11.60	2.50	M15 x 1-6g	17.10	26.20	20.62	18.26	4.93	3.25
13	20.90	11.60	2.50	M18 x 1-6g	17.10	28.60	23.01	20.62	4.93	3.25
17	20.90	11.60	2.50	M25 x 1-6g	17.10	33.30	26.97	24.61	4.93	3.25
21	20.10	11.40	3.20	M31 x 1-6g	17.90	39.70	31.75	29.36	4.93	3.25
25	20.10	11.40	3.20	M37 x 1-6g	17.90	46.00	38.10	34.93	6.15	3.91

Dimensions in millimeters

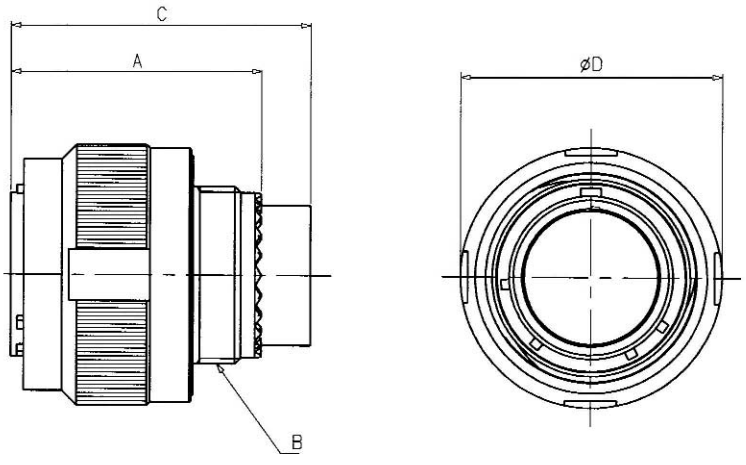
Connector for ELIO™ Termini: ELIO™ STEEL

ELIO™ STEEL - Receptacle type 24



Shell Size	A Max.	B Max.	C Max.	D Max.	E Max.	F Max.	G ± 0.40	H Thread
09	16.53	9.90	3.20	16.40	30.50	24.00	27.00	M12 x 1-6g
11	19.07	9.90	3.20	16.40	35.20	27.00	31.80	M15 x 1-6g
13	23.82	9.90	3.20	16.40	38.40	32,00	34.90	M18 x 1-6g
17	30.15	9.90	3.20	16.40	44.80	41.30	41.30	M25 x 1-6g
21	36.50	9.90	3.20	16.40	52.70	49.20	49.20	M31 x 1-6g
25	42.85	9.90	3.20	16.40	59.00	55.60	55.60	M37 x 1-6g

ELIO™ STEEL - Plug type 26

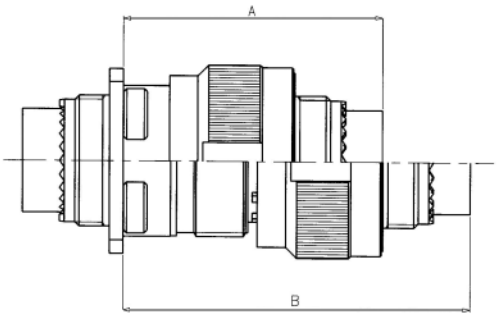


Shell Size	A Max.	B Thread	C Max.	D Max.
09	31.00	M12 x 1-6g	37.50	21.80
11	31.00	M15 x 1-6g	37.50	25.00
13	31.00	M18 x 1-6g	37.50	29.40
17	31.00	M25 x 1-6g	37.50	35.70
21	31.00	M31 x 1-6g	37.50	41.70
25	31.00	M37 x 1-6g	37.50	48.00

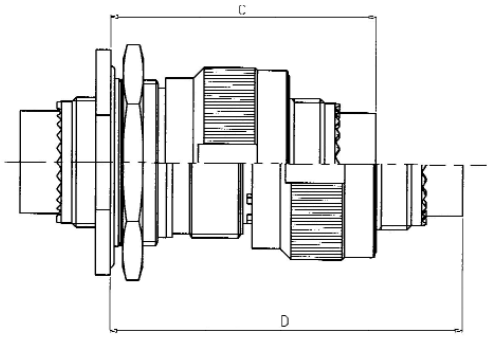
Dimensions in millimeters

Connector for ELIO™ Termini: ELIO™ STEEL

ELIO™ STEEL - Mated connectors dimensions



Square flange receptacle type 20 with plug



Jam nut receptacle type 24 with plug

Shell Size	A Max.	B Max	C Max.	D Max.
09	43.50	58.80	44.80	60.10
11	43.50	58.80	44.80	60.10
13	43.50	58.80	45.00	60.30
17	43.50	58.80	45.00	60.30
21	42.50	57.80	45.00	60.30
25	42.50	57.80	45.00	60.30

Dimensions in millimeters

4 - ORDERING INFORMATION

D 38999	26	E	K	A	01	A	N

Shell Type

26 - Plug
20 - Receptacle with 4 hole square flange fixing
24 - Receptacle with single hole jam nut fixing

Designation

E - ELIO™ optical connector

Plating

K - Stainless Steel
S - Stainless Steel Nickel plated

Shell Size

A	B	C	E	G	J
09	11	13	17	21	25

Insert Arrangement

see table 1

Male/Female insert

A - Male insert
B - Female insert with ceramic alignment sleeves
C - Female insert with phosphor bronze alignment sleeves*

Polarization N, A, B, C, D, E

** Recommended for fiber starting from 200/230 μm*

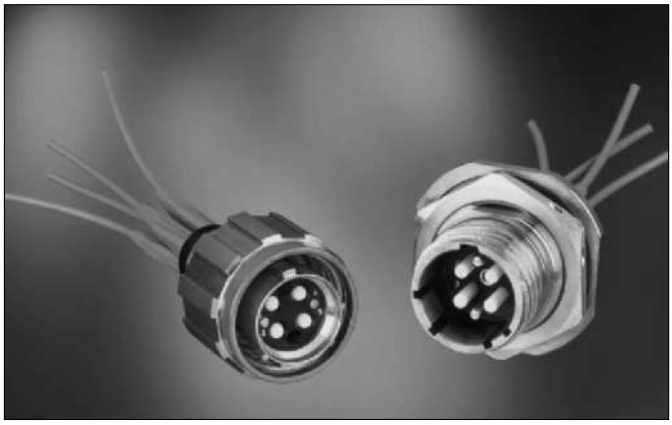
Connector for ELIO™ Termini: ELIO™ BRONZE

1/ CHARACTERISTICS

- Standard MIL-DTL-38999 Series III bronze shell
- Compatible with ELIO™ termini
- Robust connector
- Environmental performance as per MIL-DTL-38999 and EN 3645 standard
- Temperature range: -65° C, +150° C

Applications

Fiber optic connector for all marine purposes: navy vessels, military, merchant fleet, transportation, oceanography, field equipment, battle-field cables



Mechanical

- Shell: Bronze shell
- Endurance: 500 mating / unmating operations
- Shocks: 300 g, 3 ms as per EN 2591-6402 method A and MIL-STD-1344
- Vibrations:
  - random 50 to 2000 Hz, 3 x 8 hours
    – 1 g^2/Hz, as per EN 2591-6403 and MIL-STD-1344
  - sine 1 to 16 Hz amplitude 2 mm, 16 to 55 Hz - 2g
- Contact retention: minimum 110 daN

Environmental

- Salt spray: 2000 hours
- Temperature range: -65° C, +125° C long term (1000 hours), +150°C short term (100 hours)
- Sealing:
  3 cycles (3 x 1 hours) altitude immersion 1,1 kPa in accordance with EN 2591-314 and MIL-STD-1344
  IP 68
- Damp heat: 10 cycles of 24 hours in accordance with EN 2591-321 and MIL-STD-1344
- Fire resistant:
  30 seconds fire exposure as per EN 2591-317 and MIL-STD-1344
  UL94-V0

Resistance to fluids as per 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-C-25769 diluted
- De-icing fluid: MIL-A-8243
- Extinguishing fluid: Chlorobromethane
- Cooling fluid: Coolanol

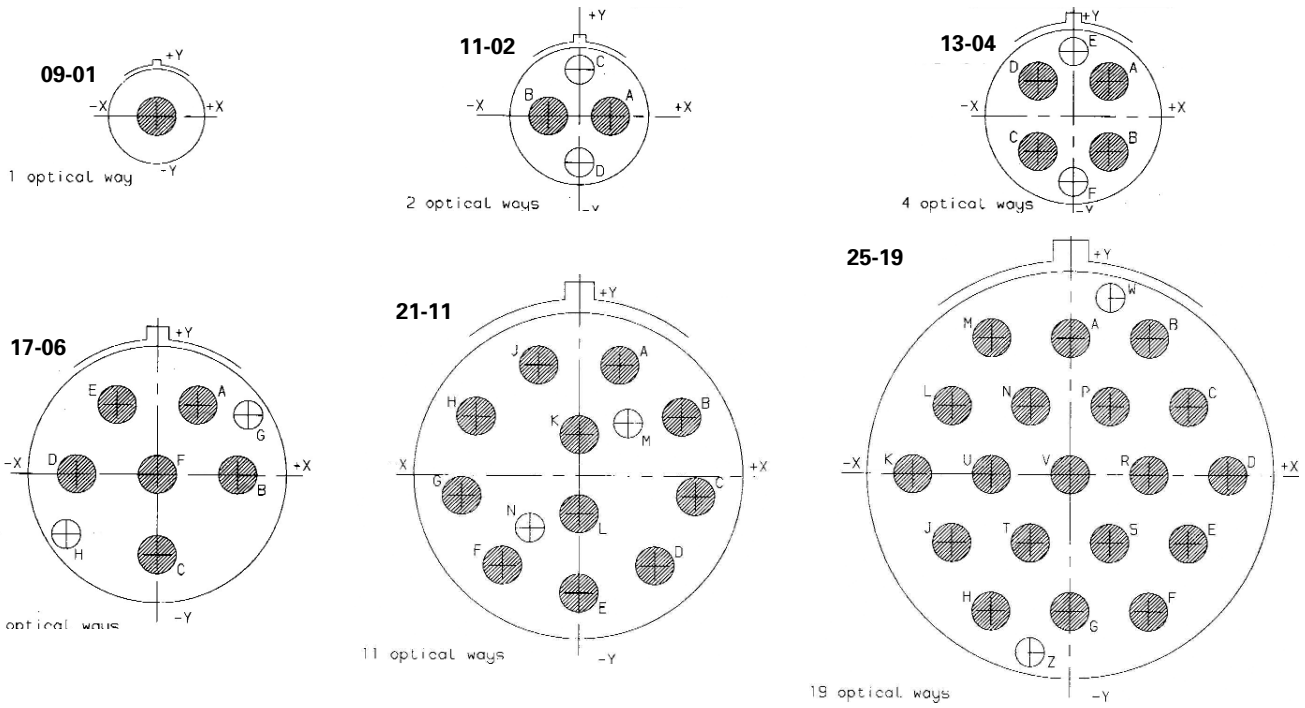
Optical

- Compatible with ELIO™ termini
- Typical Insertion Loss
  Singlemode: 0.3 dB @ 1300 nm
  Multimode: 0.2 dB @ 1300 nm
- Typical Return Loss
  Singlemode: -30 dB @ 1300 nm
  Multimode: -30dB @ 1300 nm
- Maximum IL during and after climatic tests: 0.7 dB at 1300 nm and 850 nm for multimode 62.5/125 fiber

Connector for ELIO™ Termini: ELIO™ BRONZE

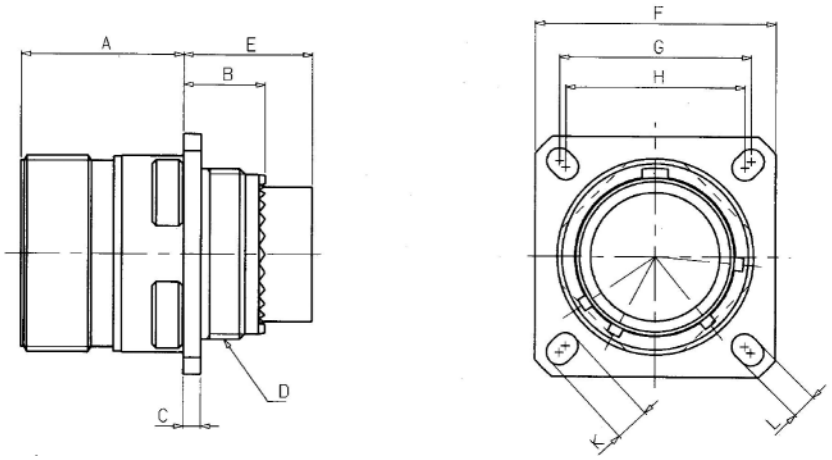
2 - INSERT ARRANGEMENTS

Insert arrangement (table 1)



3 - DIMENSIONS

ELIO™ BRONZE - Receptacle type 0

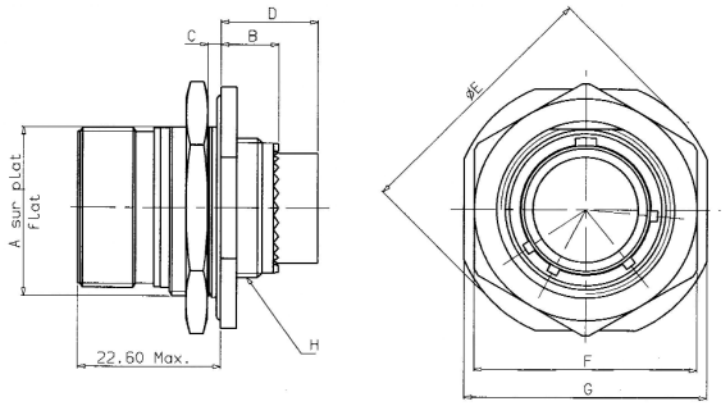


Shell Size	A Max.	B Max.	C Max.	D Thread	E Max.	F ± 0.30	G	H	K ± 0.20	L ± 0.20
09	20.10	11.40	2.50	M12 x 1-6g	17.10	23.80	18.26	15.09	5.49	3.25
11	20.10	11.40	2.50	M15 x 1-6g	17.10	26.20	20.62	18.26	4.93	3.25
13	20.10	11.40	2.50	M18 x 1-6g	17.10	28.60	23.01	20.62	4.93	3.25
17	20.10	11.40	2.50	M25 x 1-6g	17.10	33.30	26.97	24.61	4.93	3.25
21	20.10	11.40	3.20	M31 x 1-6g	17.90	39.70	31.75	29.36	4.93	3.25
25	20.10	11.40	3.20	M37 x 1-6g	17.90	46.00	38.10	34.93	6.15	3.91

Dimensions in millimeters

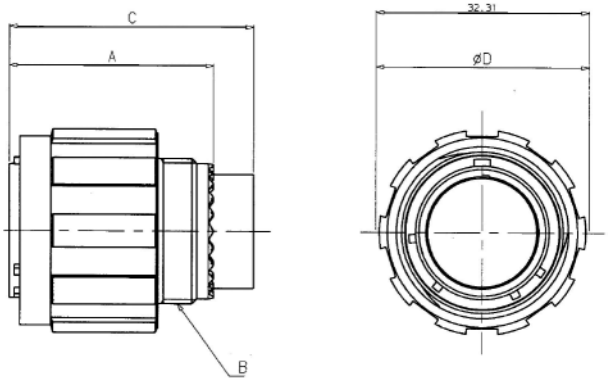
Connector for ELIO™ Termini: ELIO™ BRONZE

ELIO™ BRONZE - Receptacle type 7 - front face of male insert



Shell Size	A +0.10 -0.15	B Max.	C Max.	D Max.	E Max.	F Max.	G ± 0.40	H Thread
09	16.53	9.90	3.20	16.40	30.50	24.00	27.00	M17 x 1-6g
11	19.07	9.90	3.20	16.40	35.20	27.00	31.80	M20 x 1-6g
13	23.82	9.90	3.20	16.40	38.40	32.00	34.90	M25 x 1-6g
17	30.15	9.90	3.20	16.40	44.80	37.00	41.30	M32 x 1-6g
21	36.50	9.90	3.20	16.40	52.70	46.00	49.20	M38 x 1-6g
25	42.85	9.90	3.20	16.40	59.00	51.20	55.60	M44 x 1-6g

ELIO™ BRONZE - Plug type 6

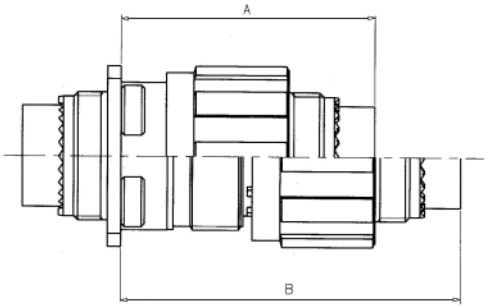


Shell Size	A Max.	B Thread	C Max.	D Max.
09	31.00	M12 x 1-6g	37.50	21.10
11	31.00	M15 x 1-6g	37.50	23.80
13	31.00	M18 x 1-6g	37.50	28.20
17	31.00	M25 x 1-6g	37.50	36.50
21	31.00	M31 x 1-6g	37.50	42.50
25	31.00	M37 x 1-6g	37.50	48.40

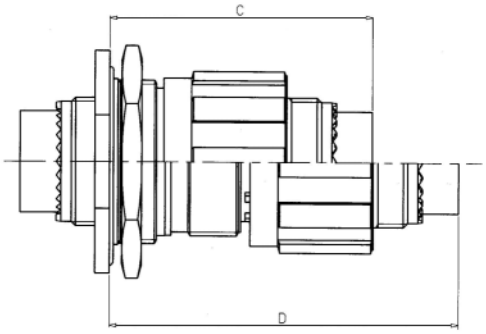
Dimensions in millimeters

Connector for ELIO™ Termini: ELIO™ BRONZE

ELIO™ BRONZE - Mated connectors dimensions



Square flange receptacle type 0 with plug



Jam Nut receptacle type 7 with plug

Shell Size	A Max.	B Max.	C Max.	D Max.
09	43.50	58.80	44.80	60.10
11	43.50	58.80	44.80	60.10
13	43.50	58.80	45.00	60.30
17	43.50	58.80	45.00	60.30
21	43.50	58.80	45.00	60.30
25	43.50	58.80	45.00	60.30

Dimensions in millimeters

4 - ORDERING INFORMATION

JVS E	6	A	11	02	A	N

Shell Style
6 - Plug
0 - Receptacle with 4 hole square flange fixing
1 - Receptacle with round flange
7 - Receptacle with single hole jam nut fixing

Material
A - Bronze

Shell size
see table 1

Insert Arrangement
see table 1

Male/Female insert
A - Male insert
B - Female insert with ceramic alignment sleeves
B - Female insert with phosphor bronze alignment sleeves*

Polarization N, A, B, C, D, E

** Recommended for fiber starting from 200/230 µm*