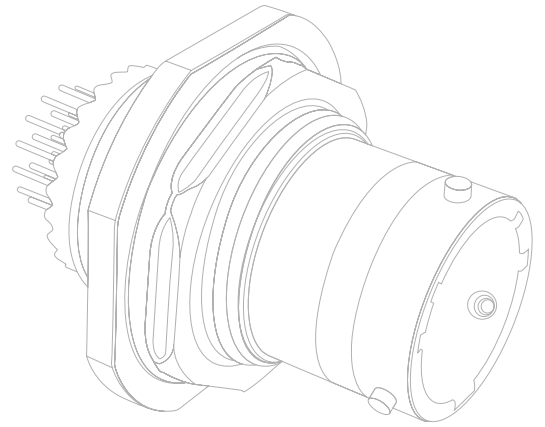


VG96912 and JN1003 bayonet connectors
Souriau 8ST series





Souriau 8ST

VG96912 and JN1003

Typical applications



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Souriau 8ST series

Technical specifications



Description

- High density connector with 1 to 128 contacts designed for military and aerospace applications
- Contact sizes #22D, #20, #16, #12, #16 coax, #8 concentric twinax (triax), #8 and #4 power
- Bayonet locking system
- MIL-DTL-38999 Series I contact layouts
- 100% Scoop-proof
- EMI/RFI shielding and shell-to-shell continuity
- Standards: JN 1003, VG 96912, pr EN 3372, EFA J 62-017

Mechanical

Shell

Aluminum alloy

Plating

- Black zinc nickel (Z)
- Olive green cadmium (G)
- Olive green cadmium, spec. 034 (B)
- Nickel (F)
- Gray tin-zinc (with black coupling nut for plug) (SZ)

Insulator

Thermoplastic or metallic version available for specification 284 & 384

Grommet or seal

Liquid silicone rubber or fluorocarbon elastomer for specification 022

Contact

Copper alloy

Plating contact

Gold over nickel

Endurance

500 mating/unmating operations

Shock

300 g during 3 ms and according to MIL S 901 grade A

Vibration

147 m/s², 10 to 2000 Hz

Contact retention (min force in N)

Contacts size	22	20	16	12	8	4
Min force in N	45	67	111	111	110	200

Electrical

Test voltage (Vrms)

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

Insulation resistance

≥ 5 000 MW at 500 VAC

Contact resistance

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

Contact rating

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

Shell continuity

- Black zinc nickel: 2.5 mΩ
- Olive green plating: 2.5 mΩ
- Nickel plating: 1 mΩ
- Tin-zinc plating: 2.5mΩ

Shielding

70 db at 0.01 to 100 MHz

Electrical continuity between contact and shell for specification 284 & 384: 10 mΩ max

Environmental

Temperature range

- Black zinc nickel plating (Z)
- 65°C to +175°C
- Olive green cadmium plating (B or G)
- 65°C to +175°C
- Nickel plating (F)
- 65°C to +200°C
- Tin-zinc plating (SZ)
- 65°C to +175°C

Sealing, mated connectors

Differential pressure 1 bar leakage ≤16 cm³/h


Salt spray

- MIL STD 1344 method 1001:
 - 500 hours (plating SZ, B, G and Z)
 - 48 hours (plating F)
- NFC 93422:
 - 48 hours (plating F)

Resistance to fluids

- According to MIL-DTL-38999:
 - MIL-L-7808
 - MIL-L-23699
 - MIL-H-5606
 - MIL-A-8243
 - MIL-C-87936
 - MIL-T-5624 (JP5), hydraulic fluids, solvents
- Specification 022 for fuel immersion

Contact layouts

 Contact #26 & #22D


 Contact #20


 Contact #16


 Contact #12

 Contact #10

 Contact #8

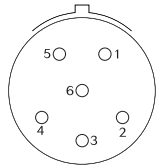
 Contact #8 Power

 Contact #8 Quadrax

 Contact #4 Power

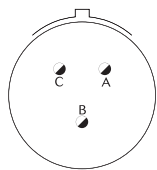
08

35



6#22D
Service M

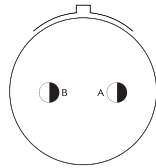
98



3#20
Service I

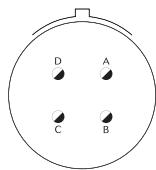
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02



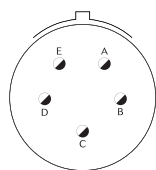
2#16
Service I

04



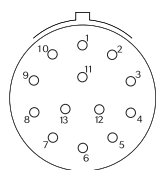
4#20
Service I

05



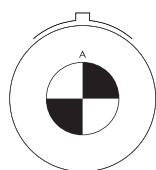
5#20
Service I

35



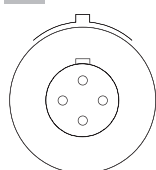
13#22D
Service M

80



1#8
Concentric
Twinax
Service I

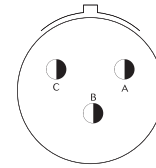
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1#8 Quadrax

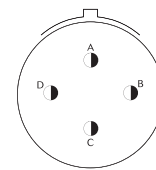
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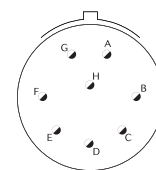
3#16
Service I

04



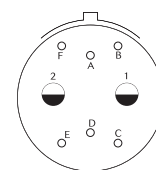
4#16
Service I

08



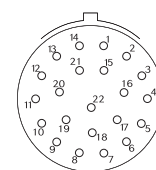
8#20
Service I

26



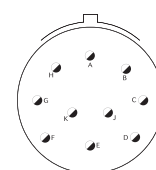
2#12
6#22D
Service M

35



22#22D
Service M

98



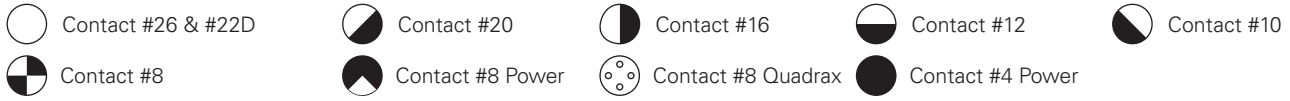
10#20
Service I

 Ethernet Quadrax

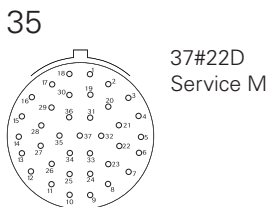
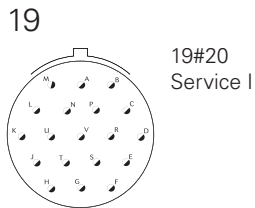
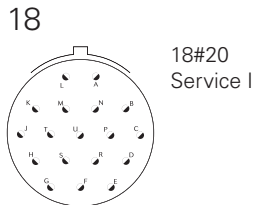
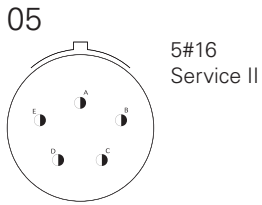
Note: Concentric Twinax = Triax

Souriau 8ST series

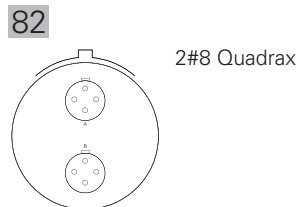
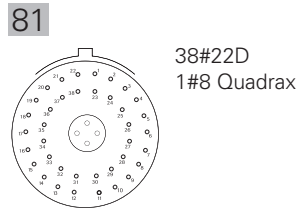
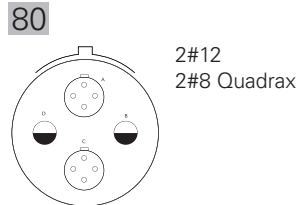
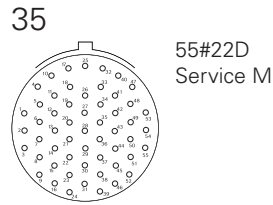
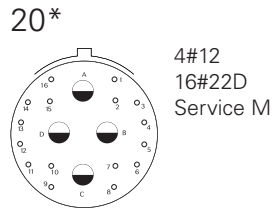
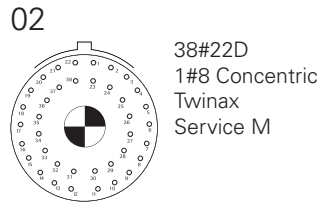
Contact layouts



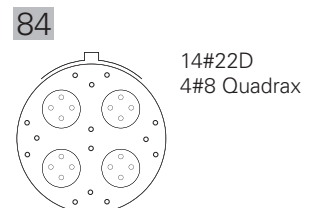
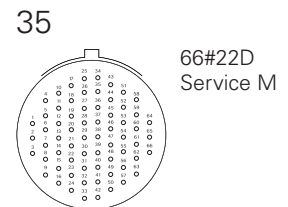
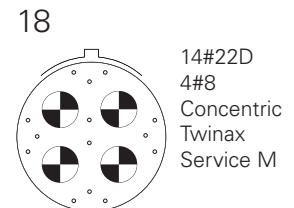
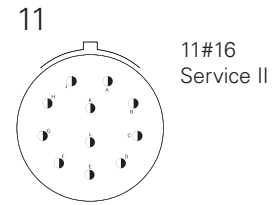
14



16



18

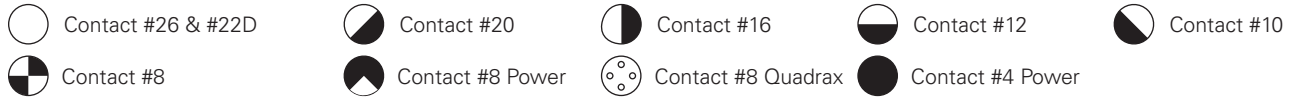


Ethernet Quadrax

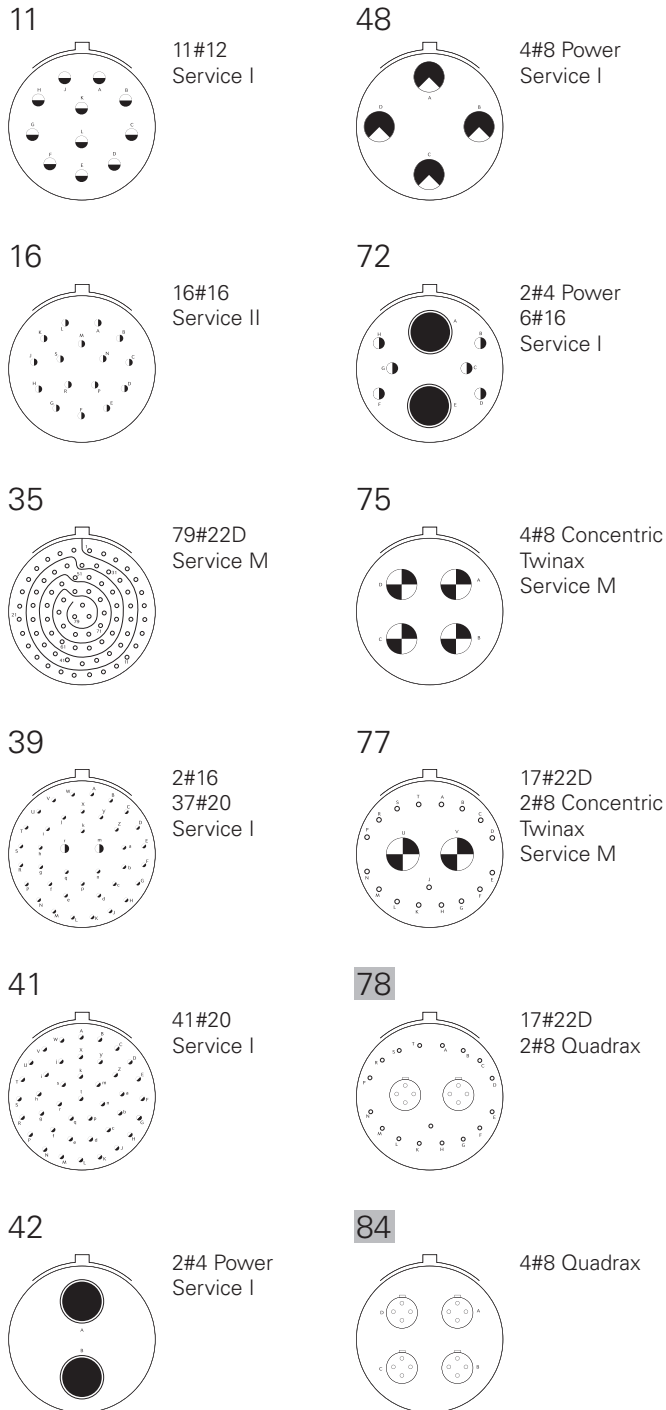
* Available by request

Note: Concentric Twinax = Triax

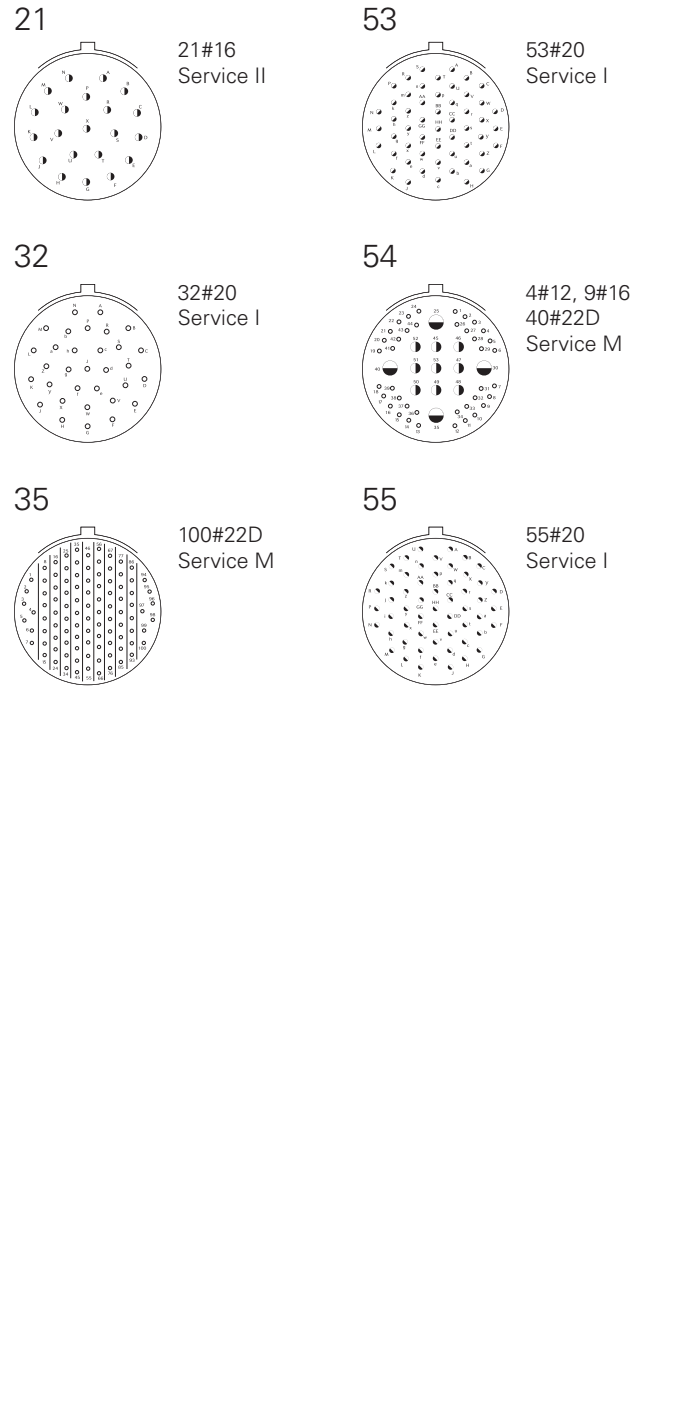
Contact layouts



20



22



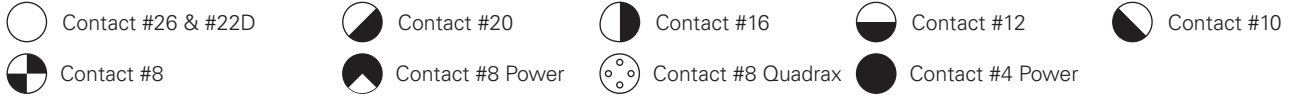
Ethernet Quadrax

Note: Concentric Twinax = Triax

Souriau 8ST series

Contact layouts

Contact layouts



24

<p>04</p> <p>8#16 48#20 Service I</p>	<p>29</p> <p>29#16 Service I</p>	<p>44</p> <p>4#4 Power 4#16 Service I</p>	<p>86</p> <p>40#20 4#16 2#8 Quadrax</p>
<p>07</p> <p>97#22D 2#8 Concentric Twinax Service M</p>	<p>35</p> <p>128#22D Service M</p>	<p>46</p> <p>40#20, 4#16 2#8 Coax Service I</p>	<p>90</p> <p>40#20, 4#16 2#8 Concentric Twinax Service I</p>
<p>08*</p> <p>8#8 Concentric Twinax Service M</p>	<p>37</p> <p>37#16 Service I</p>	<p>61</p> <p>61#20 Service I</p>	
<p>19</p> <p>19#12 Service I</p>	<p>41</p> <p>22#22D, 3#20 11#16, 2#12 3#8 Concentric Twinax Service M</p>	<p>81</p> <p>22#22D 3#20, 11#16 2#12 3#8 Quadrax</p>	
<p>24</p> <p>12#16 12#12 Service I</p>	<p>43</p> <p>23#20 20#16 Service I</p>	<p>82</p> <p>97#22D 2#8 Quadrax</p>	

Ethernet Quadrax

* Available by request

Note: Concentric Twinax = Triax

Contact layouts (matrix)

Shell Size	Layout	Service	8ST	JN1003			Nber of Contacts	#26	#22D	#20	#16	#12	#10	#8	#4 Power
				VG96912	8ST2*034	Other P/N									
08	08-35	M	OK	Q	Q	Q	6	6							
	08-98	I	OK		Q	Q	3		3						
10	10-02	I	OK			Q	2			2					
	10-04	I	OK				4		4						
	10-05	I	OK				5		5						
	10-35	M	OK	Q	Q	Q	13	13							
	10-80	I	OK			Q	1							1 Twx	
	10-81	-	OK				1							1 Qdx	
	10-98	I	OK	Q	Q	Q	6		6						
	10-99	I	OK				7		7						
	12	12-03	I	OK				3			3				
12-04		I	OK			Q	4			4					
12-08		I	OK				8		8						
12-26		M	OK				8	6			2				
12-35		M	OK	Q	Q	Q	22	22							
12-98		I	OK	Q	Q	Q	10		10						
14	14-05	II	OK	Q			5			5					
	14-15	I	OK				15		14	1					
	14-18	I	OK				18		18						
	14-19	I	OK	Q	Q	Q	19		19						
	14-35	M	OK	Q	Q	Q	37	37							
	14-97	I	OK	Q	Q	Q	12		8	4					
16	16-02	M	OK				39	38						1 Twx	
	16-06	I	OK	Q		Q	6				6				
	16-08	II	OK	Q		Q	8			8					
	16-20	M	OK				20	16			4				
	16-22	M	OK				4				2			2 Twx	
	16-26	I	OK	Q		Q	26		26						
	16-35	M	OK	Q	Q	Q	55	55							
	16-75	M	OK				2							2 Twx	
	16-80	-	OK				4				2			2 Qdx	
	16-81	-	OK				39	38						1 Qdx	
	16-82	-	OK				2							2 Qdx	
16-99	I	OK	Q			23		21	2						
18	18-11	II	OK	Q		Q	11			11					
	18-18	M	OK				18	14						4 Twx	
	18-28	I	OK				28		26	2					
	18-32	I	OK	Q		Q	32		32						
	18-35	M	OK	Q	Q	Q	66	66							
	18-84	-	OK				18	14						4 Qdx	

OK Souriau's layout
Q Qualified layout according corresponding norm
#8 Qdx: Quadrax; Twx: Concentric Twinax

Souriau 8ST series

Contact layouts

Contact layouts (matrix)

Shell Size	Layout	Service	8ST	JN1003			Nber of Contacts	#26	#22D	#20	#16	#12	#10	# 8	#4 Power
				VG96912	8ST2*034	Other P/N									
20	20-11	I	OK			Q	11					11			
	20-16	II	OK	Q	Q	Q	16			16					
	20-35	M	OK	Q	Q	Q	79	79							
	20-39	I	OK				39		37	2					
	20-41	I	OK	Q		Q	41		41						
	20-42	I	OK				2							2	
	20-48	I	OK				4							4 Pow	
	20-72	I	OK				8			6				2	
	20-75	-	OK			Q	4							4 Twx	
	20-77	M	OK				19		17					2 Twx	
	20-78	-	OK				19		17					2 Qdx	
	20-84	-	OK				4							4 Qdx	
22	22-21	II	OK	Q		Q	21			21					
	22-32	I	OK				32		32						
	22-35	M	OK	Q	Q	Q	100	100							
	22-53	I	OK			Q	53		53						
	22-54	M	OK				53		40	9	4				
	22-55	I	OK				55		55						
24	24-04	I	OK				56			48	8				
	24-07	M	OK				99		97					2 Twx	
	24-08	-	OK				8							8 Twx	
	24-19	I	OK	Q		Q	19					19			
	24-24	II	OK				24			12	12				
	24-29	I	OK				29			29					
	24-35	M	OK	Q	Q	Q	128	128							
	24-37	I	OK				37			37					
	24-41	N	OK				41		22	3	11	2		3 Twx	
	24-43	I	OK				43			23	20				
	24-44	I	OK				8				4			4	
	24-46	I	OK				46			40	4			2 Coax	
	24-61	I	OK	Q		Q	61			61					
	24-81	N	OK				41		22	3	11	2		3 Qdx	
	24-82	M	OK				99		97					2 Qdx	
	24-86	I	OK				46			40	4			2 Qdx	
24-90	I	OK				46			40	4			2 Twx		

- OK** Souriau's layout
- Q** Qualified layout according corresponding norm
- #8** Pow: Power; Qdx: Quadrax; Twx: Concentric Twinax

Cross reference list

VG: approval n°307/84

Pr EN3372

JN1003 qualified

	Souriau	VG96912	EN3372*	JN1003 (EFA)*	Designation
Connectors	8ST0••G••P/SN	VG96912A••••P/SN	-	-	Square flange receptacle
	8ST0••SZ••P/SN	VG96912A••••P/SNJ	-	-	
	8ST0••F/B••P/SN	-	EN3372F/W0••N••P/SN	-	
	8ST0••B••P/SN034	-	-	JN1003B••••P/SN1	
	8ST0••B••A/BN034	-	-	JN1003B••••P/SN	
	8ST1••F/G••P/SN	-	-	-	In line receptacle
	8ST2••B••P/SN034	-	-	JN1003H••••P/SN1	Mounting box receptacle
	8ST2••F••A/BN034	-	-	JN1003H••••P/SN	
	8ST5••G••P/SN	VG96912D••••P/SN	-	-	Plug with EMI/RFI shielding
	8ST5••SZ••P/SNC	VG96912D••••P/SNJ	-	-	
	8ST5••F/B••P/SN	-	EN3372F/W6••N••P/SN	-	
	8ST5••B••P/SN034	-	-	JN1003FG••••P/SN1	
	8ST5••B••A/BN034	-	-	JN1003FG••••P/SN	
	8ST6••G••P/SN	VG96912E••••P/SN	-	-	Plug without EMI/RFI shielding
	8ST6••SZ••P/SNC	VG96912E••••P/SNJ	-	-	
	8ST6••F/B••P/SN	-	-	-	
8ST7••G••P/SN	VG96912B••••P/SN	-	-	Jam nut receptacle	
8ST7••SZ••P/SNC	VG96912B••••P/SNJ	-	-		
8ST7••F/B••P/SN	-	EN3372F/W7••N••P/SN	-		
8ST7••B••P/SN034	-	-	JN1003A••••P/SN1		
8ST7••B••A/BN034	-	-	JN1003A••~••P/SN		

	Souriau	VG96912	EN3372*	JN1003 (EFA)*	Designation
Connectors	8599-0702 JJ	VG96912P22 D	Separate EN	-	Crimp male contact #22D
	8599-0703 SA	VG96912P20	standard in	-	Crimp male contact #20
	8599-0704 MJ	VG96912P16	progress	-	Crimp male contact #16
	8599-0705 MJ	VG96912P12	-	-	Crimp male contact #12
	8599-0706 900	VG96912S22D1	Separate EN	-	Crimp female contact #22D
	8599-0707-900	VG96912S201	standard in	-	Crimp female contact #20
	8599-0708-900	VG96912S161	progress	-	Crimp female contact #16
	8599-0709-900	VG96912S121	-	-	Crimp female contact #12
	M39029/58-360	-	-	JN1003P22D	Crimp male contact #22D
	M39029/58-363	-	-	JN1003P20	Crimp male contact #20
	M39029/58-364	-	-	JN1003P16	Crimp male contact #16
	M39029/58-365	-	-	JN1003P12	Crimp male contact #12
	M39029/56-348	-	-	JN1003S22D	Crimp female contact #22D
	M39029/56-351	-	-	JN1003S20	Crimp female contact #20
	M39029/56-352	-	-	JN1003S16	Crimp female contact #16
	M39029/56-353	-	-	JN1003S12	Crimp female contact #12

VG: approval n°307/84

Pr EN3372

JN1003: full qualification in process

	Souriau	VG96912	EN 3372*	JN1003 (EFA)*	Designation
Backshells	8LST101B57 (shell size 08)	VG96912L08	Separate EN standard in progress	-	Endbell for shielding braids
	8LST102B57 (shell size 10)	VG96912L10		-	
	8LST103B57 (shell size 12)	VG96912L12		-	
	8LST104B57 (shell size 14)	VG96912L14		-	
	8LST105B57 (shell size 16)	VG96912L16		-	
	8LST106B57 (shell size 18)	VG96912L18		-	
	8LST107B57 (shell size 20)	VG96912L20		-	
	8LST108B57 (shell size 22)	VG96912L22		-	
	8LST109B57 (shell size 24)	VG96912L24		-	

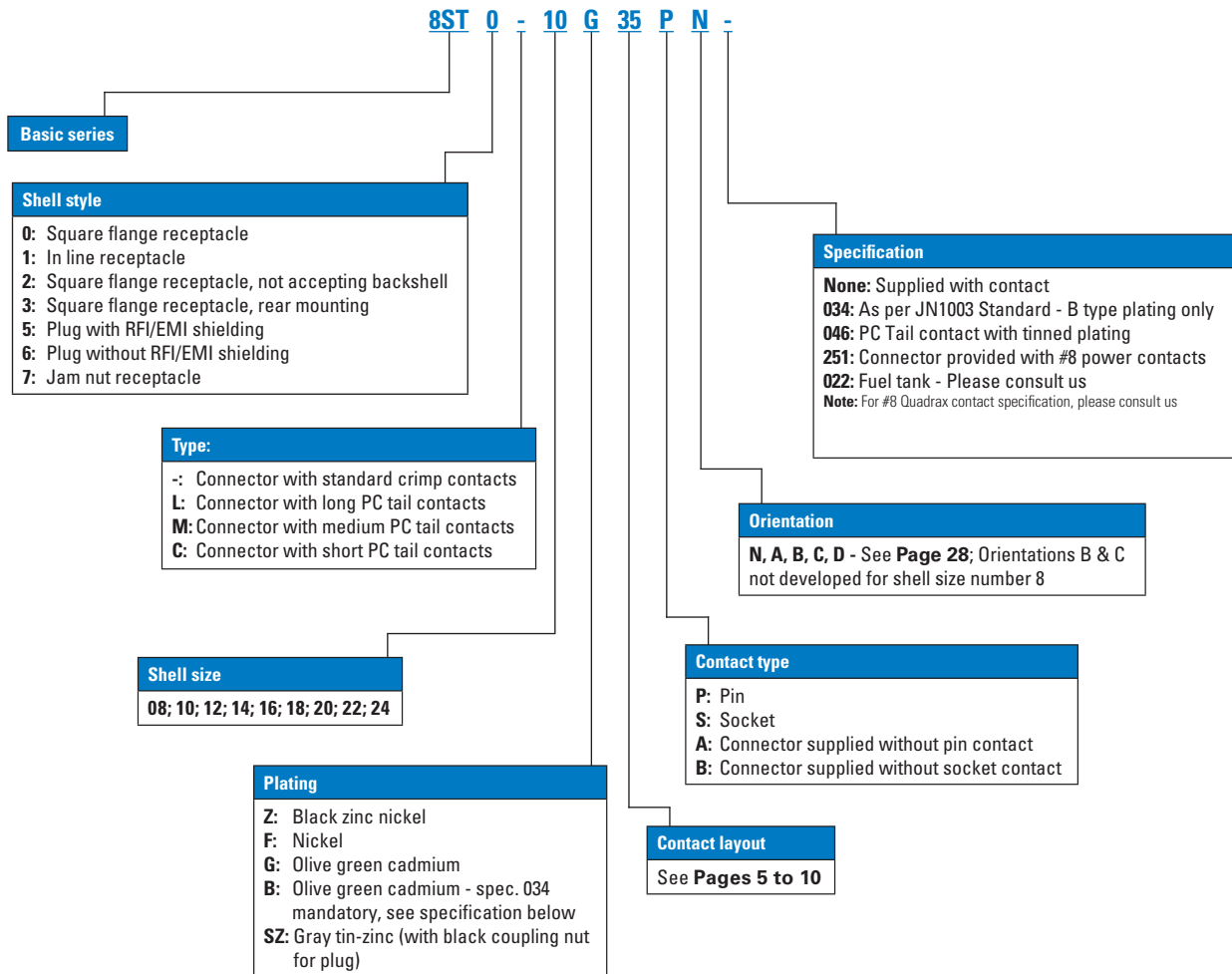
* Please contact us, our product will be evaluated against the final drafts/standards when available.

Souriau 8ST series

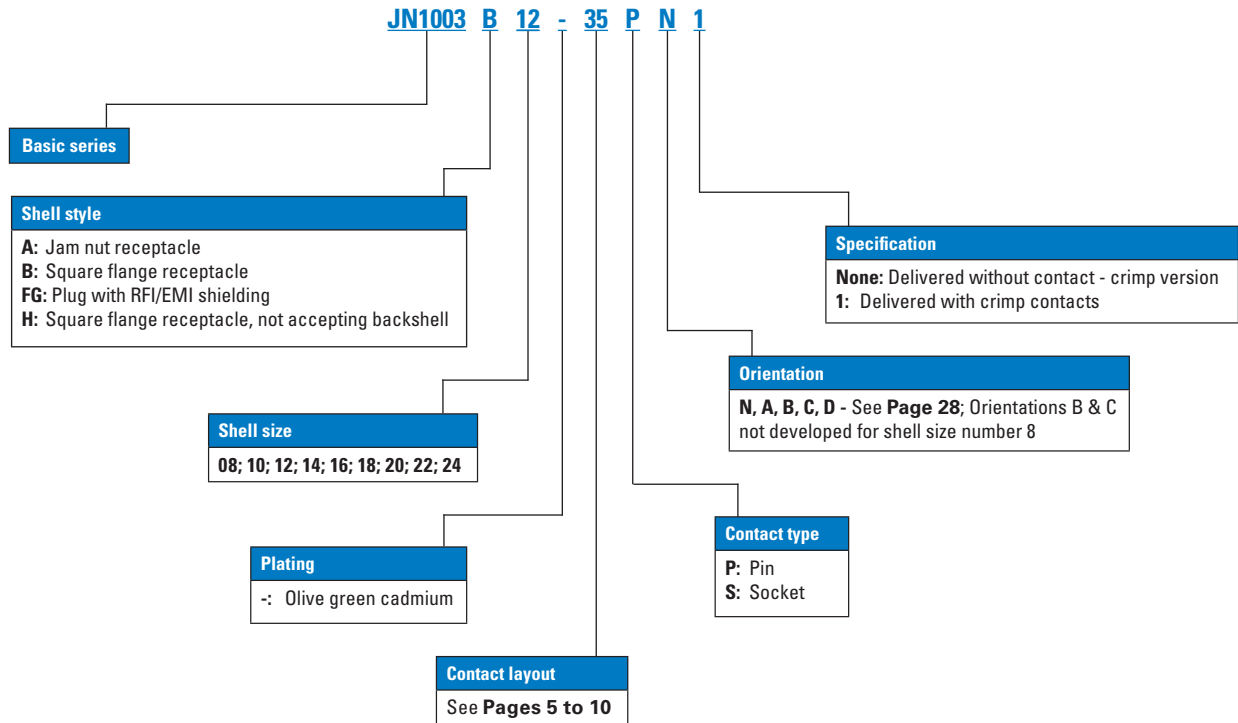
Ordering information

Ordering information

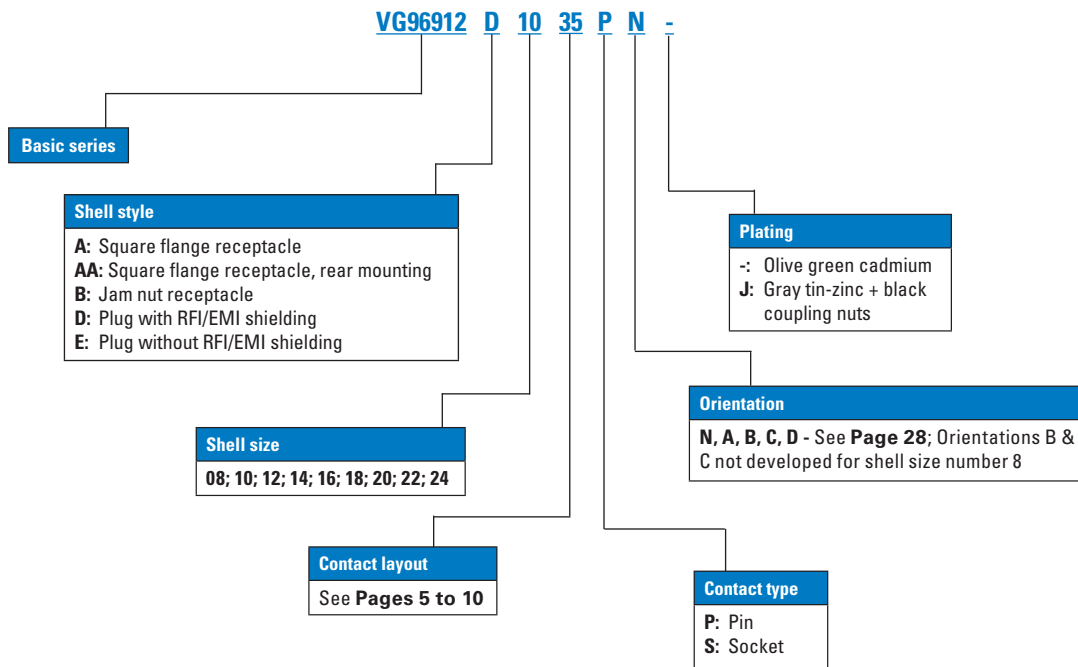
Souriau part numbers



JN1003 part numbers



VG96912 part numbers

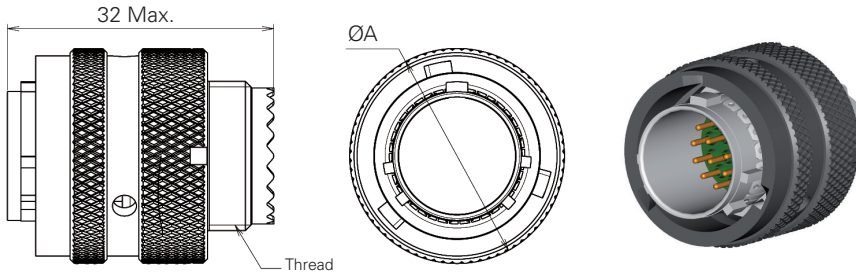


Souriau 8ST series

Dimensions

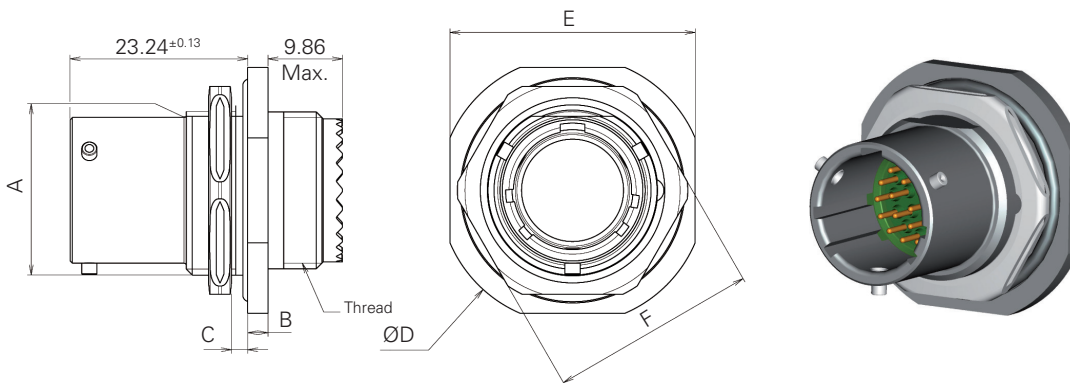
Dimensions

Types 5 & 6 - Plug



Shell size	A	Thread
08	19	7/16-28 UNEF 2A
10	22	9/16-24 UNEF 2A
12	26	11/16-24 UNEF 2A
14	29	13/16-20 UNEF 2A
16	33	15/16-20 UNEF 2A
18	36	1"1/16-18 UNEF 2A
20	39	1"3/16-18 UNEF 2A
22	44	1"5/16-18 UNEF 2A
24	46	1"7/16-18 UNEF 2A

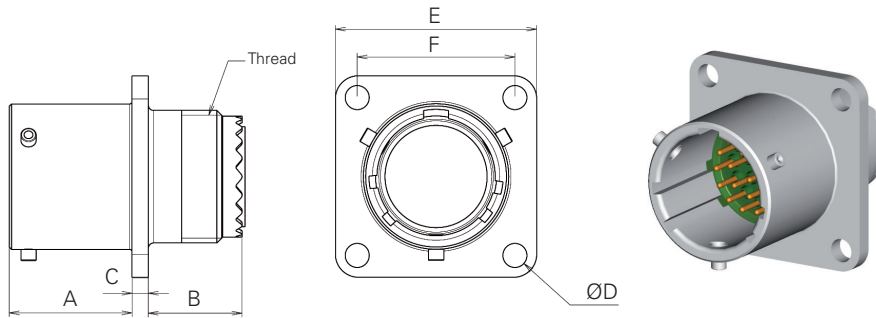
Type 7 - Jam nut receptacle



Shell size	A ⁺⁰ _{-0.2}	B	C	8ST & VG Thread	JN1003 Thread	ØD	E ^{±0.3}	F ^{±0.4}	Tightening torque for JN1003 (mN)
08	13.46	2.43 / 3.09	1.6 / 3.2	9/16-24 UNEF 2A	7/16-28 UNEF 2A	27.3	23.8	19.1	4
10	16.64	2.43 / 3.09	1.6 / 3.2	11/16-24 UNEF 2A	9/16-24 UNEF 2A	30.5	27.0	22.2	6
12	20.78	2.43 / 3.09	1.6 / 3.2	13/16-20 UNEF 2A	11/16-24 UNEF 2A	35.3	31.8	27.0	9
14	23.93	2.43 / 3.09	1.6 / 3.2	15/16-20 UNEF 2A	13/16-20 UNEF 2A	38.4	34.9	30.2	10
16	27.08	2.43 / 3.09	1.6 / 3.2	1"1/16-18 UNEF 2A	15/16-20 UNEF 2A	41.6	38.1	33.3	13
18	30.25	3.23 / 3.89	1.6 / 3.2	1"3/16-18 UNEF 2A	1"1/16-18 UNEF 2A	44.8	41.3	36.5	20
20	33.43	3.23 / 3.89	1.6 / 3.2	1"5/16-18 UNEF 2A	1"3/16-18 UNEF 2A	49.6	46.0	39.7	23
22	36.60	3.23 / 3.89	1.6 / 3.2	1"7/16-18 UNEF 2A	1"5/16-18 UNEF 2A	52.7	49.2	42.7	25
24	39.78	3.23 / 3.89	1.6 / 3.2	1"7/16-18 UNEF 2A	1"7/16-18 UNEF 2A	55.9	52.4	46.0	26

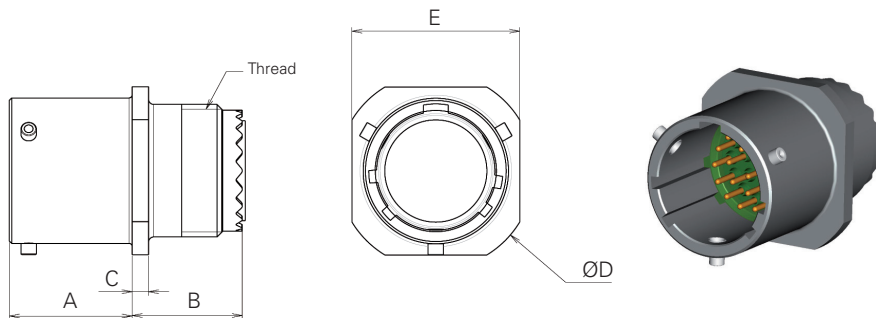
Note: All dimensions are in millimeters (mm)

Type 0 - Square flange receptacle



Shell size	A ⁺⁰ _{-0.2}	B Min.	C	Thread	ØD ^{±0.13}	E ^{±0.4}	F ^{±0.1}
08	16.05	11.8	2.16 / 2.42	7/16-28 UNEF 2A	3.05	20.6	15.1
10	16.05	11.8	2.16 / 2.42	9/16-24 UNEF 2A	3.05	23.8	18.3
12	16.05	11.8	2.16 / 2.42	11/16-24 UNEF 2A	3.05	26.2	20.6
14	16.05	11.8	2.16 / 2.42	13/16-20 UNEF 2A	3.05	28.6	23.0
16	16.05	11.8	2.16 / 2.42	15/16-20 UNEF 2A	3.05	31.0	24.6
18	16.05	11.8	2.16 / 2.42	1"1/16-18 UNEF 2A	3.05	33.3	27.0
20	15.29	11.8	2.92 / 3.18	1"3/16-18 UNEF 2A	3.05	36.5	29.4
22	15.29	11.8	2.92 / 3.18	1"5/16-18 UNEF 2A	3.05	39.7	31.8
24	15.29	11.8	2.92 / 3.18	1"7/16-18 UNEF 2A	3.73	42.9	34.9

Type 1 - In line receptacle



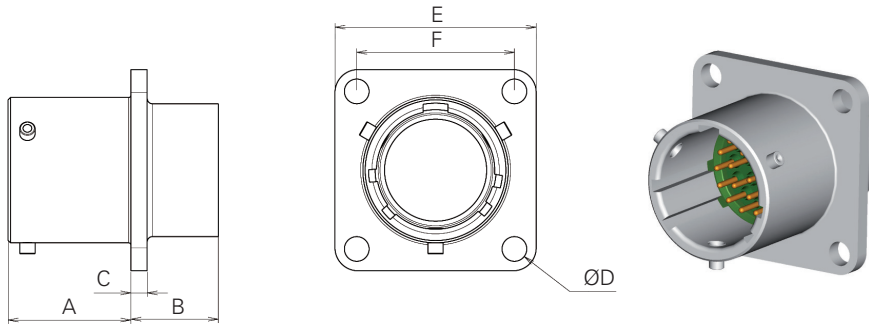
Shell size	A ⁺⁰ _{-0.2}	B Min.	C	Thread	ØD ^{±0.1}	E ^{±0.4}
08	16.05	11.8	2.16 / 2.42	7/16-28 UNEF 2A	18.0	14.2
10	16.05	11.8	2.16 / 2.42	9/16-24 UNEF 2A	22.3	18.5
12	16.05	11.8	2.16 / 2.42	11/16-24 UNEF 2A	25.6	21.8
14	16.05	11.8	2.16 / 2.42	13/16-20 UNEF 2A	29.0	25.2
16	16.05	11.8	2.16 / 2.42	15/16-20 UNEF 2A	31.2	27.4
18	16.05	11.8	2.16 / 2.42	1"1/16-18 UNEF 2A	34.6	31.0
20	15.29	11.8	2.92 / 3.18	1"3/16-18 UNEF 2A	38.0	34.2
22	15.29	11.8	2.92 / 3.18	1"5/16-18 UNEF 2A	41.4	37.6
24	15.29	11.8	2.92 / 3.18	1"7/16-18 UNEF 2A	45.4	41.6

Note: All dimensions are in millimeters (mm)

Souriau 8ST series

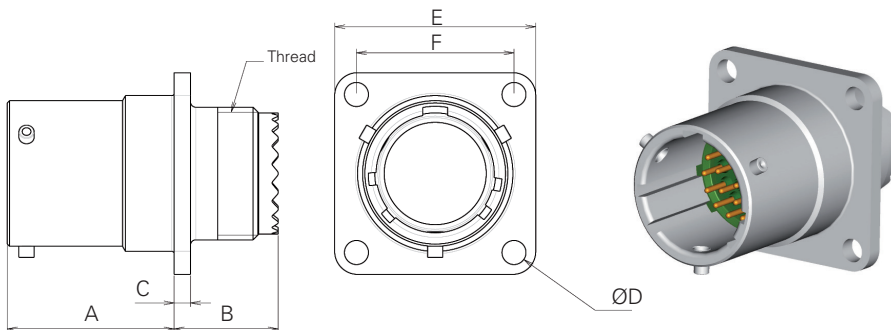
Dimensions

Type 2 - Square flange receptacle (not accepting backshell)



Shell size	A ⁺⁰ _{-0.2}	B Min.	C	ØD ^{±0.13}	E ^{±0.4}	F ^{±0.1}
08	16.05	11.2	2.16 / 2.42	3.05	20.6	15.1
10	16.05	11.2	2.16 / 2.42	3.05	23.8	18.3
12	16.05	11.2	2.16 / 2.42	3.05	26.2	20.6
14	16.05	11.2	2.16 / 2.42	3.05	28.6	23.0
16	16.05	11.2	2.16 / 2.42	3.05	31.0	24.6
18	16.05	11.2	2.16 / 2.42	3.05	33.3	27.0
20	15.29	12.0	2.92 / 3.18	3.05	36.5	29.4
22	15.29	12.0	2.92 / 3.18	3.05	39.7	31.8
24	15.29	13.0	2.92 / 3.18	3.73	42.9	34.9

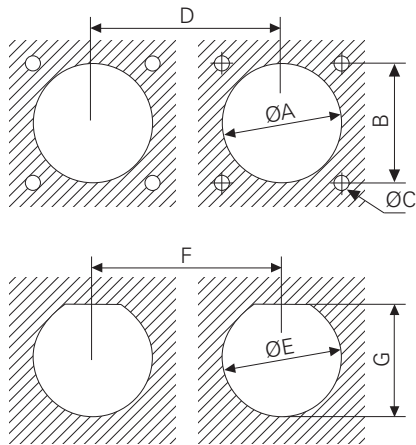
Type 3 - Square flange receptacle (rear mounting)



Shell size	A ⁺⁰ _{-0.2}	B Min.	C	Thread	ØD ^{±0.13}	E ^{±0.4}	F ^{±0.1}
08	21.84	13.5	2.16 / 2.42	7/16-28 UNEF 2A	3.05	20.6	15.1
10	21.84	13.5	2.16 / 2.42	9/16-24 UNEF 2A	3.05	23.8	18.3
12	21.84	13.5	2.16 / 2.42	11/16-24 UNEF 2A	3.05	26.2	20.6
14	21.84	13.5	2.16 / 2.42	13/16-20 UNEF 2A	3.05	28.6	23.0
16	21.84	13.5	2.16 / 2.42	15/16-20 UNEF 2A	3.05	31.0	24.6
18	21.84	13.5	2.16 / 2.42	1"1/16-18 UNEF 2A	3.05	33.3	27.0
20	21.84	13.5	2.16 / 2.42	1"3/16-18 UNEF 2A	3.05	36.5	29.4
22	21.84	13.5	2.16 / 2.42	1"5/16-18 UNEF 2A	3.05	39.7	31.8
24	25.4	12.3	2.16 / 2.42	1"7/16-18 UNEF 2A	3.73	42.9	34.9

Note: All dimensions are in millimeters (mm)

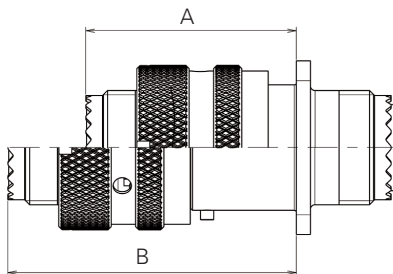
Panel cut-out



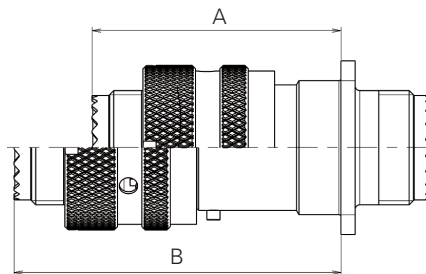
Shell size	Types 0, 2 & 3						Type 7			
	Back panel mounting			Front panel mounting			B	ØE ^{+0.25} ₋₀	F Min.	G ^{+0.25} ₋₀
	ØA ^{+0.25} ₋₀	ØC ^{+0.25} ₋₀	D Min.	ØA ^{+0.25} ₋₀	ØC ^{+0.25} ₋₀	D Min.				
08	14	3.3	28	12.7	3.5	21.45	15.1	14.5	28	13.7
10	17	3.3	31	16	3.5	24.65	18.3	17.7	31	16.9
12	22	3.3	36	19	3.5	27	20.6	22.7	36	21
14	25	3.3	41	22.2	3.5	29.8	23.0	25.7	41	24.2
16	28	3.3	43	25.5	3.5	32.95	24.6	28.8	43	27.3
18	31	3.3	46	28.5	3.5	36.15	27.0	32.0	46	30.5
20	34.5	3.3	53	31.7	3.5	38.9	29.4	35.1	53	33.7
22	37.5	3.3	58	35	3.5	42.1	31.8	38.4	58	36.9
24	41	3.88	61	38	4	45.25	34.9	41.5	61	40

Mated/unmated dimensions

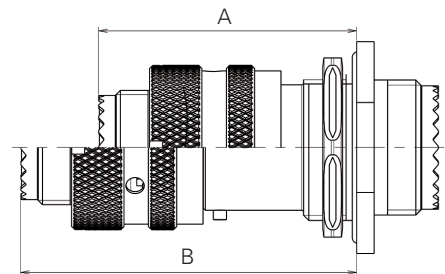
Types 8ST5 & 8ST6
with types
8ST0/8ST1/8ST2



Types 8ST5 & 8ST6
with type 8ST3



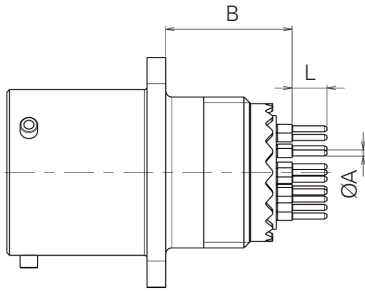
Types 8ST5 & 8ST6
with type 8ST7



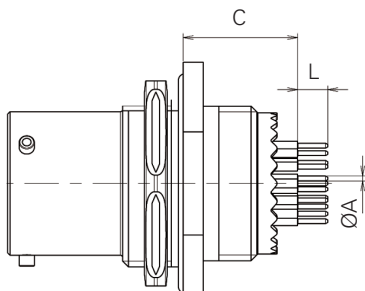
Shell size	A Max.	B Max.	C Max.	D Max.	E Max.	F Max.
08	31.93	46.99	37.72	52.78	39.24	54.30
10	31.93	46.99	37.72	52.78	39.24	54.30
12	31.93	46.99	37.72	52.78	39.24	54.30
14	31.93	46.99	37.72	52.78	39.24	54.30
16	31.93	46.99	37.72	52.78	39.24	54.30
18	31.93	46.99	37.72	52.78	39.24	54.30
20	31.17	46.23	37.72	52.78	39.24	54.30
22	31.17	46.23	37.72	52.78	39.24	54.30
24	31.17	46.23	41.28	56.34	39.24	54.30

Note: All dimensions are in millimeters (mm)

Receptacle with straight PC tail contacts



8ST0



8ST7

	Contact style			Shell type	
	Size	Type	Length	8ST0	8ST7
ØA Max.	#22D / #20	P / S	L / C	0.7	-
		P / S	C	-	0.66
	#22D	P	M	0.5	0.66
	#20	S	M	-	0.66
	#16	P	L	1.66	-
	P / S	C	1.15	1.15	
L	#22D / #20	P / S	L	8.5 ⁺⁰ _{-0.2}	-
		P	L	5.3 ^{±0.1}	-
	#22D	P / S	C	4 ⁺⁰ _{-0.2}	-
	#20 / #16 / #12	P / S	C	5 ^{±0.1}	-
	#22D	P	M	6 ^{±0.1}	6.5 ⁺⁰ _{-0.2}
	#22D / #20 / #16	P / S	C	-	4 ^{±0.1}
B	#22D	P / S	L / C	14.07 / 15.06	14.07 / 15.06
		P	M	14.24 / 15.23	14.24 / 15.23
	#20	P / S	L	14.07 / 15.06	14.07 / 15.06
		P / S	C	14.24 / 15.23	14.24 / 15.23
	#16	P	L	18.62 / 19.61	18.62 / 19.61
	#16 / #12	P / S	C	14.24 / 15.23	14.24 / 15.23
C	#22D	P	M	13.86 / 14.86	13.86 / 14.86
	#20	S	M	13.86 / 14.86	13.86 / 14.86
	#22D / #20 / #16	P / S	C	14.79 / 15.79	14.79 / 15.79

Note: All dimensions are in millimeters (mm)

Straight PC tail contacts

Shell type	Contact length	Contact size	Contact type	Part number (no color code)	Profile	
8ST0	L	#22D	P	8599-0720		
			S	8599-0721		
		#20	P	8599-0771		
			S	8599-0772		
		#16	P	8599-7496A		
		C	#22D	P	8599-0730	
	S			8599-0731		
	#20		P	8599-0724		
			S	8599-0725		
	#16		P	8599-0726		
			S	8599-0727		
	#12		P	8599-7929		
			S	8599-7932		
	M	#22D	P	8599-8028		
	8ST7	C	#22D	P	8599-0779	
				S	8599-0788	
#20			P	8599-0780		
			S	8599-0789		
#16			P	8599-7711		
			S	8599-7710		
M		#22D	P	8599-0728		
		#20	S	8599-0786		

Crimp contacts

Contact size	Contact type	Part number (no color code)	QPL part number	Profile and color code
#22D	P	8599-0702 JJ	M39029/58-360	Black / Blue / Orange
	S	8599-0706 900	M39029/56-348	Grey / Yellow / Orange
#20	P	8599-0703 SA	M39029/58-363	Orange / Blue / Orange
	S	8599-0707 900	M39029/56-351	Brown / Green / Orange
#16	P	8599-0704 MJ	M39029/58-364	Yellow / Blue / Orange
	S	8599-0708 900	M39029/56-352	Red / Green / Orange
#12	P	8599-0705 MJ	M39029/58-365	Green / Blue / Orange
	S	8599-0709 900	M39029/56-353	Orange / Green / Orange
#8 Power	P	8599-7560	-	-
	S	8599-7561	-	-
#4 Power	P	8599-7534	-	-
	S	8599-7535	-	-

Souriau 8ST series

Contacts

Coaxial contacts #12

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

Solder cup


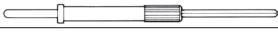
Contact size	Contact type	Part number
#22D	Pin	8599-0750 900
#20	Pin	8599-0077A 900
#16	Pin	8599-7482A 900
#12	Socket	8599-7485A 900

For other contact types, please contact us.

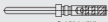





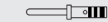

Quadrax #8 contacts

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

Wire wrap contacts

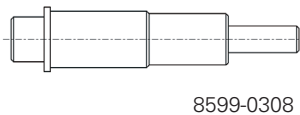
Contact size	Contact type	Part number	Contact Ø (mm)	Profile	(mm)
#22D	Pin	8599-0790 JJ	0.76		0.86
#20	Pin	8599-0791 900	1		0.86

Thermocouple contacts

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

Wire wrap contacts

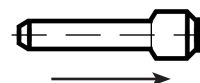
Size	Part number
#16	8599-6A016001A
#8	8599-0308
#4	8599-0310



8599-0308

Filler plugs

Contact size	MS (Rev. N)		Souriau		JN1003 (EFA)*
	Part number	Color	Part number	Color	Part number
#22D	MS27488-22-2	Black	8660-212	Black	JN1003 N 22
#20	MS27488-20-2	Red	8522-389A	Red	JN1003 N 20
#16	MS27488-16-2	Green	8522-390A	Blue	JN1003 N 16
#12	MS27488-12-2	Orange	8522-391A	Yellow	JN1003 N 12



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

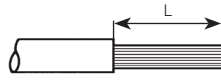
Souriau 8ST series

Wiring instructions

Wiring instructions

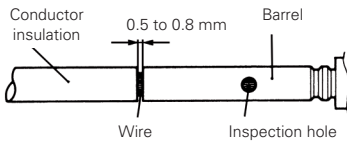
Cable preparation and wire stripping

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



L = length of wire stripping

Insertion of wire in contact barrel

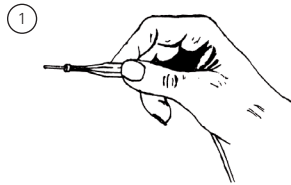


When inserting the stripped wire into the contact barrel check that no strands are left outside and that the wire is visible through the wire inspection hole in the barrel.

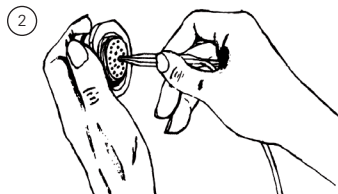
Important:

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

Insertion of the contacts



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

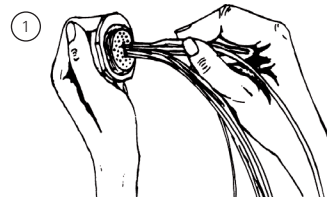


2 - Introduce the contact into the required contact cavity in the insulator, pushing tool axially, until the contact snaps into position in clip.

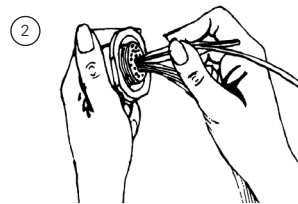


3 - Withdraw the tool from rear. Check that contact is firmly locked by pulling wire gently. When connector is fully loaded, check the position of contact tips. They should all be in the same plane. Note: For larger sizes of cable which are stiff enough manual insertion without tool is preferable.

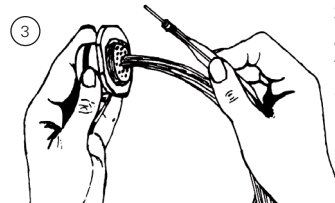
Extraction of the contacts



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



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



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

Tooling

Crimping tools

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

Contact size	Contact type	Plier M22520/2-01 (Souriau 8476-01)	Plier M22520/31-01	Plier M22520/4-01	Plier M22520/5-01
		Locator Part number	Locator Part number	Locator Part number	Die set Part number
#12 Coax M39029/102-558 M39029/103-559	Inner	-	-	-	M22520/5-03
	Outer	-	-	-	M22520/5-03
#12 Coax M39029/28-211 M39029/75-416	Inner	M22520/2-34	-	-	-
	Outer	-	M22520/31-02	-	-
#16 Coax	Inner	M22520/2-35	-	-	-
	Outer	-	-	M22520/4-02	-
#8 Coax	Inner	M22520/2-31	-	-	-
	Outer	-	-	-	M22520/5-05 closure B
#8 Concentric Twinax **	Inner	M22520237	-	-	-
	Middle	-	-	-	Y631 closure B
	Ferrule	-	-	-	Y631 closure A

* Pneumatic plier

Note: Please contact us for the #10 contact's plier and locator.

** Concentric Twinax = Triax

Souriau 8ST series

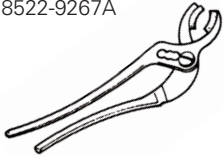
Tooling

Insertion & extraction tools

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

Backshell tightening tools

8522-9267A



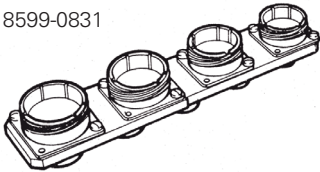
Backshell tightening pliers, part number: **8522-9267A**

Tightening of rear accessories:

Shell size	8	10	12	14	16	18	20	22	24
Max torque in m/daN	0.62	0.62	0.62	0.62	0.62	0.62	1.24	1.24	1.24

Tightening support

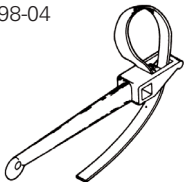
8599-0831



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

Slackening tools

8498-04



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

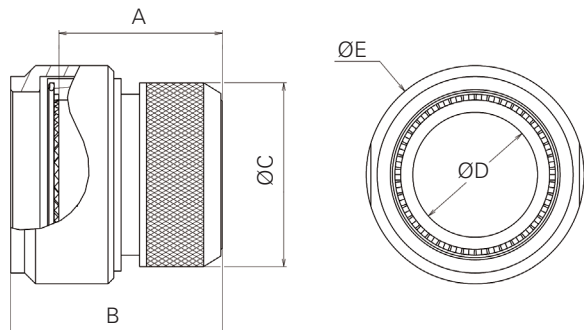
Tightening of fixing nuts, receptacle type 7

Shell size	08	10	12	14	16	18	20	22	24
Nut dimension across flats	19.1	22.2	27.0	30.2	33.3	36.5	39.7	42.7	46.0
Max tightening torque on nut (mN)	4	6	9	10	13	20	23	25	26

Backshells

Aluminum backshell

Backshell for shielded cables and heatshrink boot



Dimensions

Shell size	A Max	B Max	ØC Max	ØD Max	ØE ±0.2
08	24.8	34	14	6.4	19
10	25.8	35	16	7.2	22
12	25.8	35	18	9.7	25
14	25.8	36	22	12.7	28
16	26.8	36	25	15.7	30
18	26.8	36	28	18.7	34
20	26.8	36	32	21.7	38
22	26.8	36	34	23.7	43
24	26.8	36	38	27.7	45

Ordering information

8LST 101 B 52

Basic series

Orientation
57: Backshell for shielded cables and heatshrink boot

Plating
B: Olive green cadmium

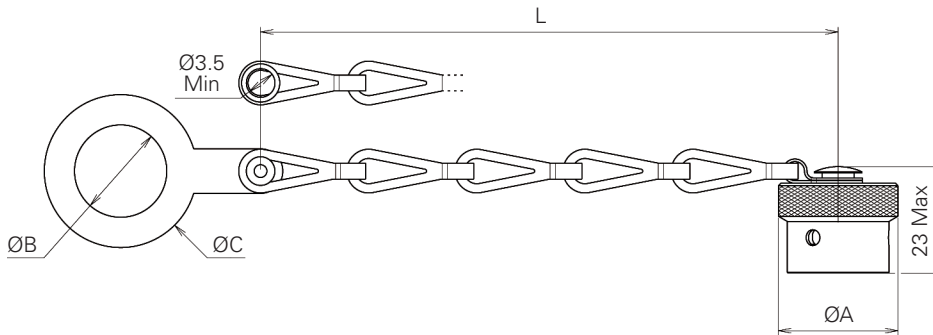
Size code										
101, 102, 103, 104, 105, 106, 107, 108, 109										
Size code	101	102	103	104	105	106	107	108	109	
= Shell size	All shell types, except type 7	08	10	12	14	16	18	20	22	24
	Shell type 7	N/A	08	10	12	14	16	18	20	22&24

Souriau 8ST series

Protective caps, dimensions

Protective caps

Metallic protective caps for receptacle



Dimensions

Shell size	ØA Max	ØB Min	ØC Max	L
08	19	14.6	23.5	84
10	22	17.8	26.77	84
12	26	22.5	31.55	100
14	29	25.7	36.83	100
16	33	28.9	40.31	100
18	36	32.1	43.18	100
20	39	35.2	46.36	116
22	44	38.4	49.19	116
24	46	41.6	52.71	116

Ordering information

8500- 0 2 -44D

Basic series

8500-: Cap for receptacle

Plating & fixing type

J: Olive green cadmium plating with metallic chain and ring
D: Olive green cadmium plating with metallic chain and eyelet
-44D: Nickel plating with metallic chain and eyelet

Size code

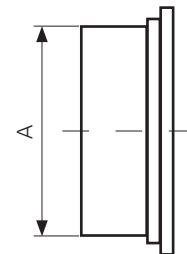
02, 03, 04, 05, 27, 06, 07, 08, 09

Size code 02 03 04 05 27 06 07 08 09

= Shell size 8ST 08 10 12 14 16 18 20 22 24

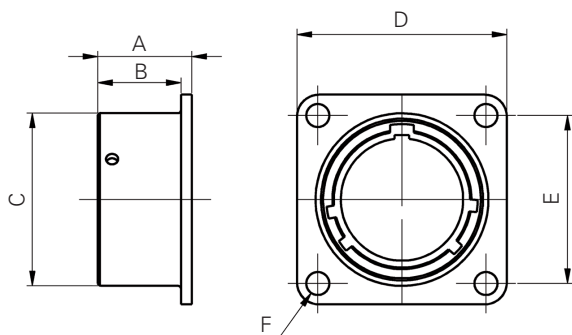
Plastic protective caps

Shell size	ØA		Part numbers	
	Cap for receptacle	Cap for plug	Cap for receptacle	Cap for plug
08	15.40	16.65	8500 5585 A	70 777
10	18.30	19.72	8500 5586 A	70 205
12	22.65	-	8500 5587 A	MS90376 16Y
14	25.80	30.80	8500 5588 A	8500 5600
16	29.20	33.90	8500 5589 A	8500 5601
18	32.40	37.00	8500 5590 A	8500 5602
20	35.60	39.00	8500 5591 A	8500 5592A
22	39.00	42.20	8500 5592 A	8500 5593A
24	42.20	44.50	8500 5593 A	70 472



Note: All dimensions are in millimeters (mm)

Dummy receptacles



Shell size	Part numbers	A Max	B Max	ØC	D Max	E	ØF ^{#13}
08	8ST0-08GUR	18.35	16.05	12.04	21.00	15.10	3.05
10	8ST0-10GUR	18.35	16.05	15.02	24.20	18.26	3.05
12	8ST0-12GUR	18.35	16.05	19.08	26.60	20.62	3.05
14	8ST0-14GUR	18.35	16.05	22.26	29.00	23.01	3.05
16	8ST0-16GUR	18.35	16.05	25.43	31.35	24.61	3.05
18	8ST0-18GUR	18.35	16.05	28.61	33.70	26.98	3.05
20	8ST0-20GUR	18.35	15.29	31.78	36.90	29.38	3.05
22	8ST0-22GUR	18.35	15.29	34.96	40.10	31.77	3.05
24	8ST0-24GUR	18.35	15.29	38.13	43.30	34.92	3.73

Panel gasket

Shell size	Part numbers		
	Gasket for receptacle type 0		O ring for receptacle type 7
08	8525-1431	8590-2251	AS3582-017
10	8525-1432	8590-2252	AS3582-019
12	8525-1433	8590-2253	AS3582-022
14	8525-1434	8590-2254	AS3582-024
16	8525-1435	8590-2255	AS3582-026
18	8525-1436	8590-2256	AS3582-028
20	8525-1437	8590-2257	AS3582-128
22	8525-1438	8590-2258	AS3582-130
24	8525-1439	8590-2259	AS3582-132

Notes:

- 8ST0 gasket must be ordered separately
- Compliant to 8ST Series temperature range - max 200°C
- For use up to 125°C, gaskets in accordance with VG95328:
 - VG95328T07A...= non conductive
 - VG95328 07B...= conductive (for HF application)

Note: All dimensions are in millimeters (mm)

Souriau 8ST series

Reducers, boots, orientations

Reducers

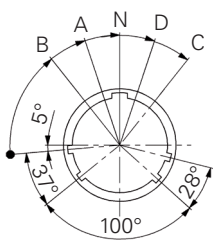
Reducer Size	Part number	For cable	For pin contacts	For socket contacts
#8 Power	8599-7645	#10	8599-7580	8599-7581
#4 Power	8400-2352A	10 mm ²	8599-7534A	8599-7535A

Boots

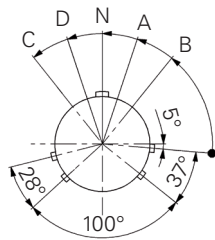
Boot Size	Part number	Admissible wire section mm ²		For cable
#8 Power	8599-4542	5	6.5	8.48 à 10 mm ²
	8599-4547	2.5	4	#10
#4 Power	8599-4594	6.35	7.5	#4 - #5
	8599-4593	4	5.8	#6 - #8

Orientations

Polarization is determined by the master keyway position. The secondary keyway positions remain fixed.



View from front face of receptacle



View from front face of plug

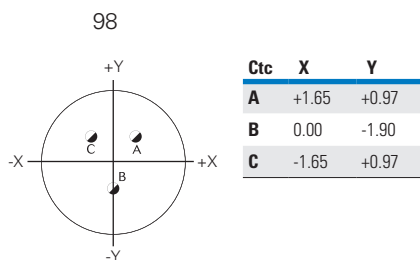
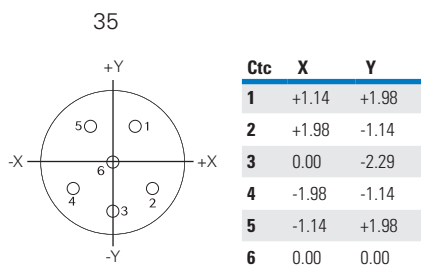
Shell size	Angles (degrees)				
	N	A	B	C	D
08	95	77	-	-	113
10	95	81	67	123	109
12	95	75	63	127	115
14	95	74	61	129	116
16	95	77	65	125	113
18	95	77	65	125	113
20	95	77	65	125	113
22	95	80	69	121	110
24	95	80	69	121	110

Coordinates for straight PC tail terminations

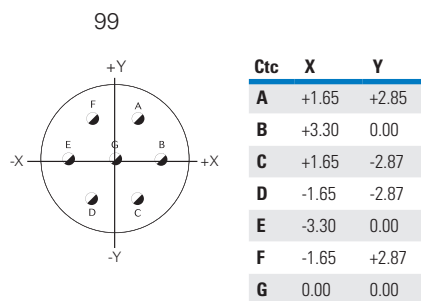
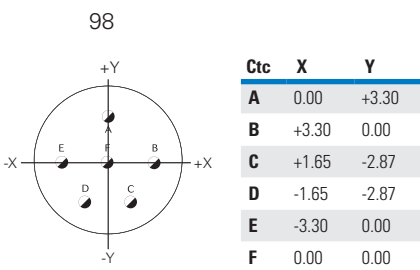
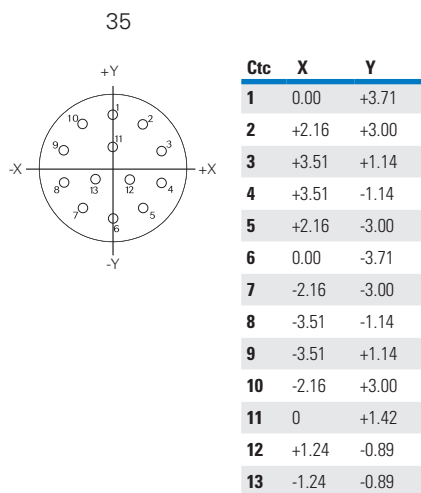
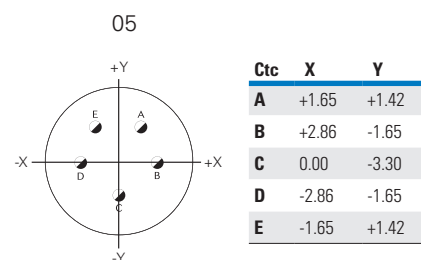
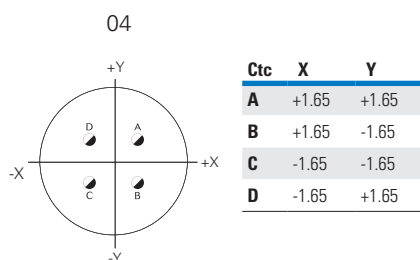
Viewed from front face of male insulator

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

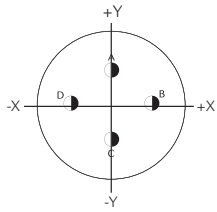
08



10

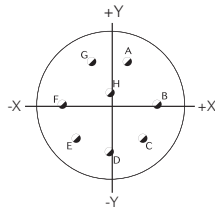


04



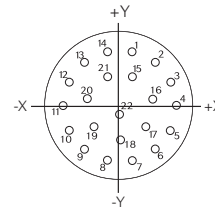
Ctc	X	Y
A	0.00	+3.81
B	+3.71	+0.89
C	0.00	-2.11
D	-3.71	+0.89

08



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

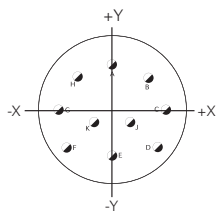
35



Ctc	X	Y
8	-1.14	-5.00
9	-3.20	-4.01
10	-4.62	-2.24
11	-5.16	0.00
12	-4.62	+2.24
13	-3.20	+4.01
14	-1.14	+5.00
15	+1.14	+2.72
16	+2.97	+0.66
17	+2.36	-1.91
18	0.00	-3.05
19	-2.36	-1.91
20	-2.97	+0.66
21	-1.24	+2.72
22	0.00	-0.76

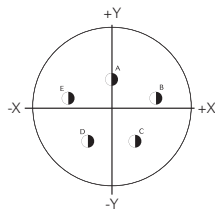
Ctc	X	Y
1	+1.14	+5.00
2	+3.20	+4.01
3	+4.62	+2.24
4	+5.16	0.00
5	+4.62	-2.24
6	+3.20	-4.01
7	+1.14	-5.00

98



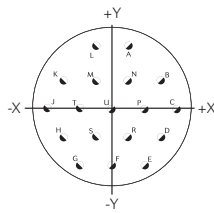
Ctc	X	Y
A	0.00	+4.95
B	+3.18	+3.81
C	+4.90	+0.76
D	+4.17	-2.67
E	0.00	-3.43
F	-4.17	-2.67
G	-4.90	+0.76
H	-3.18	+3.81
J	+1.65	-0.38
K	-1.65	-0.38

05



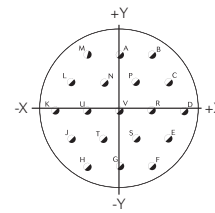
Ctc	X	Y
A	0	+2.54
B	+4.42	+0.61
C	+2.39	+3.76
D	-2.39	-3.76
E	-4.42	+0.61

18



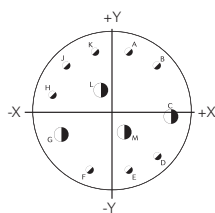
Ctc	X	Y
A	+1.65	+6.40
B	+4.95	+2.87
C	+6.60	0.00
D	+4.95	-2.87
E	+3.30	-5.72
F	0.00	-5.72
G	-3.30	-5.72
H	-4.95	-2.87
J	-6.60	0.00
K	-4.95	+2.87
L	-1.65	+6.40
M	-1.65	+2.87
N	+1.65	+2.87
P	+3.30	0.00
R	+1.65	-2.87
S	-1.65	-2.87
T	-3.30	0.00
U	0.00	0.00

19



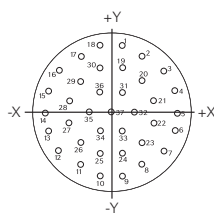
Ctc	X	Y
A	0.00	+5.72
B	+3.30	+5.72
C	+4.95	+2.87
D	+6.60	0.00
E	+4.95	-2.87
F	+3.30	-5.72
G	0.00	-5.72
H	-3.30	-5.72
J	-4.95	-2.87
K	-6.60	0.00
L	-4.95	+2.87
M	-3.30	+5.72
N	-1.65	+2.87
P	+1.65	+2.87
R	+3.30	0.00
S	+1.65	-2.87
T	-1.65	-2.87
U	-3.30	0.00
V	0.00	0.00

97



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

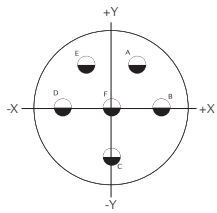
35



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

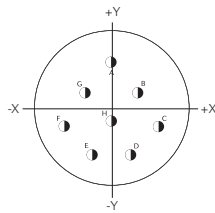
Ctc	X	Y
20	+3.12	+3.02
21	+4.32	+1.02
22	+4.32	-1.27
23	+3.12	-3.23
24	+1.14	-4.37
25	-1.14	-4.37
26	-3.12	-3.23
27	-4.32	-1.27
28	-4.32	+1.02
29	-3.12	+3.02
30	-1.14	+4.37
31	+1.14	+1.88
32	+2.29	-0.10
33	+1.14	-2.08
34	-1.14	-2.08
35	-2.29	-0.10
36	-1.14	+1.88
37	0.00	-0.10

06



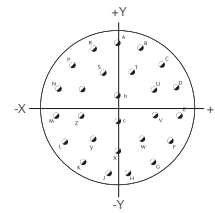
Ctc	X	Y
A	+3.07	+5.31
B	+6.12	0.00
C	0.00	-6.12
D	-6.12	0.00
E	-3.07	+5.31
F	0.00	0.00

08



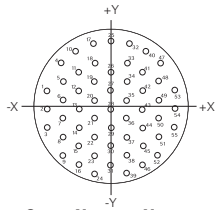
Ctc	X	Y
A	0.00	+5.99
B	+3.25	+2.18
C	+5.84	-1.98
D	+2.39	-5.49
E	-2.39	-5.49
F	-5.84	-1.98
G	-3.25	+2.18
H	0.00	-1.32

26



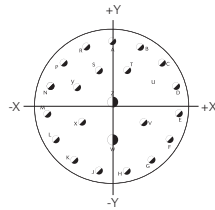
Ctc	X	Y
A	0.00	+8.15
B	+3.33	+7.44
C	+6.07	+5.44
D	+7.75	+2.51
E	+8.10	-0.86
F	+7.06	-4.09
G	+4.80	-6.60
H	+1.70	-7.98
J	-1.70	-7.98
K	-4.80	-6.60
L	-7.06	-4.09
M	-8.10	-0.86
N	-7.75	+2.51
P	-6.07	+5.44
R	-3.33	+7.44
S	-1.78	+4.50
T	+1.78	+4.50
U	+4.45	+2.39
V	+4.53	-0.91
W	+3.02	-3.84
X	0.00	-5.16
Y	-3.02	-3.84
Z	-4.53	-0.91
a	-4.45	+2.39
b	0.00	+1.65
c	0.00	-1.65

35



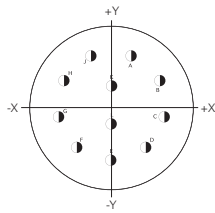
Ctc	X	Y
1	-7.92	+2.18
2	-7.92	-0.10
3	-7.92	-2.39
4	-6.15	+5.61
5	-5.94	+3.33
6	-5.94	+1.04
7	-5.94	-1.24
8	-5.94	-3.53
9	-5.94	-5.82
10	-4.37	+7.09
11	-3.96	+4.47
12	-3.96	+2.18
13	-3.96	-0.10
14	-3.96	-2.39
15	-3.96	-4.67
16	-3.96	-6.96
17	-2.26	+8.03
18	-1.98	+5.61
19	-1.98	+3.33
20	-1.98	+1.04
21	-1.98	-1.24
22	-1.98	-3.53
23	-1.98	-5.82
24	-1.98	-8.10
25	0.00	+8.36
26	0.00	+4.47
27	0.00	+2.18
28	0.00	-0.10
29	0.00	-2.39
30	0.00	+4.67
31	0.00	-6.96
32	+2.26	+8.03
33	+1.98	+5.61
34	+1.98	+3.33
35	+1.98	+1.04
36	+1.98	-1.24
37	+1.98	-3.53
38	+1.98	-5.82
39	+1.98	-8.10
40	+4.37	+7.09
41	+3.96	+4.47
42	+3.96	+2.18
43	+3.96	-0.10
44	+3.96	-2.39
45	+3.96	-4.67
46	+3.96	-6.96
47	+6.15	+5.61
48	+5.94	+3.33
49	+5.94	+1.04
50	+5.94	-1.24
51	+5.94	-3.53
52	+5.94	-5.82
53	+7.92	+2.18
54	+7.92	-0.10
55	+7.92	-2.39

99



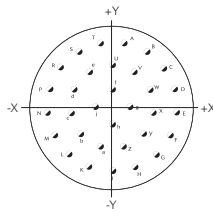
Ctc	X	Y
A	0.00	+8.15
B	+3.33	+7.44
C	+6.07	+5.44
D	+7.75	+2.51
E	+8.10	-0.86
F	+7.06	-4.09
G	+4.80	-6.60
H	+1.70	-7.98
J	-1.70	-7.98
K	-4.80	-6.60
L	-7.06	-4.09
M	-8.10	-0.86
N	-7.75	+2.51
P	-6.07	+5.44
R	-3.33	+7.44
S	-1.78	+4.50
T	+1.78	+4.50
U	+4.45	+2.39
V	+3.81	-1.91
W	0.00	-4.09
X	-3.81	-1.91
Y	-4.45	+2.39
Z	0.00	+0.64

11



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

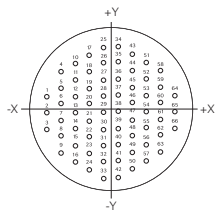
32



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

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

35



Ctc	X	Y
1	-9.07	+2.29
2	-9.07	0.00
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

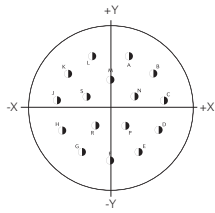
Ctc	X	Y
15	-5.11	-4.57
16	-5.11	-6.86
17	-3.12	+8.00
18	-3.12	+5.71
19	-3.12	+3.43
20	-3.12	+1.14
21	-3.12	-1.14
22	-3.12	-3.43
23	-3.12	-5.71
24	-3.12	-8.00
25	-1.14	+9.14
26	-1.14	+6.86
27	-1.14	+4.57

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

Ctc	X	Y
41	+1.14	-6.86
42	+1.14	-9.14
43	+3.12	+8.00
44	+3.12	+5.71
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

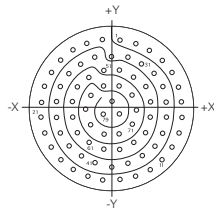
Ctc	X	Y
54	+5.11	0.00
55	+5.11	-2.29
56	+5.11	-4.57
57	+5.11	-6.86
58	+7.09	+5.71
59	+7.09	+3.43
60	+7.09	+1.14
61	+7.09	-1.14
62	+7.09	-3.43
63	+7.09	-5.71
64	+9.07	+2.29
65	+9.07	0.00
66	+9.07	-2.29

16



Ctc	X	Y
A	+3.00	+8.18
B	+6.88	+5.36
C	+8.66	+0.91
D	+7.82	-3.81
E	+4.62	-7.37
F	0.00	-8.71
G	-4.62	-7.37
H	-7.82	-3.81
J	-8.66	+0.91
K	-6.88	+5.36
L	-3.00	+8.18
M	0.00	+4.45
N	+3.91	+1.57
P	+2.39	-3.10
R	-2.39	-3.10
S	-3.91	+1.57

35



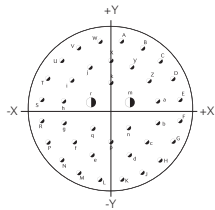
Ctc	X	Y
1	+1.35	+10.82
2	+3.71	+10.26
3	+5.89	+9.19
4	+7.77	+7.67
5	+9.27	+5.77
6	+10.31	+3.58
7	+10.85	+1.22
8	+10.85	-1.22
9	+10.31	-3.58
10	+9.27	-5.77
11	+7.77	-7.67
12	+5.89	-9.19
13	+3.71	-10.26

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

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

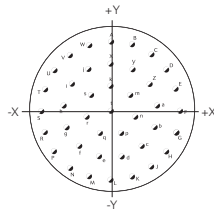
Ctc	X	Y
58	+3.40	-5.05
59	+1.22	-6.12
60	-1.22	-6.12
61	-3.40	-5.05
62	-5.28	-3.53
63	-6.02	-1.22
64	-6.02	+1.22
65	-5.28	+3.53
66	-3.40	+5.05
67	-1.22	+3.71
68	+1.22	+3.71
69	+3.18	+2.29
70	+3.94	0.00
71	+3.18	-2.29
72	+1.22	-3.71
73	-1.22	-3.71
74	-3.18	-2.29
75	-3.94	0.00
76	-3.18	+2.29
77	0.00	+1.35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

39



Ctc	X	Y
S	-10.44	+1.65
T	-9.42	+4.80
U	-7.47	+7.47
V	-4.80	+9.42
W	-1.65	+10.44
X	0.00	+7.49
Y	+3.20	+6.50
Z	+5.89	+4.55
a	+7.11	+1.45
b	+7.11	-1.88
c	+5.51	-4.80
d	+2.84	-6.73
e	-2.84	-6.73
f	-5.51	-4.80
g	-7.11	-1.88
h	-7.11	+1.45
i	-5.89	+4.55
j	-3.20	+6.50
k	0.00	+4.17
m	+2.90	+1.22
n	+2.69	-2.72
p	0.00	-4.80
q	-2.69	-2.72
r	-2.90	+1.22

41

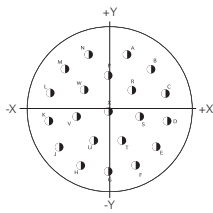


Ctc	X	Y
A	0.00	+10.60
B	+3.28	+10.09
C	+6.23	+8.58
D	+8.58	+6.23
E	+10.09	+3.28
F	+10.60	0.00
G	+10.09	-3.28
H	+8.58	-6.23
J	+6.23	-8.58
K	+3.28	-10.09
L	0.00	-10.60
M	-3.26	-10.09
N	-6.23	-8.58
P	-8.58	-6.23
R	-10.09	-3.28
S	-10.60	0.00
T	-10.09	+3.28
U	-8.58	+6.23
V	-6.23	+8.58
W	-3.28	+10.09
X	0.00	+7.20

Ctc	X	Y
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

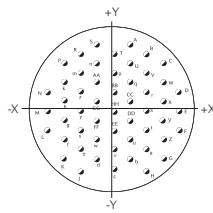
22

21



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

53



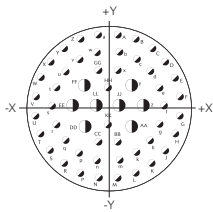
Ctc	X	Y
A	+2.84	+11.56
B	+5.72	+9.91
C	+8.53	+8.26
D	+11.43	+3.30
E	+11.43	0.00
F	+11.43	-3.30
G	+8.53	-8.26
H	+5.72	-10.41
J	-5.72	-10.41
K	-8.53	-8.26
L	-11.43	-3.30
M	-11.43	0.00
N	-11.43	+3.30
P	-8.53	+8.26
R	-5.72	+9.91
S	-2.84	+11.56
T	0.00	+9.91
U	+2.84	+8.26
V	+5.72	+6.60
W	+8.53	+4.95

Ctc	X	Y
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

Ctc	X	Y
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

24

04

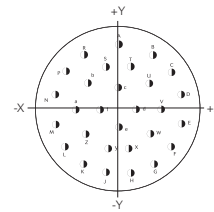


Ctc	X	Y
A	+1.75	+13.49
B	+5.16	+12.57
C	+8.23	+10.80
D	+10.77	+8.28
E	+12.52	+5.21
F	+13.49	+1.75
G	+13.49	-1.75
H	+12.52	-5.21
J	+10.77	-8.28
K	+8.23	-10.80
L	+5.16	-12.57
M	+1.75	-13.49
N	-1.75	-13.49
P	-5.16	-12.57

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

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

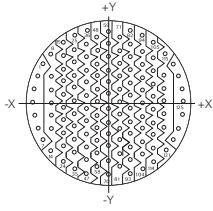
29



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

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

35



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

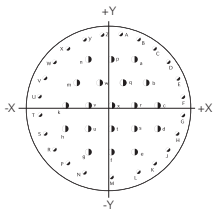
Ctc	X	Y
27	-6.32	+7.24
28	-6.32	+4.83
29	-6.32	+2.41
30	-6.32	0.00
31	-6.32	-2.41
32	-6.32	-4.83
33	-6.32	-7.24
34	-6.32	-9.65
35	-6.32	-12.07
36	-4.06	+13.49
37	-4.22	+10.85
38	-4.22	+8.43
39	-4.22	+6.02
40	-4.22	+3.61
41	-4.22	+1.19
42	-4.22	-1.19
43	-4.22	-3.61
44	-4.22	-6.02
45	-4.22	-8.43
46	-4.22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

Ctc	X	Y
53	-2.11	0.00
54	-2.11	-2.41
55	-2.11	-4.83
56	-2.11	-7.24
57	-2.11	-9.65
58	-2.11	-12.07
59	0.00	+13.26
60	0.00	+10.85
61	0.00	+8.43
62	0.00	+6.02
63	0.00	+3.61
64	0.00	+1.19
65	0.00	-1.19
66	0.00	-3.61
67	0.00	-6.02
68	0.00	-8.43
69	0.00	-10.85
70	0.00	-14.10
71	+2.11	+12.07
72	+2.11	+9.65
73	+2.11	+7.24
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

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

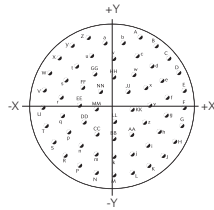
Ctc	X	Y
104	+6.32	-12.07
105	+8.43	+11.28
106	+8.43	+8.43
107	+8.43	+6.02
108	+8.43	+3.61
109	+8.43	+1.19
110	+8.43	-1.19
111	+8.43	-3.61
112	+8.43	-6.02
113	+8.43	-8.43
114	+8.43	-10.85
115	+10.77	+9.07
116	+10.54	+4.83
117	+10.54	+2.41
118	+10.54	0.00
119	+10.54	-2.41
120	+10.54	-4.83
121	+10.77	-9.07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

43



Ctc	X	Y
Y	-5.16	+12.57
Z	-1.75	+13.4
a	+4.37	+8.74
b	+6.55	+4.37
c	+8.74	0.00
d	+8.74	-4.37
e	+4.37	-8.74
f	0.00	-8.74
g	-4.37	-8.74
h	-8.74	-4.37
k	-8.74	0.00
m	-6.55	+4.37
n	-4.37	+8.74
p	0.00	+8.74
q	+2.18	+4.37
r	+4.37	0.00
s	+4.37	-4.37
t	0.00	-4.37
u	-4.37	-4.37
v	-4.37	0.00
w	-2.18	+4.37
x	0.00	0.00

61



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

Ctc	X	Y
Z	-4.98	+12.10
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

Ctc	X	Y
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



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