MIL-DTL-38999 Series II

MIL-DTL-38999 series II circular connector is designed for quick bayonet coupling, solder contact and removable crimp contact, EMI/RFI shielding, high contact density, small size, light weight, short shell and mating hermetic.

This family of circular connectors is offered 3 kinds of shell of different material, 9 kinds of size shell, 3 kinds of finishes, 2 plug styles, 5 receptacle-mounting styles, 4 kinds of contact and more than 50 kinds of contact layout.

Part number

MS	27513	T	18	C	35	P	N

Basic series

Type of connector
- 27473 = Plug
- 27472 = Wall mounting square receptacle, front
- 27497 = Wall mounting square receptacle, rear
- 27513 = Box square receptacle, front
- 27508 = Box square receptacle, rear
- 27474 = Jam nut receptacle
- 27484 = Shielded plug

Shell
- T = With thread and accessory
- E = Without thread or accessory

Shell size
- 08, 10, 12, 14, 16, 18, 20, 22, 24

Finish
- B = Olive green cadmium plating
- C = Black anodized
- E = Passivated stainless steel
- F = Electroless nickel plating

Contact layout (See below)

Type of contact
- P = Crimp pin
- S = Crimp socket
- PH = Solder pin
- SH = Solder socket
- PL = Long PCB pin
- PC = Short PCB pin
- SL = Long PCB socket
- SC = Short PCB socket

Orientation
- N = Normal
- A, B, C, D

Electrical

Contact resistance and current rating:

Contact ID	Diameter (mm)	Resistance (mΩ)	Current (A)
22D#	Φ 0.76	≤ 12	5.0
20#	Φ 1.00	≤ 5.0	7.5
16#	Φ 1.60	≤ 2.5	13.0
12#	Φ 2.40	≤ 1.5	23.0

EMI shielding:

100MHz~1GHz: minimum attenuation 85 dB

1GHz~10GHz: minimum attenuation 50 dB

Withstanding voltage (V):

Service rating	M	I	II
Sea level	1300	1800	2300
21000m	800	1000	1000

Insulation resistance:

Normal ≥ 5000MΩ, damp heat ≥ 100MΩ

Electrical continuity between shells:

E class ≤ 5.0mΩ, B class ≤ 2.5mΩ, F class ≤ 1.0mΩ

Mechanical

Shell: Aluminum alloy, stainless steel or copper-alloy

Plating:

B class: Olive green cadmium plating

C class: Black anodized

E class: Stainless steel passivated

F class: Electroless nickel plating

Insulator: Thermo-set plastic

Grommet and seal: Silicon rubber

Contact: Copper alloy with gold plated,

Endurance: 500 cycles

Vibration:

Random vibration: at frequency: 100 ~ 1000 Hz, density of power chart: 1 G^2/Hz

Shock: at 3 ms half sinusoid, peak value of acceleration: 300 g

Environmental

Operating temperature:

B class: -65 ^oC ~ +175 ^oC

C, E, F class: -65 ^oC ~ +200 ^oC

Salt spray: According to method from MIL-DTL-38999

F class 48h

C class 96h

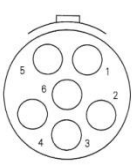
B class 500h

E class 1000h

Relative humidity: 98 % at 40 °C

Operating height: ≤ 30480m

Contact layout



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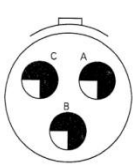

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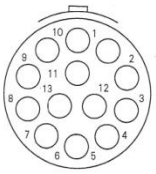

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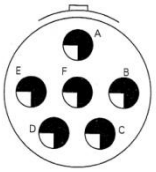

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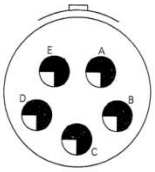

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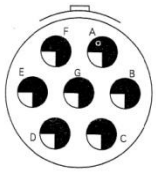

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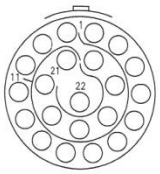

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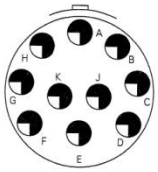

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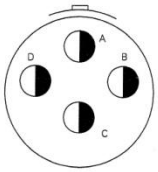

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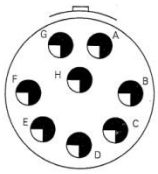

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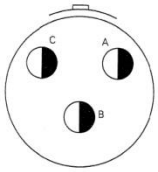

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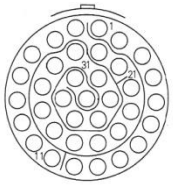

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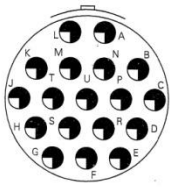

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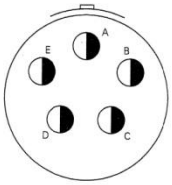

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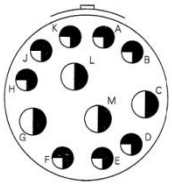

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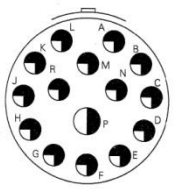

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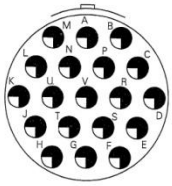

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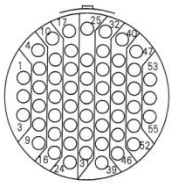

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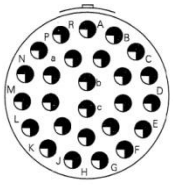

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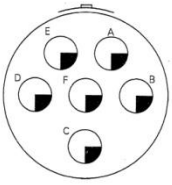

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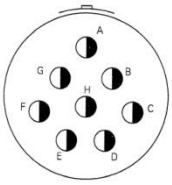

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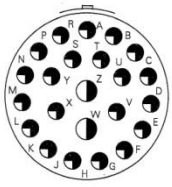

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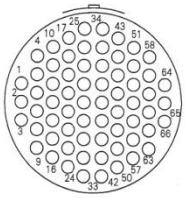

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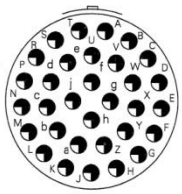

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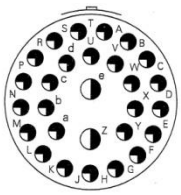

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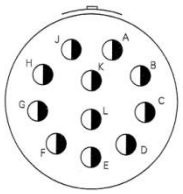

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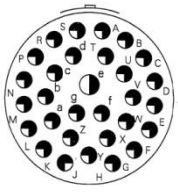

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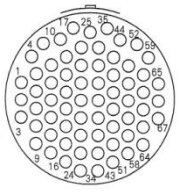

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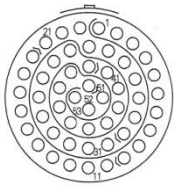

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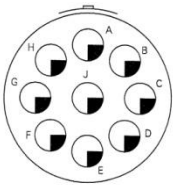

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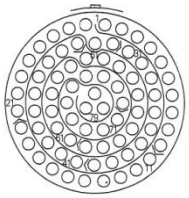

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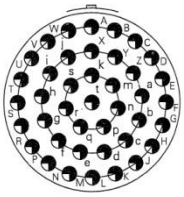

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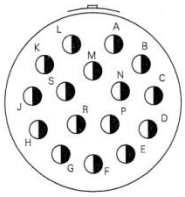

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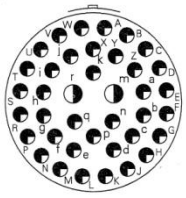

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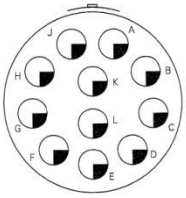

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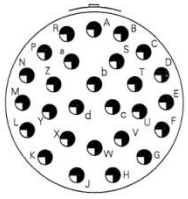

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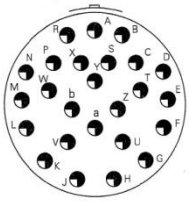

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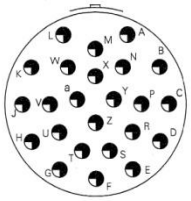

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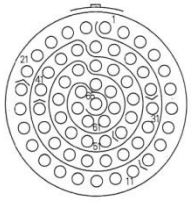

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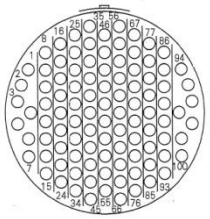

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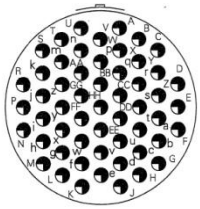

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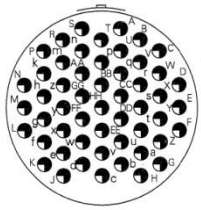

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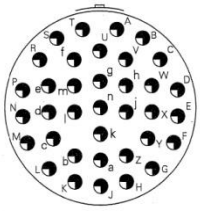

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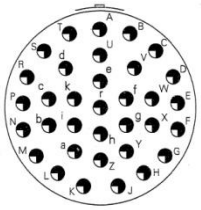

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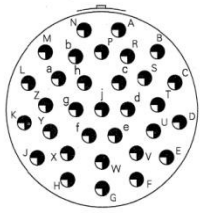

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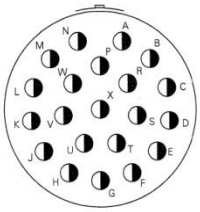

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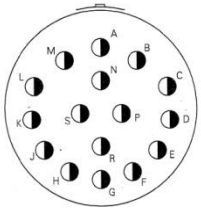

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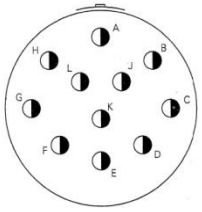

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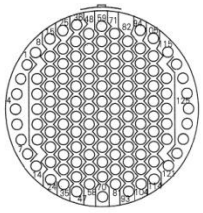

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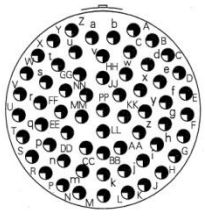

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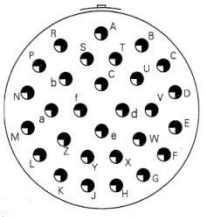

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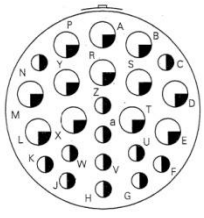

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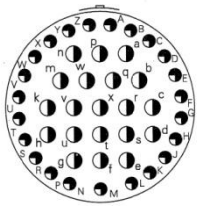
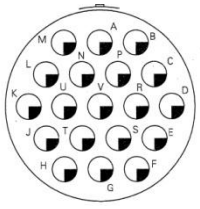
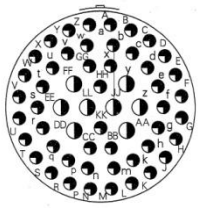


24-43 I



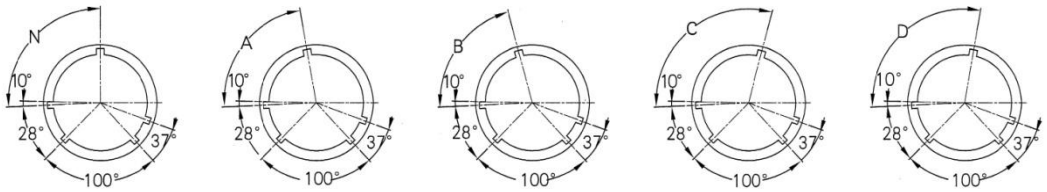
24-19 I



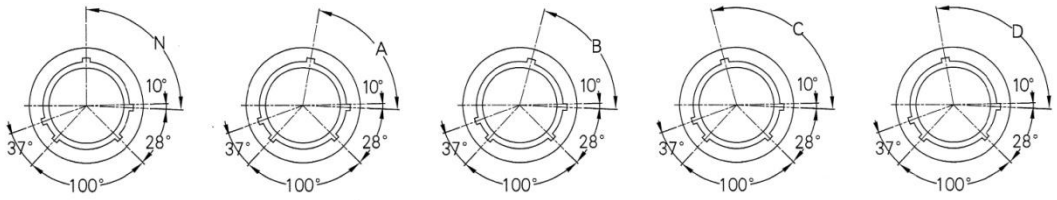
24-04 I

Orientation

Receptacle



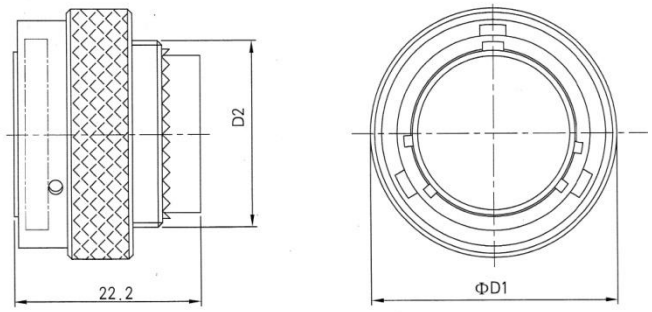
Plug



Orientation ID	08	10	12	14	16	18	20	22	24
N	100°	100°	100°	100°	100°	100°	100°	100°	100°
A	82°	86°	80°	79°	82°	82°	82°	85°	85°
B	——	72°	68°	66°	70°	70°	70°	74°	74°
C	——	128°	132°	134°	130°	130°	130°	126°	126°
D	118°	114°	120°	121°	118°	118°	118°	115°	115°

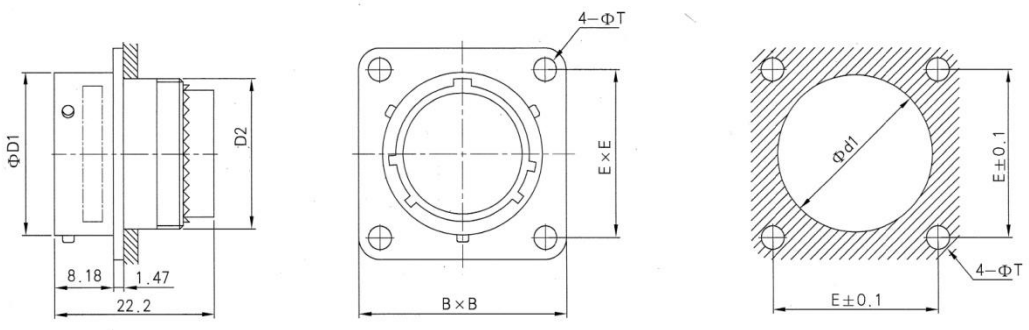
Shell size

Plug (MS27473 and MS27484)

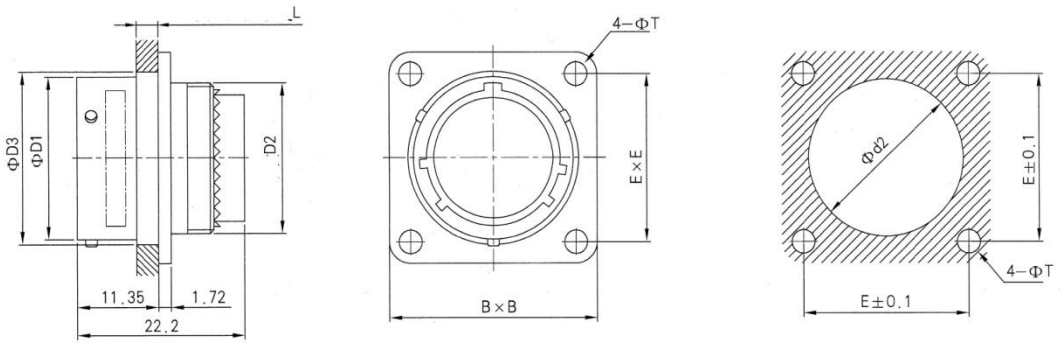


Shell No.	D1	Thread D2 UNEF-2A
08	19.00	0.4375-28
10	21.80	0.5625-24
12	26.20	0.6875-24
14	29.30	0.8125-20
16	32.50	0.9375-20
18	35.70	1.0625-18
20	38.80	1.1875-18
22	41.68	1.3125-18
24	44.86	1.4375-18

Wall mounting square receptacle, front (MS27472)

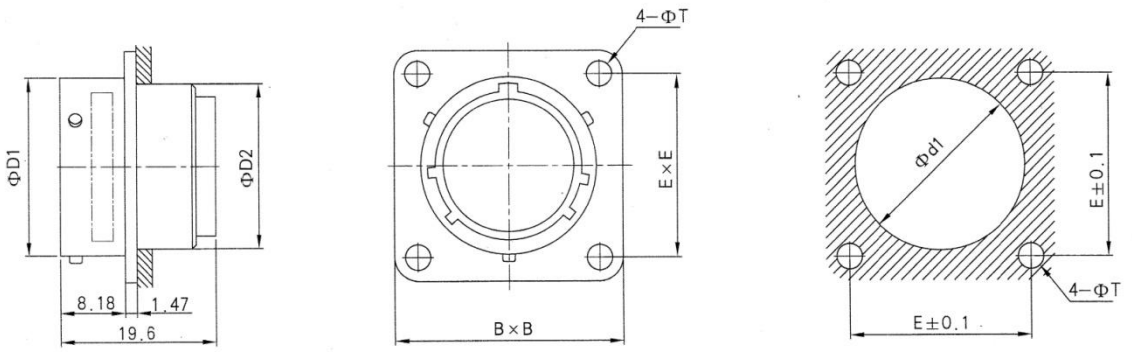


Wall mounting square receptacle, rear (MS27497)

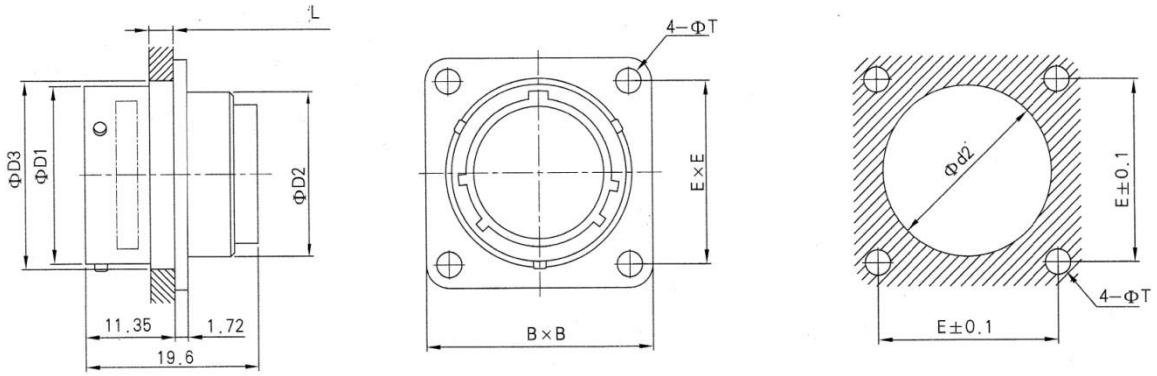


Shell No.	D1	Thread D2 UNEF-2A	D3	L (max)	B	E	T	d1	d2
08	12.00	0.4375-28	13.20	3.71	21.00	15.09	3.2	12.5	14.2
10	15.00	0.5625-24	16.14	3.71	24.10	18.26	3.2	15.5	17.5
12	19.05	0.6875-24	20.50	3.71	26.50	20.62	3.2	19.5	21.3
14	22.23	0.8125-20	23.60	3.71	28.90	23.01	3.2	21.5	25.0
16	25.40	0.9375-20	26.80	3.71	31.21	24.61	3.2	25.0	27.3
18	28.58	1.0625-18	30.00	3.71	33.60	26.97	3.2	28.0	31.3
20	31.75	1.1875-18	33.20	4.27	36.80	29.36	3.2	31.5	34.5
22	34.93	1.3125-18	36.35	4.27	40.00	31.75	3.2	34.5	37.5
24	38.10	1.4375-18	39.50	4.27	43.10	34.93	3.9	37.5	40.6

Box square receptacle, front (MS27513)

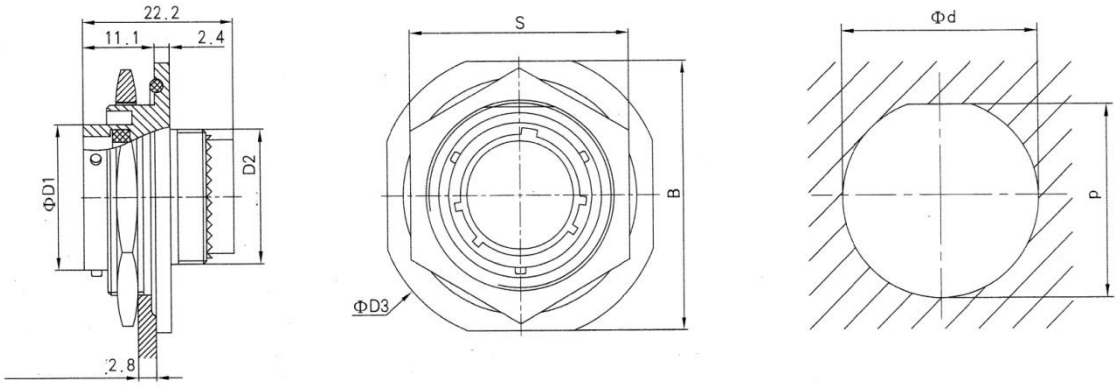


Box square receptacle, rear (MS27508)



Shell No.	D1	D2	D3	L (max)	B	E	T	d1	d2
08	12.00	11.51	13.20	3.71	21.00	15.09	3.2	12.5	14.2
10	15.00	14.68	16.14	3.71	24.10	18.26	3.2	15.5	17.5
12	19.05	17.86	20.50	3.71	26.50	20.62	3.2	19.5	21.3
14	22.23	21.03	23.60	3.71	28.90	23.01	3.2	21.5	25.0
16	25.40	24.21	26.80	3.71	31.21	24.61	3.2	25.0	27.3
18	28.58	26.97	30.00	3.71	33.60	26.97	3.2	28.0	31.3
20	31.75	30.18	33.20	4.27	36.80	29.36	3.2	31.5	34.5
22	34.93	33.32	36.35	4.27	40.00	31.75	3.2	34.5	37.5
24	38.10	36.53	39.50	4.27	43.10	34.93	3.9	37.5	40.6

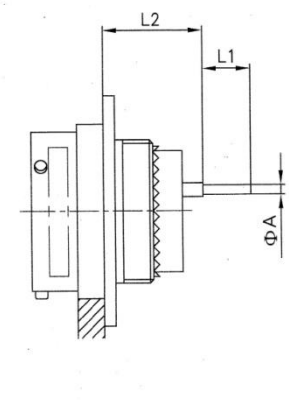
Jam nut receptacle (MS27474)



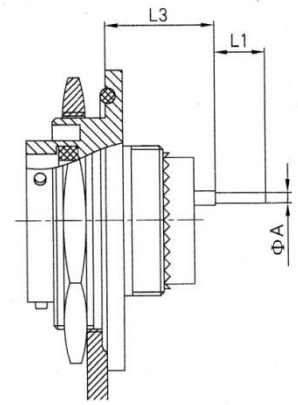
Shell No.	D1	Thread D2 UNEF-2A	D3	A	B	S	d	p
8	12.00	0.4375-28	34.95	11.1	31.75	27.40	22.46	21.08
10	15.00	0.5625-24	38.10	11.1	34.95	30.61	25.58	24.26
12	19.05	0.6875-24	41.28	11.1	38.10	33.75	28.80	27.53
14	22.23	0.8125-20	44.45	11.1	41.28	36.96	31.98	30.68
16	25.40	0.9375-20	49.23	11.1	45.24	40.10	35.15	33.86
18	28.58	1.0625-18	51.21	11.1	48.00	43.31	38.28	37.06
20	31.75	1.1875-18	54.38	11.8	51.21	46.45	41.50	40.03
22	34.93	1.3125-18	57.53	11.8	54.36	51.23	44.68	43.21
24	38.10	1.4375-18	60.71	11.8	57.53	54.41	47.85	46.38

Receptacle with PCB contact

MS27497



MS27474



Type for PCB contact		L1	A
22D#	Long PCB contact	8.5	0.7
	Short PCB contact	4.0	
20#	Long PCB contact	8.5	0.7
	Short PCB contact	5.1	
16#	Long PCB contact	8.5	1.15
	Short PCB contact	5.1	

Size		Shell No.	Shell No.
		8, 10, 12, 14, 16, 18	20, 22, 24
L2	22D#	13.40	13.40
	16# or 20#	13.57	13.57
L3	22D#	13.61	12.95
	16# or 20#	13.78	13.12