

## MIL-DTL-38999 Series IV



MIL-DTL-38999 series IV circular connector is designed for breech lock with quick disconnect, removable crimp contact, excellent environmental resistance performance, EMI/RFI shielding with grounding, high contact density, withstand greater vibration, 100% scoop-proof and mating hermetic.

This family of circular connectors is offered 3 kinds shell of different material, 8 kinds of size of shell, 2 kinds of finishes, 3 receptacle-mounting styles, 4 kinds of contact and more than 55 kinds of contact layout.

## Part number

	D38999/	40	W	B	35	P	N
<b>Basic series</b>							
<b>Type</b>							
40 = Wall mount square receptacle							
41 = Hermetic wall mount square receptacle							
42 = Box mount square receptacle							
43 = Hermetic jam nut receptacle							
44 = Jam nut receptacle							
45 = Hermetic solder mount receptacle							
46 = Shielding straight plug							
48 = Hermetic weld mount receptacle							
49 = In-line receptacle							
<b>Finish</b>							
W = Olive green cadmium, aluminium-alloy							
F = Electroless nickel, aluminium-alloy							
N = Hermetic, electrodeposited nickel, stainless steel							
Y = Hermetic, electroless nickel, stainless steel							
S = electrodeposited nickel, stainless steel							
K = Stainless steel passivated							
<b>Shell size</b>							
11 (B), 13 (C), 15 (D), 17 (E), 19 (F), 21 (G), 23 (H), 25 (J)							
<b>Contact layout</b>							
See below							
<b>Type of contact</b>							
P = Pin							
S = Socket							
<b>Orientation</b>							
N = Normal							
A, B, C, D							

## Electrical

Contact resistance and current rating:

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

EMI shielding:

At 10GHz: minimum attenuation 65 dB (F)

At 10GHz: minimum attenuation 50 dB (W)

At 1GHz: minimum attenuation 85 dB (F and W)

Withstanding voltage (V):

Service rating	M	I	II	N
Sea level	1300	1800	2300	1000
21336m	800	1000	1000	600

Insulation resistance:

At 500V  $\geq 5000M\Omega$

Electrical continuity between shells:

K class  $\leq 5.0m\Omega$ , W class  $\leq 2.5m\Omega$ , F class  $\leq 1.0m\Omega$

## Mechanical

Shell: Aluminum alloy, stainless steel or copper-alloy

Plating:

W Olive green cadmium plating

F Electroless nickel plating

K Stainless steel passivated

Insulator: Thermo-set plastic

Grommet and seal: Silicon rubber

Contact: copper alloy with gold plating, crimp or PCB

Endurance:  $\geq 500$  cycles

Vibration:

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

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

## Environmental

Operating temperature:

W class:  $-65^{\circ}C \sim +175^{\circ}C$

K, F class:  $-65^{\circ}C \sim +200^{\circ}C$

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

F class 48h

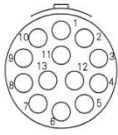
W class 500h

K class 1000h

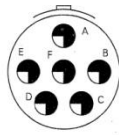
Relative humidity: 98% at  $40^{\circ}C$

Operating height:  $\leq 30480$  m

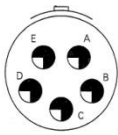
# Contact layout



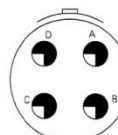
11-35 M



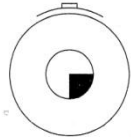
11-98 I



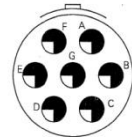
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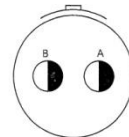
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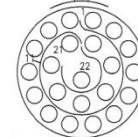
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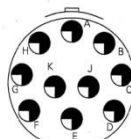
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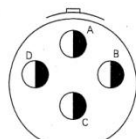
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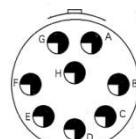
13-35 M



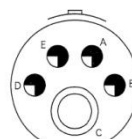
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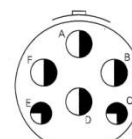
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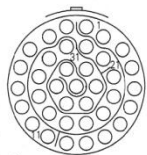
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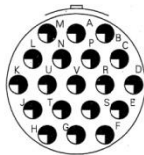
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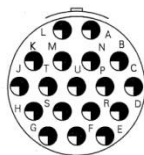
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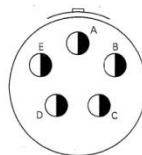
15-35 M



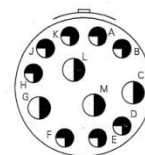
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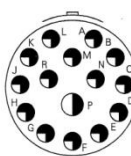
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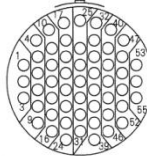
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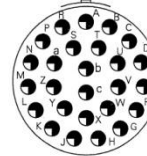
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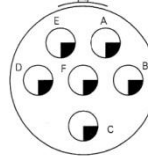
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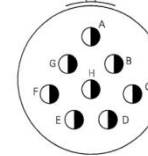
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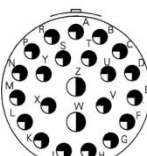
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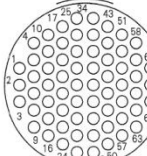
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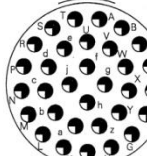
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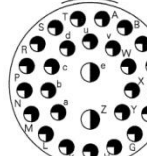
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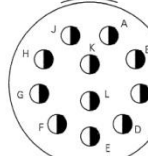
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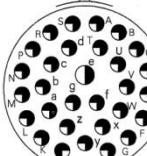
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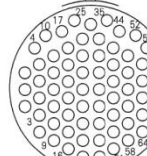
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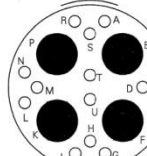
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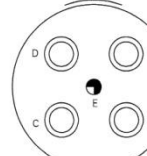
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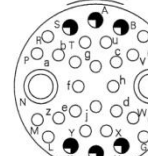
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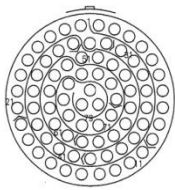
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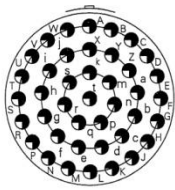
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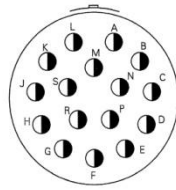
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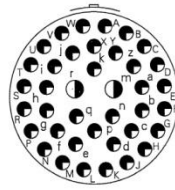
21-35 M



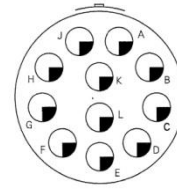
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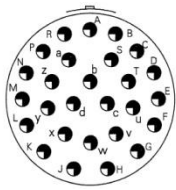
21-16 II



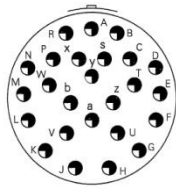
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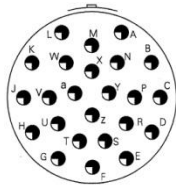
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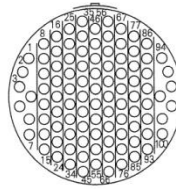
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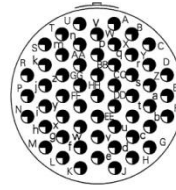
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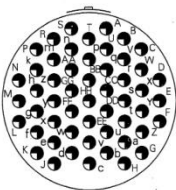
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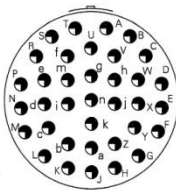
23-35 M



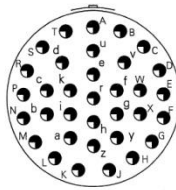
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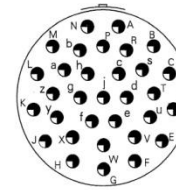
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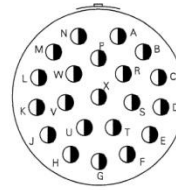
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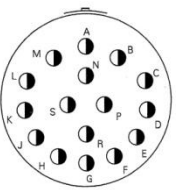
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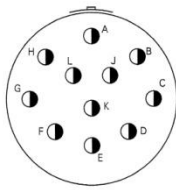
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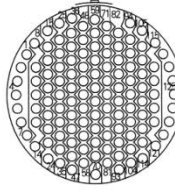
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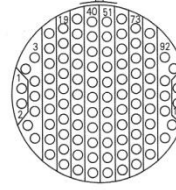
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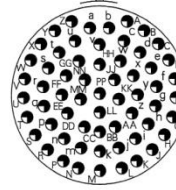
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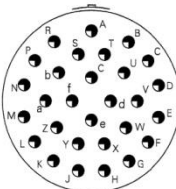
25-35 M



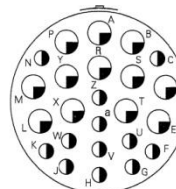
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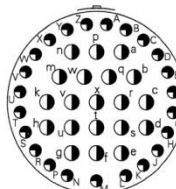
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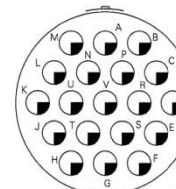
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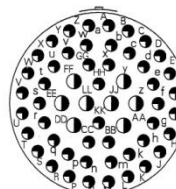
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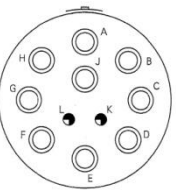
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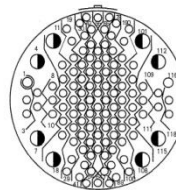
25-19 I



25-04 I



25-11



25-93 M

○ 22D #

● 20 #

◐ 16 #

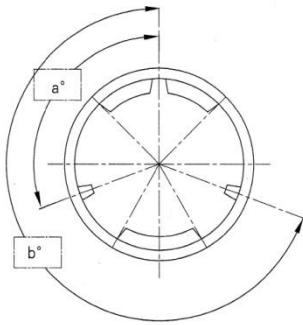
◑ 12 #

○ 10 #

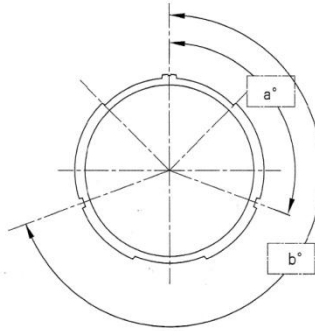
● 8 #

## Orientation

Angle of connecting screw cap



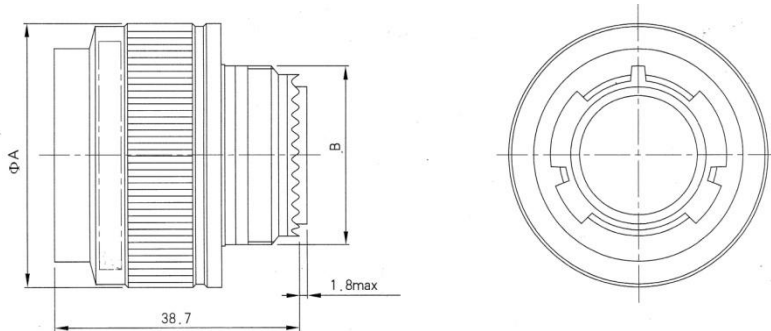
Angle of plug shell



Angle	a	b
N	110°	250°
A	100°	260°
B	90°	270°
C	80°	280°
D	70°	290°
K	120°	255°

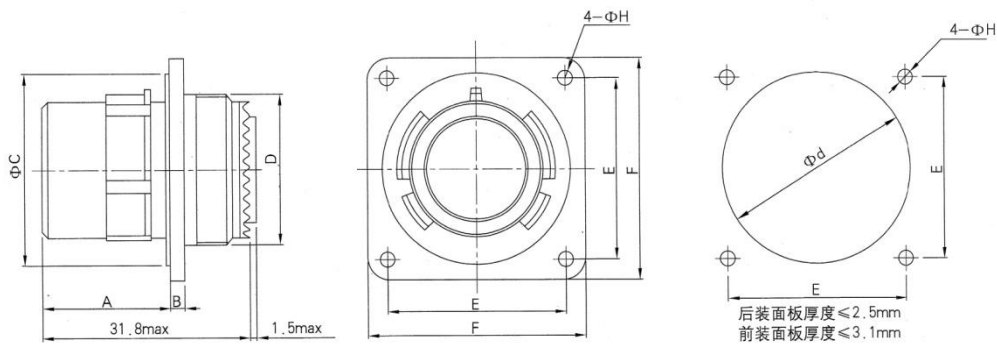
## Shell size

Shielding plug (D38999/46)



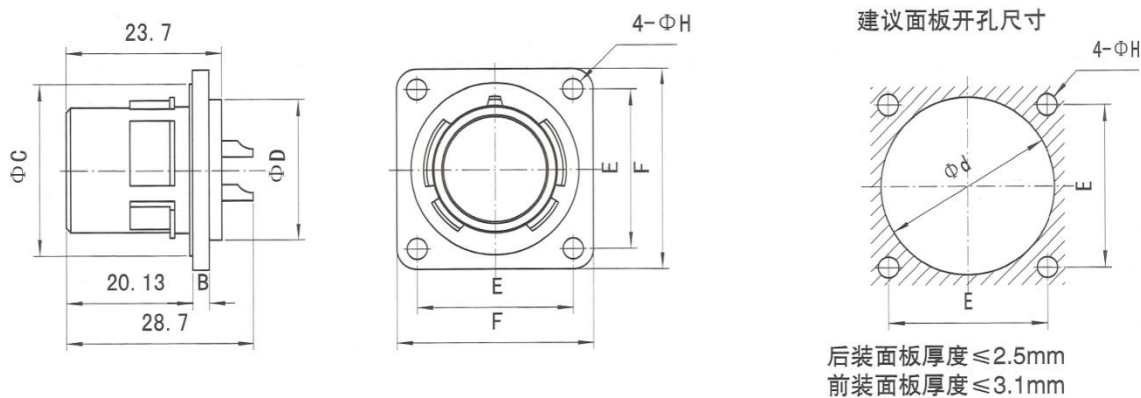
Shell No	A (max)	Thread B (-6g)
11 (B)	26.6	M15*1
13 (C)	30.8	M18*1
15 (D)	34.0	M22*1
17 (E)	37.4	M25*1
19 (F)	40.0	M28*1
21 (G)	43.2	M31*1
23 (H)	46.5	M34*1
25 (J)	49.7	M37*1

## Wall mount square receptacle (D38999/40)



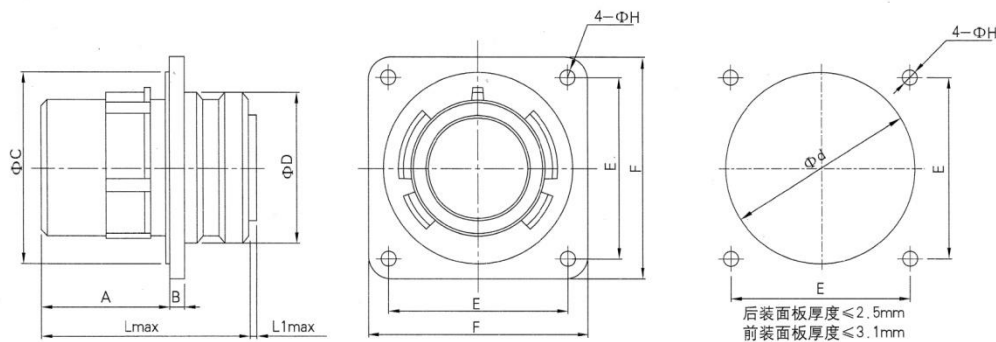
Shell No	A (max)	B (max)	C (max)	Thread D (-6g)	E	F	H	d (front)	d (rear)
11 (B)	20.13	2.6	20.10	M15*1	20.62	26.2	3.2	15.3	20.5
13 (C)	20.13	2.6	23.30	M18*1	23.02	28.6	3.2	19.2	23.7
15 (D)	20.13	2.6	26.50	M22*1	24.62	31.0	3.2	23.3	26.9
17 (E)	20.13	2.6	29.66	M25*1	26.98	33.3	3.2	25.9	31.0
19 (F)	20.13	2.6	32.80	M28*1	29.36	36.5	3.2	29.0	33.0
21 (G)	20.13	3.2	36.00	M31*1	31.76	39.7	3.2	32.2	36.2
23 (H)	20.13	3.2	39.20	M34*1	34.92	42.9	3.7	35.0	39.4
25 (J)	20.13	3.2	42.40	M37*1	38.10	46.0	3.7	37.8	42.6

## Hermetic wall mount square receptacle(D38999/41)



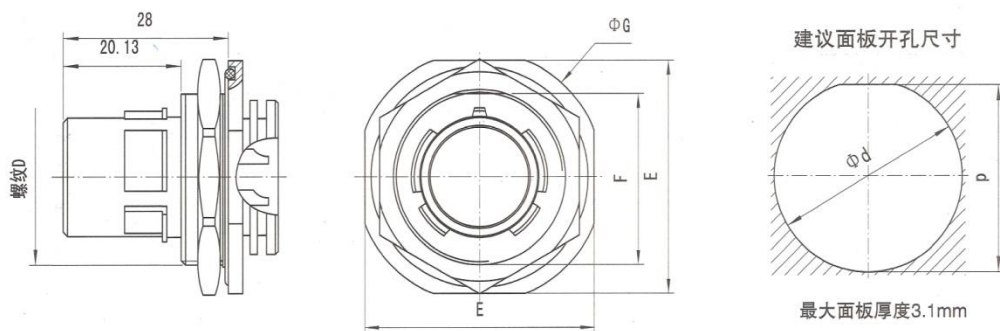
Shell No	B (max)	C (max)	D	E	F	H	d (front)	d (rear)
11 (B)	2.6	20.10	15.38	20.62	26.2	3.2	16.0	20.5
13 (C)	2.6	23.30	18.55	23.02	28.6	3.2	19.0	23.7
15 (D)	2.6	26.50	22.51	24.62	31.0	3.2	23.0	26.9
17 (E)	2.6	29.66	25.31	26.98	33.3	3.2	26.0	31.0
19 (F)	2.6	32.80	29.43	29.36	36.5	3.2	29.8	33.0
21 (G)	3.2	36.00	31.06	31.76	39.7	3.2	31.8	36.2
23 (H)	3.2	39.20	34.33	34.92	42.9	3.7	35.0	39.4
25 (J)	3.2	42.40	37.19	38.10	46.0	3.7	38.0	42.6

### Box mount square receptacle (D38999/42)



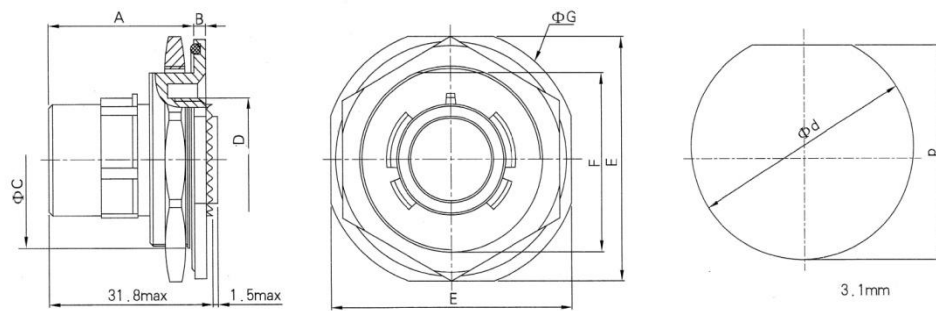
Shell No	A (max)	B (max)	L	L1	C (max)	D (max)	E	F	H	d (front)	d (rear)
11 (B)	20.13	2.6	31.2	2.1	20.10	14.6	20.62	26.2	3.2	15.3	20.5
13 (C)	20.13	2.6	31.2	2.1	23.30	17.5	23.02	28.6	3.2	19.2	23.7
15 (D)	20.13	2.6	31.2	2.1	26.50	20.7	24.62	31.0	3.2	23.3	26.9
17 (E)	20.13	2.6	31.2	2.1	19.66	23.9	26.98	33.3	3.2	25.9	31.0
19 (F)	20.13	2.6	31.2	2.1	32.8	26.6	29.36	36.5	3.2	29.0	33.0
21 (G)	20.13	3.2	31.8	1.5	36.00	29.6	31.76	39.7	3.2	32.2	36.2
23 (H)	20.13	3.2	31.8	1.5	39.20	32.9	34.92	42.9	3.7	35.0	39.4
25 (J)	20.13	3.2	31.8	1.5	36.10	36.1	38.10	46.0	3.7	37.8	42.6

### Hermetic jam nut receptacle(D38999/43)



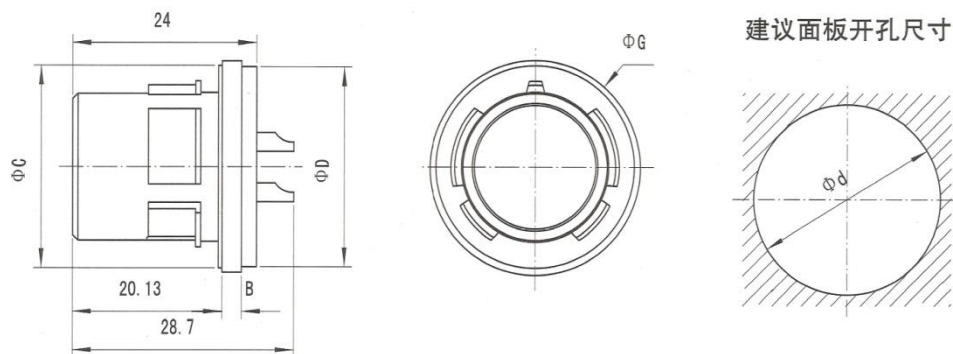
Shell No	Thread (-6g)	E (max)	F (max)	G (max)	d	p
11 (B)	M20*1	31.6	19.17	34.8	20.5	19.5
13 (C)	M25*1	34.8	23.92	38.1	25.5	24.3
15 (D)	M28*1	38.0	27.07	41.2	28.5	27.3
17 (E)	M32*1	41.1	30.25	44.5	32.5	30.7
19 (F)	M35*1	45.9	33.44	49.2	35.5	33.8
21 (G)	M38*1	49.1	36.62	52.3	38.5	37.0
23 (H)	M41*1	52.2	39.75	55.5	41.5	40.1
25 (J)	M44*1	55.4	42.98	58.6	44.5	43.1

### Jam nut receptacle (D38999/44)



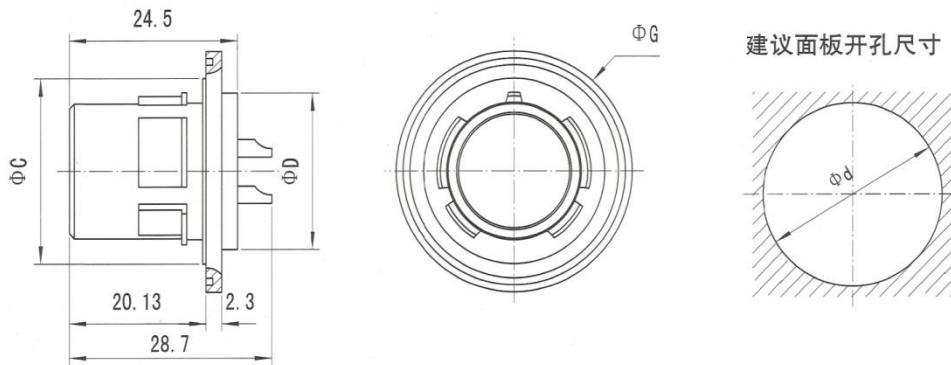
Shell No	A (max)	B (max)	C (max)	Thread D (-6g)	E (max)	F (max)	G (max)	d	p
11 (B)	28.0	2.6	25.40	M15*1	34.9	23.93	38.1	25.6	24.3
13 (C)	28.0	2.6	28.58	M18*1	38.1	27.08	41.2	28.8	27.3
15 (D)	28.0	2.6	31.75	M22*1	41.3	30.26	44.5	32.2	30.7
17 (E)	28.0	2.6	34.92	M25*1	45.2	33.56	49.2	35.2	33.8
19 (F)	28.0	2.6	38.10	M28*1	48.0	36.61	51.2	38.4	37.0
21 (G)	28.0	2.6	41.28	M31*1	51.2	39.78	54.3	41.6	40.1
23 (H)	28.0	2.6	44.45	M34*1	54.3	42.96	57.5	44.7	43.1
25 (J)	28.0	2.6	47.63	M37*1	57.5	46.13	60.7	48.0	46.3

### Hermetic solder mount receptacle(D38999/45)



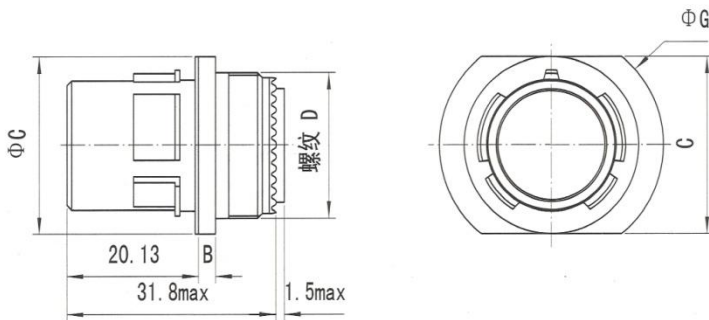
Shell No	B (max)	C (max)	D (max)	G (max)	d
11 (B)	2.6	20.10	19.9	21.9	20.4
13 (C)	2.6	23.30	23.1	25.1	23.6
15 (D)	2.6	26.50	26.3	28.2	26.8
17 (E)	2.6	29.66	29.4	31.4	29.9
19 (F)	2.6	32.80	31.8	33.8	32.3
21 (G)	3.2	36.00	35.0	37.0	35.5
23 (H)	3.2	39.20	38.2	40.2	38.7
25 (J)	3.2	42.40	41.4	43.3	41.9

### Hermetic weld mount receptacle(D38999/48)



Shell No	C (max)	D (max)	G	d
11 (B)	20.10	15.38	28.0	16.18
13 (C)	23.30	18.55	31.2	19.35
15 (D)	26.50	22.51	34.3	23.31
17 (E)	29.66	25.31	36.6	26.11
19 (F)	32.80	28.48	40.3	29.28
21 (G)	36.00	31.66	43.9	32.46
23 (H)	39.20	34.33	48.1	35.13
25 (J)	42.40	37.19	50.3	37.99

### In-line receptacle(D38999/49)



Shell No	B (max)	C (max)	Thread D (-6g)	G
11 (B)	2.6	20.10	M15*1	26.5
13 (C)	2.6	23.30	M18*1	29.9
15 (D)	2.6	26.50	M22*1	34.0
17 (E)	2.6	29.66	M25*1	37.2
19 (F)	2.6	32.80	M28*1	40.0
21 (G)	3.2	36.00	M31*1	43.1
23 (H)	3.2	39.20	M34*1	46.3
25 (J)	3.2	42.40	M37*1	49.6