



MIL-DTL-38999 Series III

Military Style Connectors

PRODUCT INTRODUCTION

www.Donconn.com

George@donconn.com

The MIL-DTL-38999 Series III standards for performance and durability and is 100% compatible with all commercial and military derivatives. The Series is our most technologically advanced series of cylindrical connectors available. Connectors can accommodate the highest density of contacts and feature the most comprehensive selection of contacts, including fiber optic, twinax, coax, quadax, and PC tail contacts. Coupling is achieved with one 360° turn of the self-locking coupling ring, which is designed with triple-start, impact-resistant stub threads. Standard RFI grounding fingers provide superior shell-to-shell conductivity for shielded applications, while available stainless steel shells protect connectors in harsh environments. For mission-critical applications that demand absolute reliability,



- MIL-DTL-38999 Series III compatibility
- High-density, up to 128 contacts (#22D)
- Wide variety of specialty contacts (PC tail, RF, fiber optic)
- Self-locking, ratchet coupling
- Triple-start, impact-resistant stub threads
- 100% scoop-proof shell design for contact protection
- Hermetic receptacles available for vacuum applications

Specification

Material: Shell: aluminum alloy, stainless steel, titanium alloy

Insulation: thermosetting plastic or thermoplastic

Grommet and seal: silicon rubber

Plating:

W: Olive drab cadmium over electroless nickel base

K: Stainless steel shell, passivated

F: Electroless nickel finish

FT: Aluminum Alloy satin cadmium plating

TA: Titanium alloy

Contacts: copper alloy gold plating, crimp, solder and PCB

Durability: 500 cycles

Vibration:

Sinusoidal: 60 g, with temperature cycle and analog accessories (36 h)

Random vibration: Under high temperature, frequency 100~1000 Hz, power spectral density 1 g²/Hz, corresponding to root mean square value 41.7 g

Under ambient temperature: frequency 100~1000 Hz power spectral density 5 g²/Hz, corresponding root mean square value 49.5g

Environmental performance

Temperature range:

W: -65 °C ~ +175 °C

F, K, FT, TA: -65 °C ~ +200 °C

Salt spray resistance:

W: 500h K, TA: 1000h F: 48h/96h FT: 96h

Sealing:

matching connector meet MIL-DTL-38999M requirements for low pressure impregnation

Damp heat:

As MIL-DTL-38999M: 24 hours 10 times cycle

Liquid resistance: resistance to multiple fuels. Coolant, solvents.

Electrical performance

Withstand voltage: V

Working level*	M	N	I	II
Sea level	1300	1000	1800	2300
21000m	800	600	1000	1000

Note: different insert arrangement has different working grade, see insert arrangement upper right corner mark for details.

Contact resistance and current rating:

Contact specification	Working diameter mm	Contact resistance Ω	Current rating A
22D	$\Phi 0.76$	≤ 12	5
20#	$\Phi 1.00$	≤ 5	7.5
16#	$\Phi 1.60$	≤ 2.5	13
12#	$\Phi 2.40$	≤ 1.5	23
10#	$\Phi 3.15$	≤ 1.0	40

Insulator resistance: $\geq 5000M\Omega$ (500VDC)

Shell conductivity; W: $2.5m\Omega$ F、FT: $1.0m\Omega$ K、TA: $10m\Omega$

Electromagnetic interference shielding;

100MHz ~ 1GHz, minimum attenuation is 85dB (F、W)

1GHz ~ 10GHz, minimum attenuation is 65dB (F)、50dB (W)

8# Dual coaxial contact: 0~20MHz

Rated voltage : maximum is 500VAC, 21000m is 125VAC.

Voltage drop: Voltage drop: inner contact and intermediate contact under 1A $\leq 55mV$, outer contact under 12A $\leq 75mV$

How to order

	D38999/	20	W	B	35	P	N
Basic series							
Type of connector							
20 = Square flange receptacle							
24 = Jam nut receptacle							
26 = Shielding plug							
Finish							
W = Olive green cadmium plating							
F = <u>Electroless nickel plating</u>							
T = Marine Bronze (copper aluminium alloy)							
K = <u>Stainless steel passivated</u>							
L = Black anodized							
J = Composite material + W							
M = Composite material + F							
Shell size							
09 (A), 11 (B), 13 (C), 15 (D), 17 (E), 19 (F), 21 (G), 23 (H), 25 (J)							
Contact layout (See below)							
Type of contact							
P = Crimp pin							
S = Crimp socket							
PL = Long PCB pin							
PC = Short PCB pin							
SL = Long PCB socket							
SC = Short PCB socket							
Orientation							
N = Normal							
A, B, C, D = Alternative							

Wire & Crimp Contact Dimensions

Crimp contacts

Contact specification	Work diameter	Pin color	Socket color	Inside diameter of crimp barrel (mm)	Outer diameter of crimp barrel (mm)	Conductor section (mm ²)	USA cable AWG	Adapted cable insulated outer diameter mm	Unloading tool	Crimp tool
22D	Φ0.76	orange blue black	orange yellow gray	0.85	1.20	0.08 0.125 0.2 0.3	28 26 24 22	0.76~1.37	M81969/ 14-01	YJQ- 02
20#	Φ1.00	orange blue orange	orange green brown	1.17	1.78	0.2 0.3 0.5	24 22 20	1.02~2.11	M81969/ 14-10	YJQ- 02 XCXY- 01
16#	Φ1.60	orange blue yellow	orange green red	1.68	2.62	0.5 0.8 1.0 1.2	20 18 16	1.65~2.77	M81969/ 14-03	XCXY- 01
12#	Φ2.40	orange blue green	orange green orange	2.49	3.84	2.0 3.0	14 12	2.46~3.61	M81969/ 14-04	XCXY- 01
10#	Φ3.15	green red gray	green orange purple	3.40	4.65	4.8	10	3.42~4.12	M81969/ 14-05	XCXY- 01 YTQ
8#	Φ3.60	—	—	4.55	6.4	8.37	8	6.4~6.9	M81969/ 14-12	YTQ

Solder contacts

Solder contact specification	solder cup diameter	(AWG)
22D	Φ0.9	22
20#	Φ1.1	20
16#	Φ1.9	16
12#	Φ2.9	12
10#	Φ3.6	10
8#	Φ4.8	8

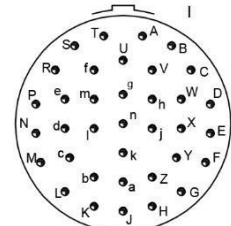
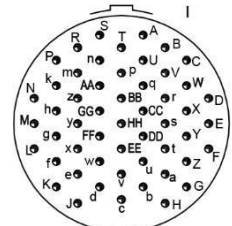
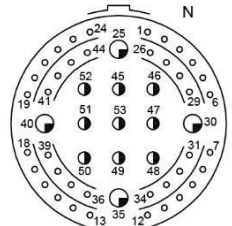
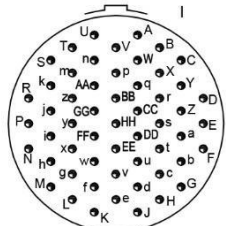
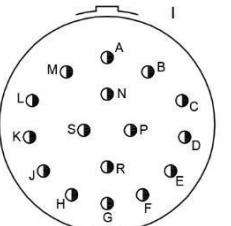
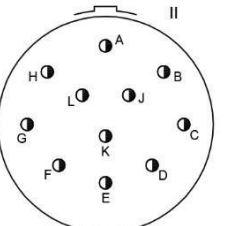
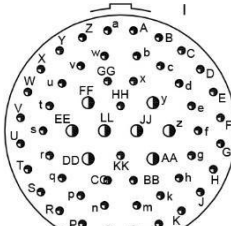
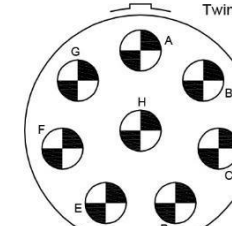
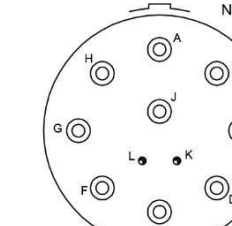
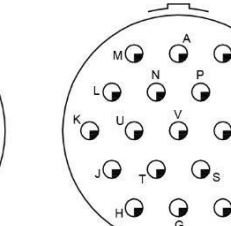
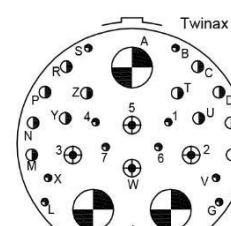
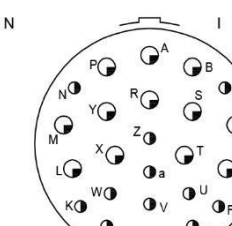
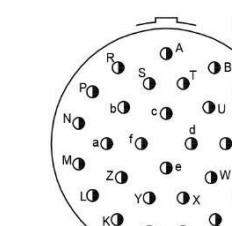
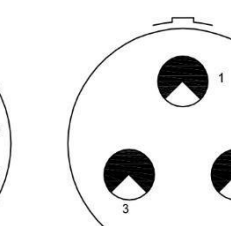
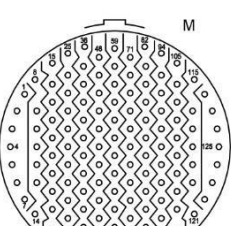
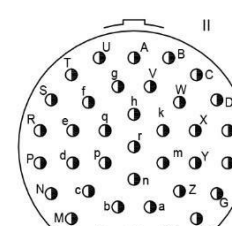
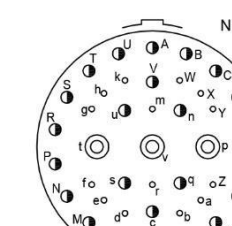
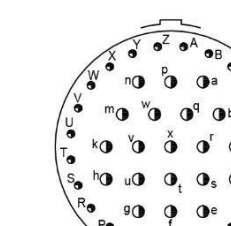
Insert Arrangement Drawings

<p>09 (A)</p>	<p>09-03 3-20#</p>	<p>09-02 2-20#</p>	<p>09-07 7-22D</p>	<p>09-09 9-23#/22D</p>	<p>09-23 9-23#/22D</p>	<p>09-35 6-22D</p>	<p>09-44 4-22M</p>	<p>09-98 3-20#</p>
<p>11 (B)</p>	<p>11-02 2-16#</p>	<p>11-04 4-20#</p>	<p>11-05 5-20#</p>	<p>11-19 19-23#/22D</p>	<p>11-23 19-23#/22D</p>	<p>11-35 13-22D</p>	<p>11-98 6-20#</p>	<p>11-99 7-20#</p>
<p>13 (C)</p>	<p>13-02 2-12#</p>	<p>13-03 3-16#</p>	<p>13-04 4-16#</p>	<p>13-05 2-16# 3-20#</p>	<p>13-08 8-20#</p>	<p>13-12 1-12#同轴 11-22D</p>	<p>13-35 22-22D</p>	<p>13-98 10-20#</p>
<p>15 (D)</p>	<p>15-05 5-16#</p>	<p>15-15 1-16# 14-20#</p>	<p>15-18 18-20#</p>	<p>15-19 19-20#</p>	<p>15-21 1-12#同轴 3-20# 17-22D</p>	<p>15-35 37-22D</p>		
	<p>15-38 4-12#</p>	<p>15-97 4-16# 8-20#</p>						
<p>17 (E)</p>	<p>17-06 6-12#</p>	<p>17-08 8-16#</p>	<p>17-20a 2-8# 2-20# 16-22D</p>	<p>17-26 26-20#</p>	<p>17-30 3-10# 3-20#</p>	<p>17-35 55-22D</p>		
	<p>17-42 42-22D</p>	<p>17-62 2-8#</p>	<p>17-75 2-8#同轴</p>	<p>17-99 2-16# 21-20#</p>				

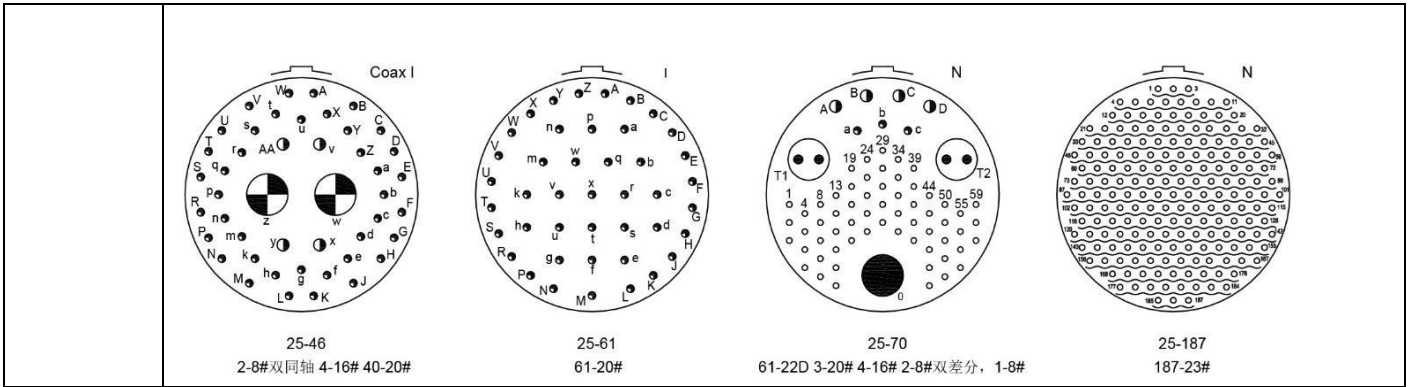
MIL-DTL-38999 Series III Style Connectors

<p>19 (F)</p>	<p>19-08 8-12#</p> <p>19-11 11-16#</p> <p>19-18 2-8#双同轴 14-22D</p> <p>19-28 2-16# 26-20#</p> <p>19-30 1-16# 29-20#</p>
<p>19 (F)</p>	<p>19-32 32-20#</p> <p>19-35 66-22D</p> <p>19-45 67-22D</p> <p>19-53 53-22D</p> <p>19-96 9-12#</p>
<p>21 (G)</p>	<p>21-11 11-12#</p> <p>21-16 16-16#</p> <p>21-24 24-20#</p> <p>21-25 25-20#</p> <p>21-27 27-20#</p> <p>21-29 4-12# 4-16# 19-20#</p> <p>21-35 79-22D</p> <p>21-39 2-16# 37-20#</p> <p>21-41 41-20#</p> <p>21-48 4-8#</p> <p>21-75 4-8#双同轴</p>
<p>23 (H)</p>	<p>23-21 21-16#</p> <p>23-32 32-20#</p> <p>23-34 34-20#</p> <p>23-35 100-22D</p>

MIL-DTL-38999 Series III Style Connectors

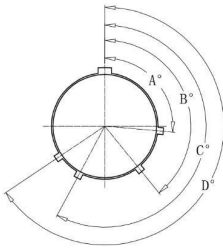
	 <p>23-36 36-20#</p>	 <p>23-53 53-20#</p>	 <p>23-54 4-12# 9-16# 40-22D</p>	 <p>23-55 55-20#</p>
23 (H)	 <p>23-97 16-16#</p>	 <p>23-99 11-16#</p>		
25 (J)	 <p>25-04 8-16# 48-20#</p>	 <p>25-08 / 25-10 8-8# 双同轴</p>	 <p>25-11 9-10# 2-20#</p>	 <p>25-19 19-12#</p>
	 <p>25-20 3-8# 双同轴 4-12# 同轴 13-16# 10-20#</p>	 <p>25-24 12-12# 12-16#</p>	 <p>25-29 29-16#</p>	 <p>25-33 3-4#</p>
	 <p>25-35 128-22D</p>	 <p>25-37 37-16#</p>	 <p>25-41 14-22D 24-16# 3-10#</p>	 <p>25-43 20-16# 23-20#</p>

MIL-DTL-38999 Series III Style Connectors

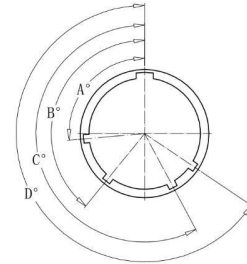


Alternate Keying

Receptacle



Plug



N Normal Keying



A Keying



B Keying



C Keying



D Keying



E Keying

Shell no	MS shell no	Angle	N	A	B	C	D	E
9	A	A°	105	102	80	35	64	91
		B°	140	132	118	140	155	131
		C°	215	248	230	205	234	197
		D°	265	320	312	275	304	240
11	B C	A°	95	113	90	53	119	51
13	D	B°	141	156	145	156	146	141
15		C°	208	182	195	220	176	184
		D°	236	292	252	255	298	242
17	E F G H J	A° B° C° D°	80	135	49	66	62	79
19			142	170	169	140	145	153
21			196	200	200	200	180	197
23			293	310	244	257	280	272
25								

Prevent Operator Error & Damage

Alternate key positions can protect equipment and the operator from accidentally cross-mating connectors by designating mating pairs with a matching key and keyway . In this way, only correctly matched sets will mate .

In addition to preventing cross-mating, engineers and designers can benefit from being able to safely use the same insert in six different con- figurations. In low-voltage or low-power applica- tions engineers may also reverse the contacts on a connector to help differentiate cables . This method provides up to 12 different combinations using the same insert arrangement.

- Simple and permanent connector keying
- Prevents operator error when accidentally connecting similar cables
- Provides up to 12 unique combinations with the same insert arrangement

Overall dimension

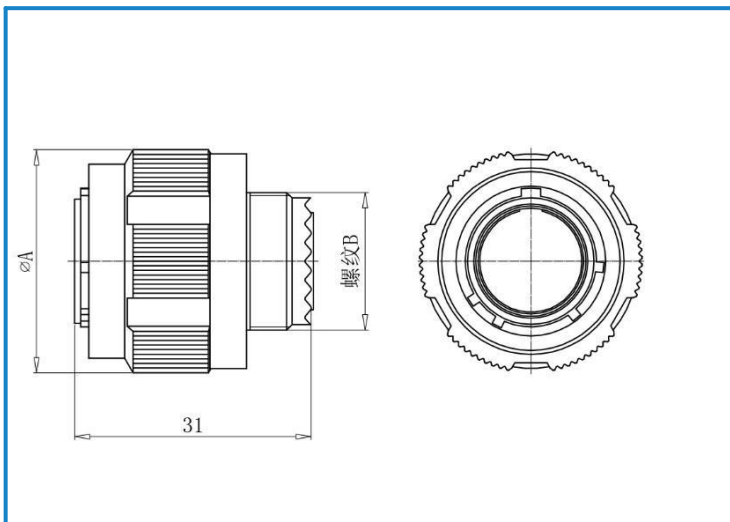
D38999/26 plug



Cross-Reference & Compatibility

Compatible Brands	Equivalen ts	Mates
MIL-DTL-38999 Series III	D38999/26	D38999/20, D38999/24
Aero / Conesys	AE326	AE320, AE324
Amphenol	TV06, TVS06	TVP00, TVPS00, TVP07, TVPS07
Deutsch	DTS26	DTS20, DTS24
ITT Cannon	KJA6	KJA0, KJA7
Souriau	8D5, 8DS06G	8D0, 8D1, 8D7, 8DS00, 8DS07

Dimension

	Shell no	MS shell no	A	Screw thread B
	09	A	21.5	M12×1.0-6g
11	B	25.0	M15×1.0-6g	
13	C	29.2	M18×1.0-6g	
15	D	32.4	M22×1.0-6g	
17	E	35.6	M25×1.0-6g	
19	F	38.5	M28×1.0-6g	
21	G	41.7	M31×1.0-6g	
23	H	44.9	M34×1.0-6g	
25	J	48.0	M37×1.0-6g	

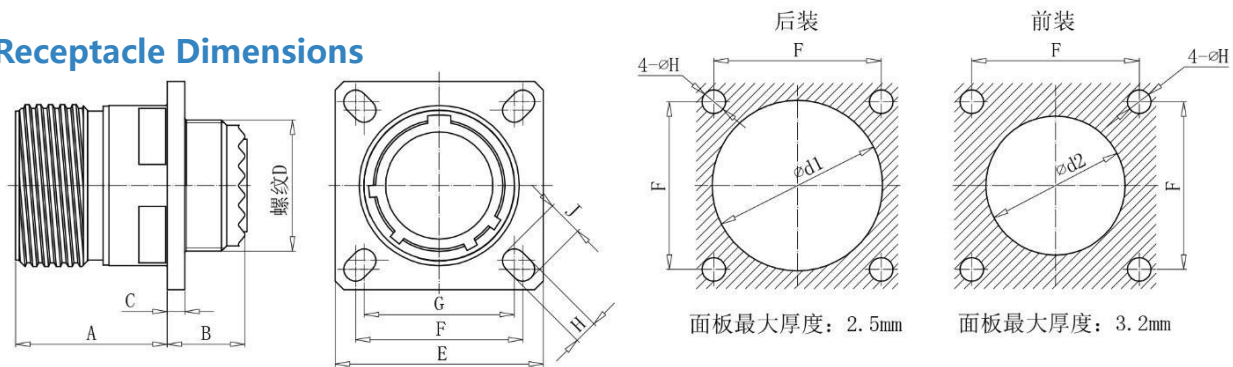
D38999/20 flange receptacle



Cross-Reference & Compatibility

Compatible Brands	Equivalents	Mates
MIL-DTL-38999 Series III	D38999/20	D38999/26
Aero / Conesys	AE320	AE326
Amphenol	TV00, TVPS00	TV06, TVS06, CTV06, CTVS06
Deutsch	DTS20	DTS26
ITT Cannon	KJA0	KJA6
Souriau	8D0	8D5, 8DS06G

Receptacle Dimensions



Shell no	MSShell no	Amax	Bmax	Cmax	D screw thread	E	F	G	H	J	d1 min	d2 min
9	A	20.9	10.8	2.5	M12×1.0-6g	23.8	18.26	15.09	3.25	5.49	16.66	13.11
11	B	20.9	10.8	2.5	M15×1.0-6g	26.2	20.62	18.26	3.25	4.93	20.22	15.88
13	C	20.9	10.8	2.5	M18×1.0-6g	28.6	23.01	20.62	3.25	4.93	23.42	19.05
15	D	20.9	10.8	2.5	M22×1.0-6g	31.0	24.61	23.01	3.25	4.39	26.59	23.01
17	E	20.9	10.8	2.5	M25×1.0-6g	33.3	26.97	24.61	3.25	4.93	30.96	25.81
19	F	20.9	10.8	2.5	M28×1.0-6g	36.5	29.36	26.97	3.25	4.93	32.94	28.98
21	G	20.1	11.5	3.2	M31×1.0-6g	39.7	31.75	29.36	3.25	4.93	36.12	32.16
23	H	20.1	11.5	3.2	M34×1.0-6g	42.9	34.93	31.75	3.91	6.15	39.29	34.93
25	J	20.1	11.5	3.2	M37×1.0-6g	46.0	38.10	34.93	3.91	6.15	42.47	37.69

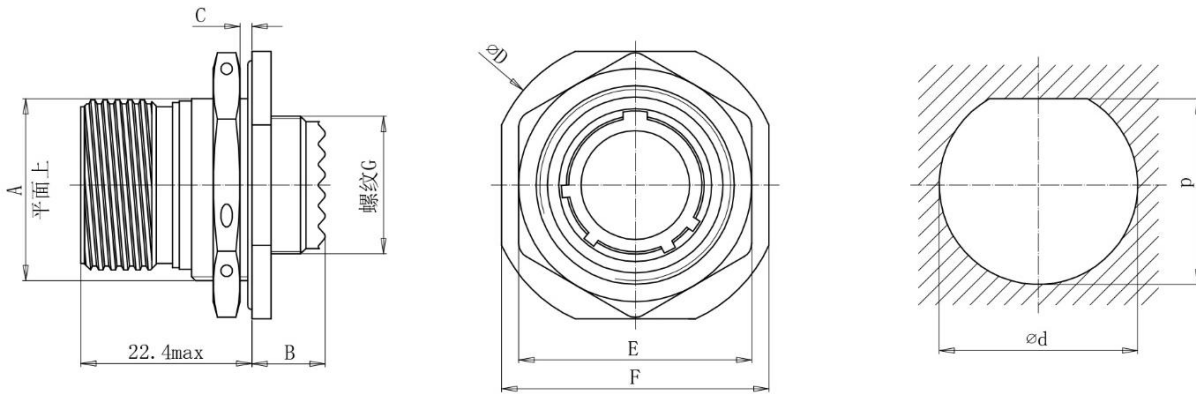
D38999/24 Jam nut receptacle



Cross-Reference & Compatibility

Compatible Brands	Equivalents	Mates
MIL-DTL-38999 Series III	D38999/24	D38999/26
Aero / Conesys	AE324	AE326
Amphenol	TV07, TVPS07	TV06, TVS06, CTV06, CTVS06
Deutsch	DTS24	DTS26
ITT Cannon	KJA7	KJA6
Souriau	8D7	8D5, 8DS06G

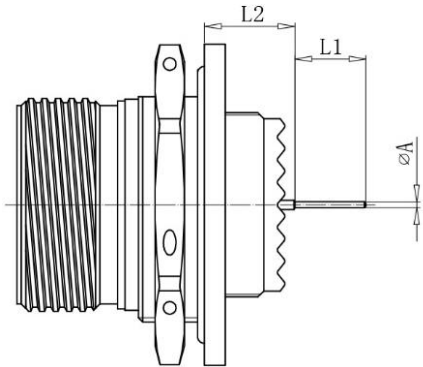
Receptacle Dimensions



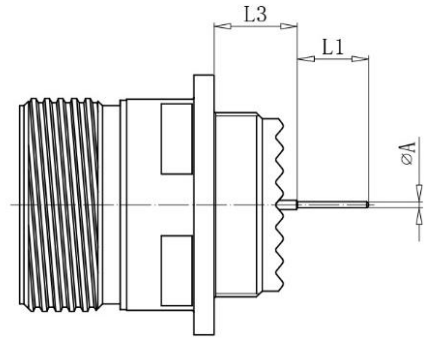
Shell no	MS Shell no	A	Bmax	Cmax	Dmax	E	F	G screw thread	d	P
9	A	16.5	9.9	3.2	30.5	22.5	27.1	M12×1.0-6g	17.70	17.00
11	B	19.2	9.9	3.2	35.2	25.7	32.1	M15×1.0-6g	20.88	19.53
13	C	23.8	9.9	3.2	38.4	30.5	35.0	M18×1.0-6g	25.58	24.26
15	D	26.9	9.9	3.2	41.6	33.6	38.3	M22×1.0-6g	28.80	27.53
17	E	30.3	9.9	3.2	44.8	36.8	41.8	M25×1.0-6g	32.01	30.73
19	F	33.4	9.9	3.2	49.3	40.0	46.4	M28×1.0-6g	35.15	33.86
21	G	36.5	9.9	3.2	52.7	43.2	49.6	M31×1.0-6g	38.28	37.06
23	H	39.7	9.9	3.2	55.9	46.3	52.8	M34×1.0-6g	41.53	40.26
25	J	42.8	9.9	3.2	59.0	51.0	55.8	M37×1.0-6g	44.68	43.41

D38999 receptacle with PCB

D38999/24receptacle



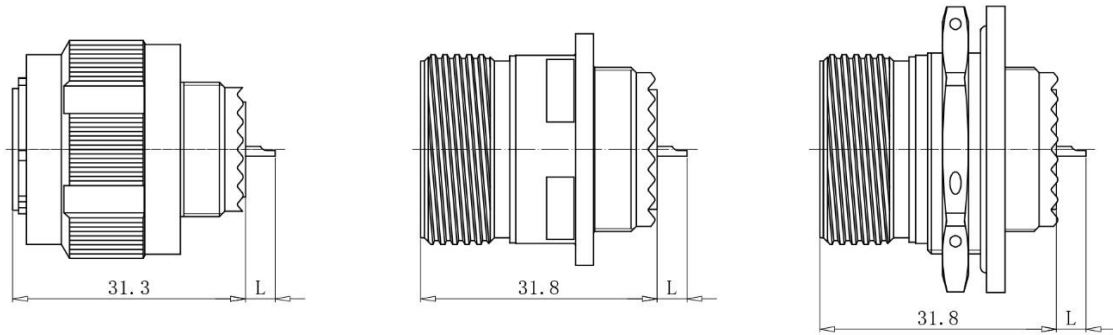
D38999/20 receptacle



PCB contact specification		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	

Dimension for mounting different specification contacts		Shell number 09-11	Shell number 13 15 17 19 21 23 25
L2	22D pin	10.52~11.46	10.34~11.28
	22D socket	10.19~11.46	10.01~11.28
	16# or 20# pin socket	10.69~11.63	10.51~11.45
L3	22D pin	9.48~10.58	9.48~10.58
	22D socket	9.15~10.58	9.15~10.58
	16# or 20# pin socket	9.65~10.75	9.65~10.75

D38999 solder connector

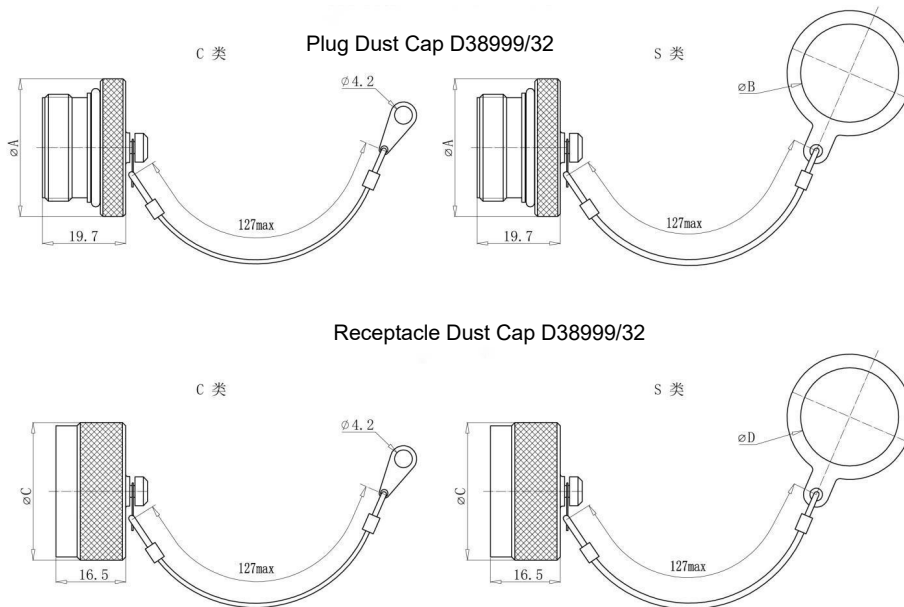


Solder contact specification	22D	20#	16#	12#	10#	8#
L	4	4	4	4	6	6

Dust cap

	D38999/	32	F	09	N
Basic series					
32 = Dust cap of plug					
33 = Dust cap of receptacle					
Finish					
W = Olive green cadmium plating					
F = <u>Electroless</u> nickel plating					
J = Olive green cadmium plating (composite material)					
M = <u>Electroless</u> nickel plating (composite material)					
Shell size					
09, 11, 13, 15, 17, 19, 21, 23, 25					
Chain type					
N = Stainless steel rope with ring					
R = Stainless steel rope with hole					

Note: Dust cap should be ordered separately, not supplied with connector, can be customized according to customer's request



Shell	09	11	13	15	17	19	21	23	25
A	22.5	26.5	29.5	32.5	36	38.4	41.7	44.4	48.3
B min	12.92	17.78	19.27	22.6	25.62	28.95	31.97	34.03	38.32
C	22.5	26.5	29.5	32.5	36	38.4	41.7	44.4	48.3
D min	17.78	21.33	25.62	28.95	31.97	35.3	38.32	41.65	44.45