

# Moistureproof Circular Connectors for Solder Terminations Meeting IP55

## EB Series

## DDK Ltd.

### OUTLINE

EB series is a moistureproof circular connector to meet Class IP55 protection when mated. The rubber inserts prevent moisture and dust from intruding into a system. EB series has a bayonet coupling design which is suitable for applications requiring quick positive coupling and vibration resistance.



### FEATURE

#### 1. Bayonet Coupling

This series has a bayonet coupling design. The click sound after rotating the coupling ring gives you the indication of full coupling.

#### 2. 5 Keys to Prevent Mismatching

The shell has five keys. Alternate insert positions eliminate the connector mismatching if more than one connector with the same size and arrangement is to be used in a system. The insulator is permanently positioned in the shell so that only a connector with the same degree of rotation can be mated with it.

#### 3. Quick and Easy Termination

The contacts are preloaded in the connector. The solder cups are oriented in one direction to simplify termination.

### SPECIFICATIONS

Contact Size	#20 Contact	#16 Contact
Male Contact Diameter	1.0mm	1.6mm
Rated Voltage	250V AC(r.m.s.) or 350V DC	
Rated Current	5A / Contact	10A / Contact
Applicable Cable	Conductor Diameter	1.0mm max.
	Nominal Sectional Area	0.5mm <sup>2</sup> max.
	Reference Wire Size	AWG #20 max.
Operating Temperature	- 25°C ~ + 85°C	
Insulation Resistance	1,000M Ω (min.) at 500V DC.	
Dielectric Withstanding Voltage	1,000V AC(r.m.s.) at 1 minute.	
Contact Resistance	5m Ω max. at 1A DC	
Vibration	Amplitude : 10-55Hz / 1.5mm	
Waterproof Rating	IP55	
Shock	Acceleration 50G.	
Durability	500 cycles	
Humidity(Stable Condition)	40°C, 90-95%, 96 hours	
Heat Cycle	- 40°C to +100°C : 5 cycles	
Salt Spray	5%, 35°C, 48 hours	

Note: AWG wire sizes for reference only.

### MATERIAL / FINISH



Item	Material / Finish
Insert	Polychloroprene Rubber / Black
Contact	Copper Alloy / Silver Plating (Standard) or Gold Plating (Option)
Shell	Zinc Diecast / Zinc Plating, Trivalent Chromium Treatment(Black)
Hood	Aluminum Alloy / Zinc Plating, Trivalent Chromium Treatment(Black)
Boot	Polychloroprene Rubber / Black
Protection Cap	Polychloroprene Rubber / Black, Zinc Plating, Trivalent Chromium Treatment

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Waterproof

IP55

Lock Type

Bayonet

▶ Insert Arrangement List

Shell Size	13		16		21	
Number of Contacts	3	7	7	10	10	19
Insert Arrangement						
Insert No.	1303	1307	1607	1610	2110	2119

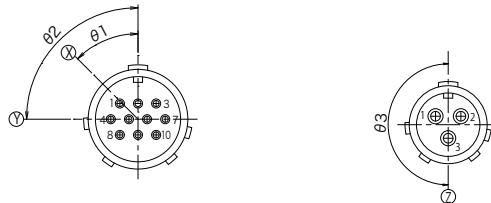
Shell Size	25	
Number of Contacts	16	32
Insert Arrangement		
Insert No.	2516	2532

● · · ·  $\phi$  1.0mm Contact(#20 Contact) ○ · · ·  $\phi$  1.6mm Contact(#16 Contact)  
 Note : Front view of pin insert or rear view of socket insert  
 Normal key position illustrated.

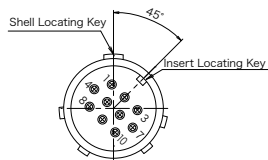
▶ Alternate Insert Positions

Shell Size	Number of Contacts	Change Angle Alternate Insert Position		
		$\theta$ 1	$\theta$ 2	$\theta$ 3
		X	Y	Z
13	3			180°
	7		90°	
16	7	30°		
	10	45°	90°	
21	10	45°	90°	
	19	45°	90°	
25	16	45°	90°	
	32	45°	90°	

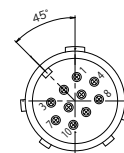
Front View of Pin Insert or Rear View of Socket Insert



Examples of Insert Rotation



For P/N EB □□ 1610MX

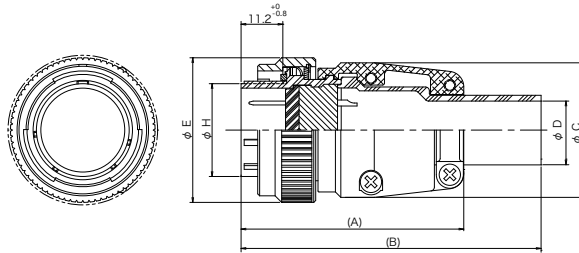


For P/N EB □□ 1610FX

▶ EBSP (Straight Plug)

**EBSP2524M □ G-D**  
 ① ② ③ ④ ⑤ ⑥ ⑦

① Connector Style	SP : Straight Plug
② Shell Size	13, 16, 21 and 25
③ Number of Contacts	03, 07, 10, 16, 19, 24 and 32
④ Contact Style	M : Male Contact(Pin) F : Female Contact(Socket)
⑤ Alternate Insert Position	Omit : Standard Position X, Y, Z : Alternate Insert Position
⑥ Contact Plating	Omit : Silver Plating (Standard) G : Gold Plating
⑦ Finish	D : Black Trivalent Chromium Treatment

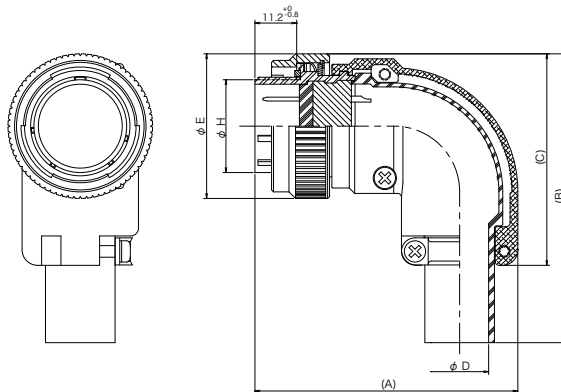


Shell Size	A max.	B max.	C±0.5	D±0.5	E±1	H <sup>0</sup> <sub>-0.3</sub>
13	51.6	71.6	23.5	8.2	25.5	12.7
16	53.6	73.6	27.4	9.2	29.5	16.3
21	55.6	75.6	31.6	12.2	33.5	20.5
25	57.6	77.6	34.8	15.0	37.4	24.0

▶ EBLP (Angle Plug)

**EBLP2524M □ G-D**  
 ① ② ③ ④ ⑤ ⑥ ⑦

① Connector Style	LP : Angle Plug
② Shell Size	13, 16, 21 and 25
③ Number of Contacts	03, 07, 10, 16, 19, 24 and 32
④ Contact Style	M : Male Contact(Pin) F : Female Contact(Socket)
⑤ Alternate Insert Position	Omit : Standard Position X, Y, Z : Alternate Insert Position
⑥ Contact Plating	Omit : Silver Plating (Standard) G : Gold Plating
⑦ Finish	D : Black Trivalent Chromium Treatment



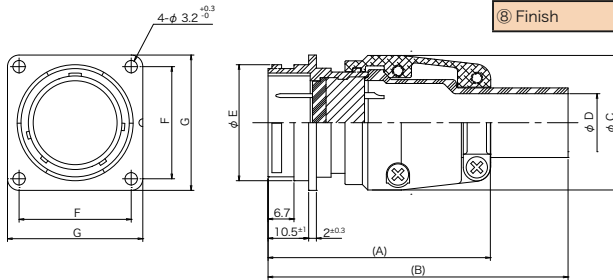
Shell Size	A max.	B max.	C±0.5	D±0.5	E±1	H <sup>0</sup> <sub>-0.3</sub>
13	55.5	63.1	43.1	8.2	25.5	12.7
16	60.0	67.1	47.1	9.2	29.5	16.3
21	63.8	71.1	51.1	12.2	33.5	20.5
25	68.0	74.7	54.7	15.0	37.4	24.0

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▶ EBWR (Wall Receptacle)

**EBWR 25 24 M □ GS-D**  
 ① ② ③ ④ ⑤ ⑥ ⑦ ⑧

① Connector Style	WR : Wall Receptacle
② Shell Size	13, 16, 21 and 25
③ Number of Contacts	03, 07, 10, 16, 19, 24 and 32
④ Contact Style	M : Male Contact(Pin) F : Female Contact(Socket)
⑤ Alternate Insert Position	Omit : Standard Position X, Y, Z : Alternate Insert Position
⑥ Contact Plating	Omit : Silver Plating (Standard) G : Gold Plating
⑦ Flange Gasket	Omit : Less Gasket S : With Gasket
⑧ Finish	D : Black Trivalent Chromium Treatment

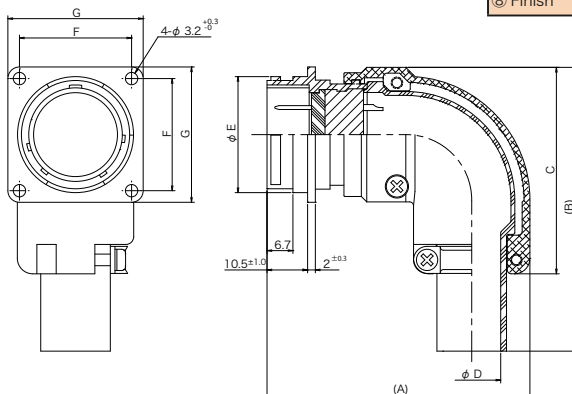


Shell Size	A max.	B max.	C±0.5	D±0.5	E±0.3	F±0.2	G±0.5
13	51.6	71.6	23.5	8.2	18	20	26
16	53.6	73.6	27.4	9.2	22	23	29
21	55.6	75.6	31.6	12.2	26	26	32
25	57.6	77.6	34.8	15.0	30	29	35

▶ EBWL (Angle Wall Receptacle)

**EBWL 25 24 M □ GS-D**  
 ① ② ③ ④ ⑤ ⑥ ⑦ ⑧

① Connector Style	WR : Angle Wall Receptacle
② Shell Size	13, 16, 21 and 25
③ Number of Contacts	03, 07, 10, 16, 19, 24 and 32
④ Contact Style	M : Male Contact(Pin) F : Female Contact(Socket)
⑤ Alternate Insert Position	Omit : Standard Position X, Y, Z : Alternate Insert Position
⑥ Contact Plating	Omit : Silver Plating (Standard) G : Gold Plating
⑦ Flange Gasket	Omit : Less Gasket S : With Gasket
⑧ Finish	D : Black Trivalent Chromium Treatment

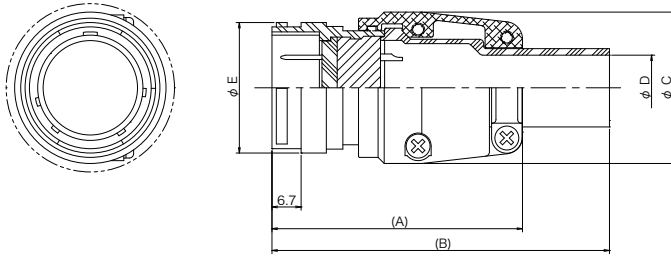


Shell Size	A max.	B max.	C±0.5	D±0.5	E±0.3	F±0.2	G±0.5
13	55.5	61.9	41.9	8.2	18	20	26
16	60.0	66.0	46.0	9.2	22	23	29
21	63.8	70.2	50.2	12.2	26	26	32
25	68.0	73.4	53.4	15.0	30	29	35

▶ EBCR ( Cable Receptacle )

**EBCR 25 24 M □ G-D**  
 ① ② ③ ④ ⑤ ⑥ ⑦

① Connector Style	CR : Cable Receptacle
② Shell Size	13, 16, 21 and 25
③ Number of Contacts	03, 07, 10, 16, 19, 24 and 32
④ Contact Style	M : Male Contact(Pin) F : Female Contact(Socket)
⑤ Alternate Insert Position	Omit : Standard Position X, Y, Z : Alternate Insert Position
⑥ Contact Plating	Omit : Silver Plating (Standard) G : Gold Plating
⑦ Finish	D : Black Trivalent Chromium Treatment

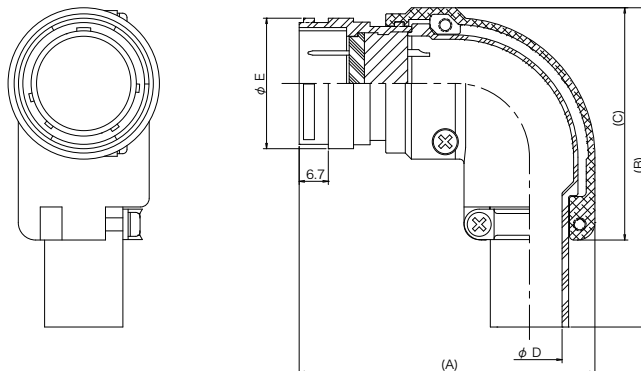


Shell Size	A max.	B max.	C±0.5	D±0.5	E±1
13	51.6	71.6	23.5	8.2	18
16	53.6	73.6	27.4	9.2	22
21	55.6	75.6	31.6	12.2	26
25	57.6	77.6	34.8	15.0	30

▶ EBCL ( Angle Cable Receptacle )

**EBCL 25 24 M □ G-D**  
 ① ② ③ ④ ⑤ ⑥ ⑦

① Connector Style	CL : Angle Cable Receptacle
② Shell Size	13, 16, 21 and 25
③ Number of Contacts	03, 07, 10, 16, 19, 24 and 32
④ Contact Style	M : Male Contact(Pin) F : Female Contact(Socket)
⑤ Alternate Insert Position	Omit : Standard Position X, Y, Z : Alternate Insert Position
⑥ Contact Plating	Omit : Silver Plating (Standard) G : Gold Plating
⑦ Finish	D : Black Trivalent Chromium Treatment

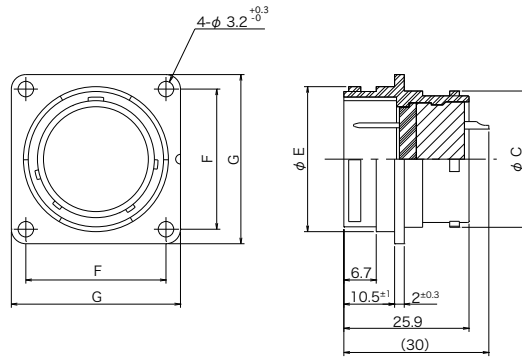


Shell Size	A max.	B max.	C±0.5	D±0.5	E±1
13	55.5	61.9	41.9	8.2	18
16	60.0	66.0	46.0	9.2	22
21	63.8	70.2	50.2	12.2	26
25	68.0	73.4	53.4	15.0	30

▶ EBR (Box Receptacle Connector)

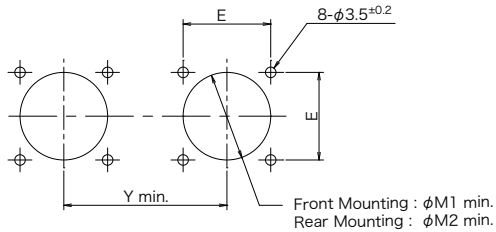
**EBR 25 24 M □ GS-D**  
 ① ② ③ ④ ⑤ ⑥ ⑦ ⑧

① Connector Style	R : Box Receptacle
② Shell Size	13, 16, 21 and 25
③ Number of Contacts	03, 07, 10, 16, 19, 24 and 32
④ Contact Style	M : Male Contact(Pin) F : Female Contact(Socket)
⑤ Alternate Insert Position	Omit : Standard Position X, Y, Z : Alternate Insert Position
⑥ Contact Plating	Omit : Silver Plating (Standard) G : Gold Plating
⑦ Flange Gasket	Omit : Less Gasket S : With Gasket
⑧ Finish	D : Black Trivalent Chromium Treatment



Shell Size	C±0.5	E±0.3	F±0.2	G±0.5
13	16.3	18	20	26
16	20.3	22	23	29
21	24.3	26	26	32
25	28.2	30	29	35

▶ EBR /EBWR /EBWL Panel Cutout Dimension



Shell Size	Mounting hole Pitch	Front Mounting Diameter	Rear Mounting Diameter	Serial Mounting Pitch
	E ±0.2	M1 (min.)	M2 (min.)	Y (min.)
13	20	17	19	42
16	23	21	23	46
21	26	25	27	50
25	29	29	31	54

Note : The panel thickness for the rear mounting is as follows.  
 Connector without Gasket : 3 mm max.  
 Connector with Gasket : 2 mm max.

Panel Cutout for Two Connectors of Same Shell Size

▶ Protection Cap



**EBPC □ □ RA-D**  
 ① ② ③

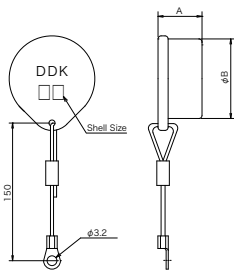
① Cap Style	PC : Plug RC : Receptacle
② Shell Size	13, 16, 21, 25
③ Material	-D : Metal RA-D : Rubber



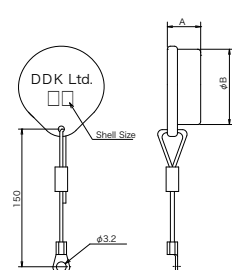
Rubber Protection Cap

Metal Protection Cap

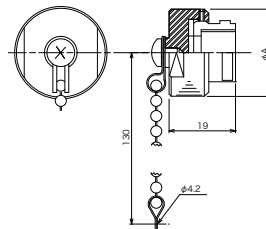
EBPC □ □ RA-D  
(Plug Cap)



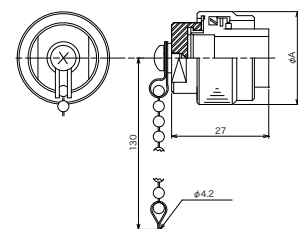
EBRC □ □ RA-D  
(Receptacle Cap)



EBPC □ □ -D  
(Plug Cap)



EBRC □ □ -D  
(Receptacle Cap)



Part Number	A	φ B
EBPC13RA-D	26.5	31.6
EBPC16RA-D	26.5	35.6
EBPC21RA-D	26.5	39.6
EBPC25RA-D	26.5	43.5

Part Number	A	φ B
EBRC13RA-D	9.5	22.0
EBRC16RA-D	9.5	26.0
EBRC21RA-D	9.5	30.0
EBRC25RA-D	9.5	34.0

Part Number	φ A
EBPC13-D	24.4
EBPC16-D	28.4
EBPC21-D	32.4
EBPC25-D	36.4

Part Number	φ A
EBRC13-D	25.5
EBRC16-D	29.5
EBRC21-D	33.5
EBRC25-D	37.4

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