

# Conesys Europe Hermetic Connectors

## AE3 Series per MIL-DTL-38999 Series III and EN3645



MIL-DTL-38999 S III



**AE3 Series**  
**Hermetic Connectors**  
per MIL-DTL-38999 Series III and EN3645



## Features and Application

AE3 Series hermetic connector receptacles are manufactured to Conesys Europe standards and meet all the requirements of MIL-DTL-38999 Series III and EN3645.

AE3 Series are cylindrical connectors, designed for highest performance capabilities, and used in both general purpose and severe environment applications.

These connectors feature a one-turn coupling system, utilizing self-locking triple start ACME thread. ACME threads provide coupling durability, while thicker wall sections and greater coupling surface area improve strength, shock resistance and EMI shielding. Blunting of the threads on both receptacle and plug coupling nut eliminates cross threading.

Square flange, jam nut, solder, and welding receptacles are available in 9 shell sizes and insert arrangements utilizing sizes 22D, 20, 16, 12 and 8 contacts.

Customer-specific design can be proposed for special applications – Consult factory for details.

These hermetic connectors are available in stainless steel material, passivated or nickel plated. Other materials can be proposed for special applications – Please consult factory.

**MIL-STD-1560 Insert Arrangement** – AE3 Series hermetic connectors use standard insert arrangement.

**EN3645 and Specific Insert Arrangement** – AE3 Series hermetic connectors can be proposed with EN3645 or special insert arrangement – Please consult factory.

**Scoop-Proof Design** – Recessed pins in elongated shells minimize the possibility of contact damage. In a blind mating application, mating shells cannot “scoop” the pins and cause a shorting or bending of contacts.

**Interfacial Pin Insert Seal** – Raised moisture barriers around each receptacle pin, which mate into lead-in chamfers of the plug hard face socket insert, provide individual contact sealing.

**Glass insulator** – These hermetic connectors are designed with sintered compression glass as an insulator.



## Performance Specifications

### Operating Temperature Range

Classes Y and N : -65°C to +200°C (-85°F to +392°F)

### Material and Finish Data (Class)

Class Y:

RECEPTACLE	material:	stainless steel
	finish:	passivated
CONTACTS	material:	ferrous alloy
	finish:	gold plated

Class N:

RECEPTACLE	material:	stainless steel
	finish:	nickel plated
CONTACTS	material:	ferrous alloy
	finish:	gold plated

### Corrosion Resistance

Class Y: 500 hours as per MIL-DTL-38999

Class N: 48 hours as per MIL-DTL-38999

### Durability

Minimum of 500 mating cycles.

### Leakage

$< 1.10^{-7}$  atm.cm<sup>3</sup>.s<sup>-1</sup>.

### Shock and Vibration

Shock: Pulse of approximate half sine wave of 300 g ± 15% magnitude with duration of 3 ± 1 milliseconds applied in three axes. Vibration: as per MIL-DTL-38999.

### Shell-to-Shell Conductivity

Maximum potential drop shall not exceed:

Class N: 1 millivolt

Classes Y: 50 millivolts

### Insulation Resistance

>5000 M $\Omega$  under 500 Vdc

(25°C – 65% HR max.)

### Withstanding Voltage

At sea level:

Service M: 1300 V RMS

Service I: 1800 V RMS

Service II: 2300 V RMS

At 21 000 m altitude:

Service M: 800 V RMS

Service I: 1000 V RMS

Service II: 1000 V RMS

### Maximum Current Rating per Contact

Size 22D 3 Amp

Size 20 5 Amp

Size 16 10 Amp

Size 12 17 Amp

Size 8 40 Amp



**AE3 Series**  
**Hermetic Connectors**  
 per MIL-DTL-38999 Series III and EN3645

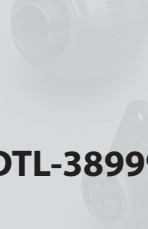


Military and Conesys Part Number Development

<b>Mil. Prefix</b>	<b>D38999/</b>	<b>21</b>	<b>Y</b>	<b>D</b>	<b>19</b>	<b>P</b>	<b>N</b>	
<b>Conesys Prefix</b>	<b>AE3</b>	<b>21</b>	<b>Y</b>	<b>D</b>	<b>19</b>	<b>P</b>	<b>N</b>	<b>-XXX</b>
<b>Shell Type (specification sheet number)</b>								
21 = Wall mount receptacle								
23 = Jam nut receptacle								
25 = Solder mount receptacle								
27 = Weld mount receptacle								
<b>Class (Material and Finish)</b>								
Y = Shell – stainless steel, passivated								
= Terminals – ferrous alloy, gold plated								
N = Shell – stainless steel, nickel plated								
= Terminals – ferrous alloy, gold plated								
<b>Shell Size</b>								
A, B, C, D, E, F, G, H, or J								
<b>Insert Arrangement</b>								
See pages 47–50								
<b>Contact Style (pin only)</b>								
P = Pin with solder cup								
X = Pin with eyelet								
C = Pin tail (for PCB)								
<b>Polarization (keying)</b>								
N = Normal								
A, B, C, D, or E for alternatives								
<b>Modification or Particularities (applies to Conesys part numbers only)</b>								
XXX = Modification								
Consult factory for details								

MIL-DTL-38999 S III





### Terminal Configuration



#### Terminal Style P

Solder cup

Available in size 22, 20, 16, 12, and 8

For other sizes, please consult factory.



#### Terminal Style X

Eyelet

Available in size 22, 20, and 16

For other sizes, please consult factory.



#### Terminal Style C

Pin tail for PCB

Available in size 22, 20, and 16

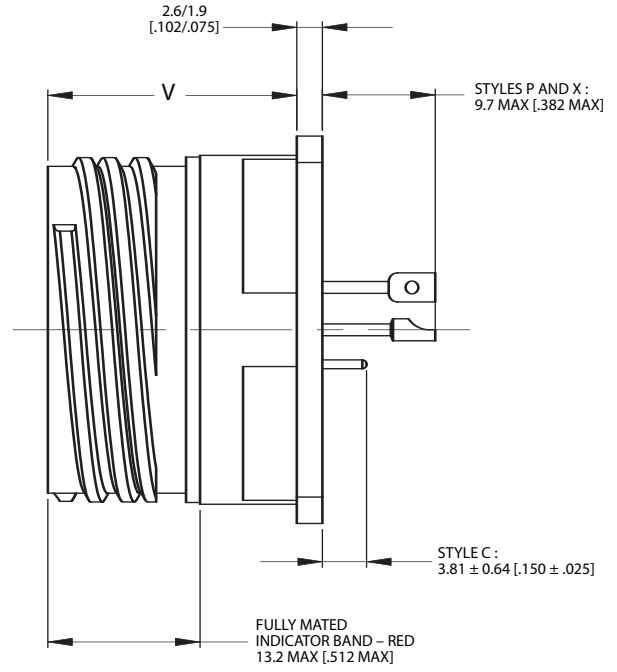
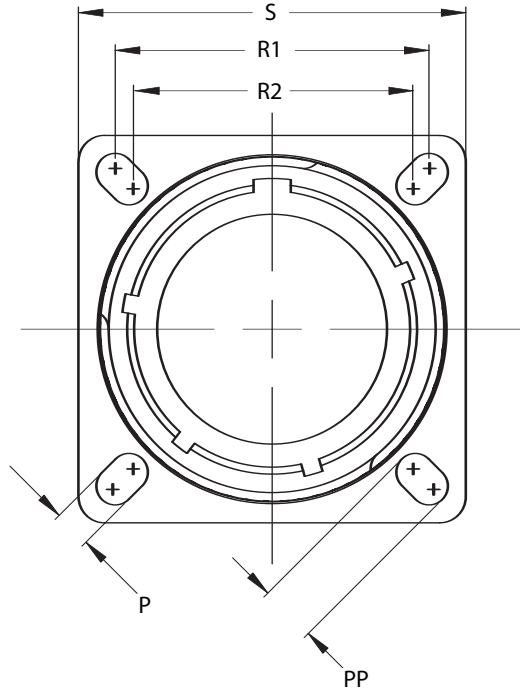
For other sizes or lengths, please consult factory.



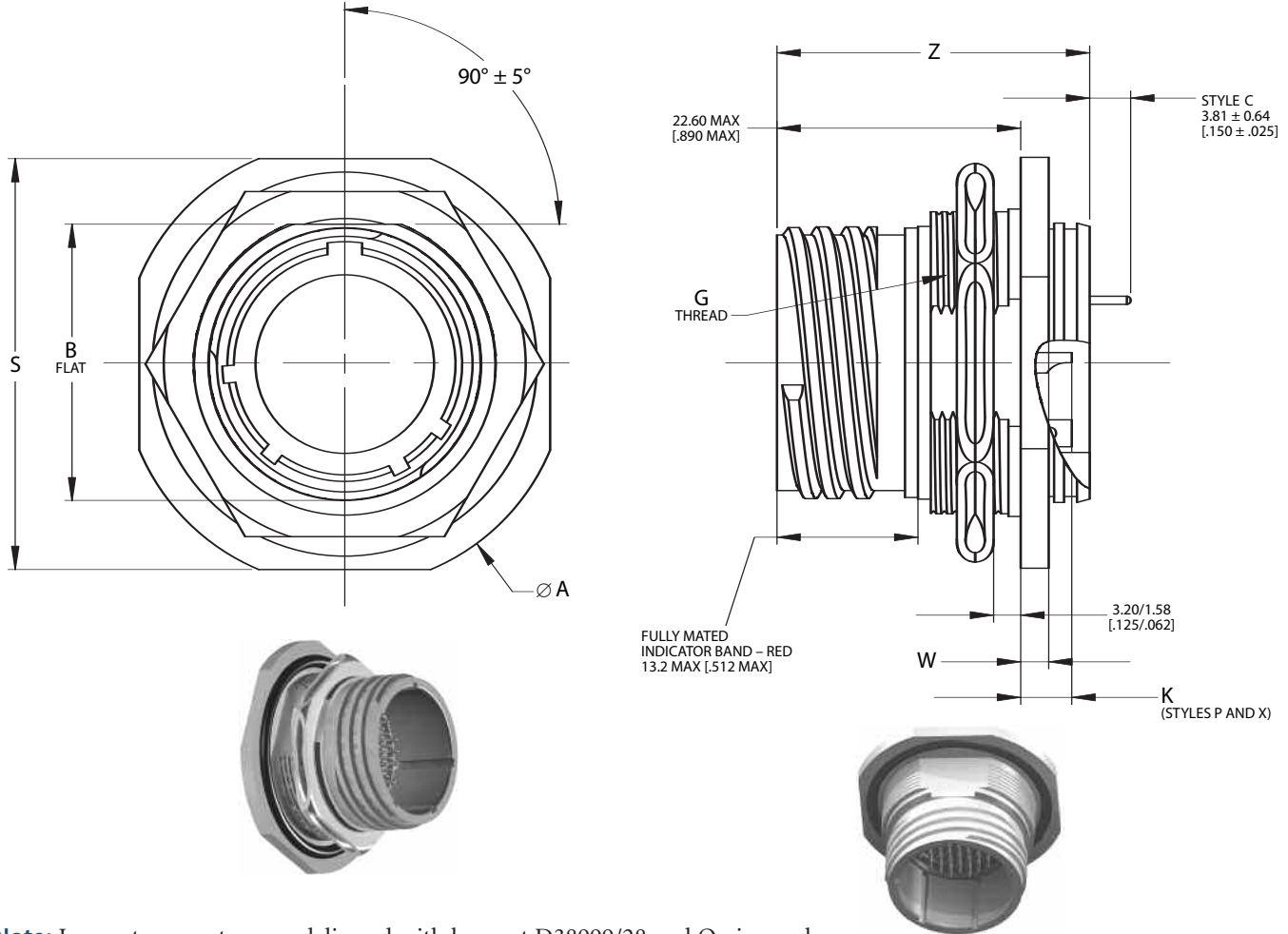
**AE321**  
**Wall Mount Receptacle**  
**D38999/21 – EN3645Y0**



MIL-DTL-38999 S III



Shell Size	Shell Size Code	P		PP		R1		R2		S		V	
		$\pm 0.20$	$\pm 0.008$	$\pm 0.20$	$\pm 0.008$	(TP)		(TP)		$\pm 0.30$	$\pm 0.012$	Maximum	
		mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
9	A	3.25	.128	5.49	.216	18.26	.719	15.09	.594	23.8	.937	21.40	.843
11	B	3.25	.128	4.93	.194	20.62	.812	18.26	.719	26.20	1.031	21.40	.843
13	C	3.25	.128	4.93	.194	23.01	.906	20.62	.812	28.60	1.126	21.40	.843
15	D	3.25	.128	4.93	.194	24.61	.969	23.01	.906	31.00	1.220	21.40	.843
17	E	3.25	.128	4.93	.194	26.97	1.062	24.61	.969	33.30	1.311	21.40	.843
19	F	3.25	.128	4.93	.194	29.36	1.156	26.97	1.062	36.50	1.437	21.40	.843
21	G	3.25	.128	4.93	.194	31.75	1.250	29.36	1.156	39.70	1.563	21.40	.843
23	H	3.91	.154	6.15	.242	34.93	1.375	31.75	1.250	42.90	1.689	21.40	.843
25	J	3.91	.154	6.15	.242	38.10	1.500	34.93	1.375	46.00	1.811	21.40	.843



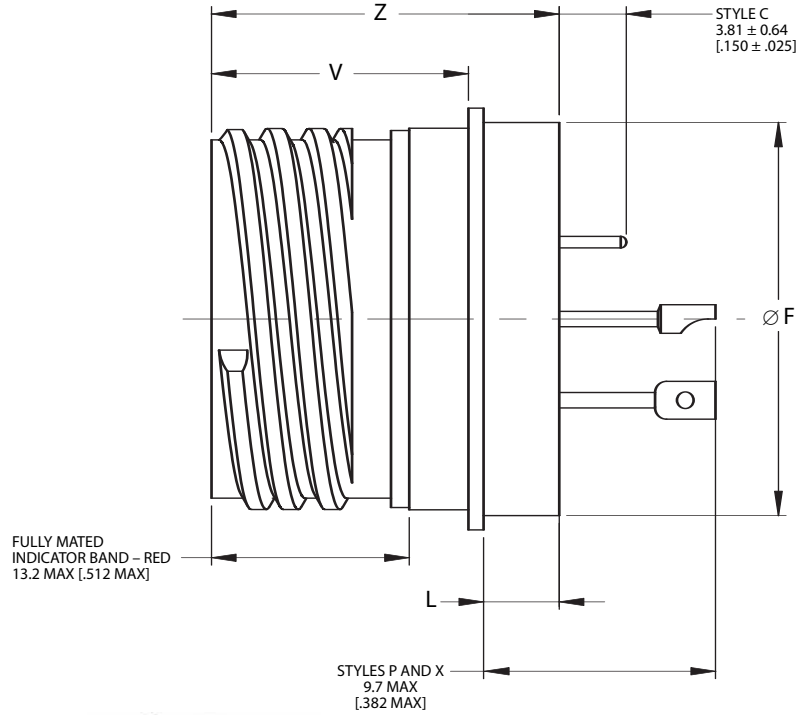
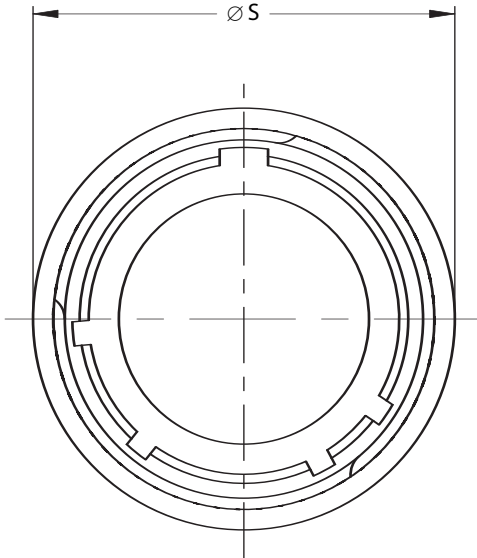
**Note:** Jam nut connectors are delivered with hex nut D38999/28 and O-ring seal.

Shell Size	Shell Size Code	Ø A		B		G	K		S		W		Z	
		±0.30	±.012	Flat			Thread	Maximum		±0.40	±.016	+0.30	+0.012	Maximum
		mm	inch	+0.10	+0.004	mm		inch	mm	inch	mm	inch	-0.10	-.004
9	A	30.20	1.189	16.53	.651	M17x1-6g 0.100R	5.30	.209	27.00	1.063	2.60	.102	29.20	1.150
11	B	34.90	1.374	19.07	.751	M20x1-6g 0.100R	5.30	.209	31.80	1.252	2.60	.102	29.20	1.150
13	C	38.10	1.500	23.82	.938	M25x1-6g 0.100R	5.10	.201	34.90	1.374	2.60	.102	29.20	1.150
15	D	41.30	1.626	26.97	1.062	M28x1-6g 0.100R	5.10	.201	38.10	1.500	2.60	.102	29.20	1.150
17	E	44.50	1.752	30.15	1.187	M32x1-6g 0.100R	5.10	.201	41.30	1.626	2.60	.102	29.20	1.150
19	F	49.20	1.937	33.32	1.312	M35x1-6g 0.100R	5.10	.201	46.00	1.811	3.40	.134	30.10	1.185
21	G	52.40	2.063	36.5	1.437	M38x1-6g 0.100R	5.10	.201	49.20	1.937	3.40	.134	30.10	1.185
23	H	55.60	2.189	39.67	1.562	M41x1-6g 0.100R	5.10	.201	52.40	2.063	3.40	.134	30.10	1.185
25	J	58.70	2.311	42.85	1.687	M44x1-6g 0.100R	5.10	.201	55.60	2.189	3.40	.134	30.10	1.185

**AE325**  
**Solder Mount Receptacle**  
**D38999/25 – EN3645Y1**

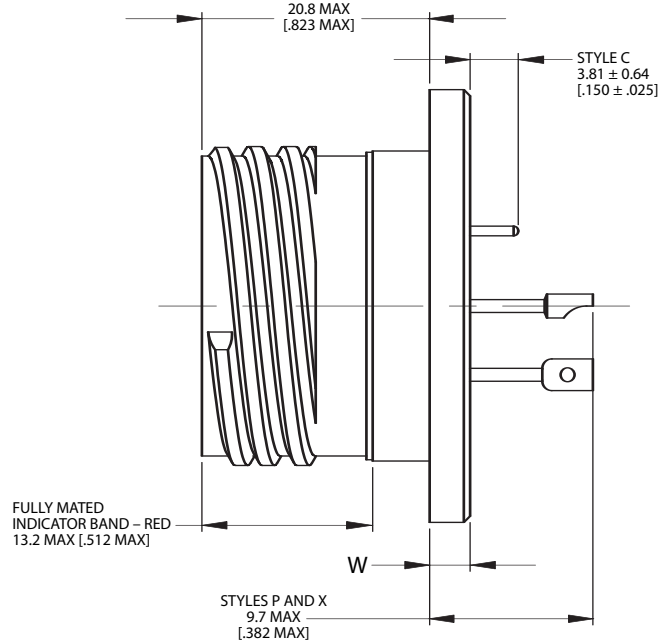
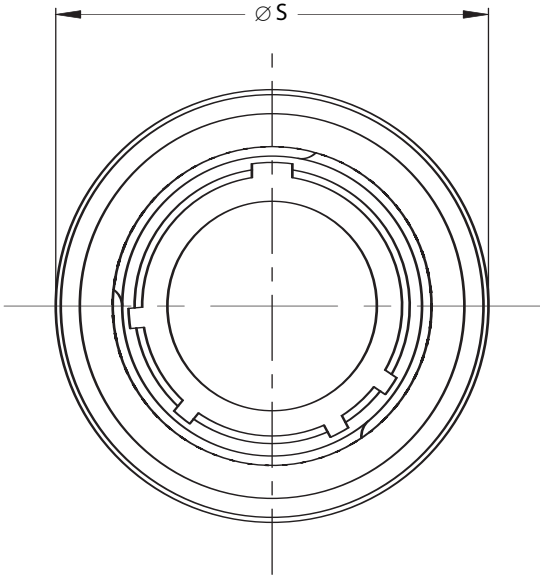


MIL-DTL-38999 S III



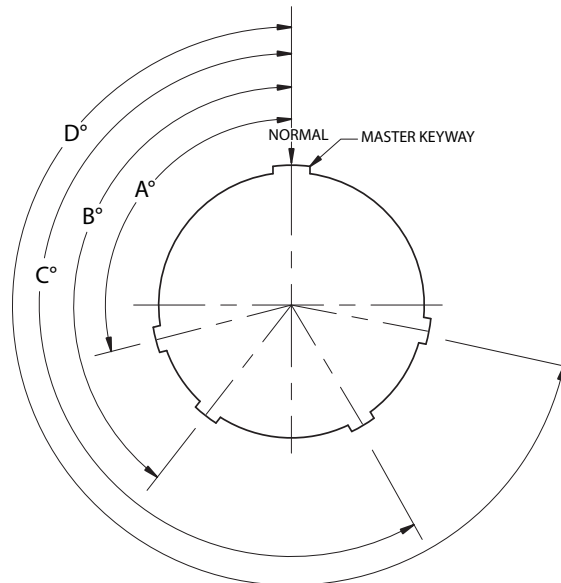
Shell Size	Shell Size Code	Ø F		L		Ø S		V		Z	
		Maximum		Maximum		Maximum		Maximum		Maximum	
		mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
9	A	17.10	.673	5.10	.201	19.40	.764	17.20	.677	23.80	.937
11	B	19.90	.783	5.10	.201	21.80	.858	17.20	.677	23.80	.937
13	C	23.10	.909	5.10	.201	24.90	.980	17.20	.677	23.80	.937
15	D	26.30	1.035	5.10	.201	28.10	1.106	17.20	.677	23.80	.937
17	E	29.40	1.157	5.10	.201	31.80	1.252	17.20	.677	23.80	.937
19	F	31.80	1.252	5.10	.201	33.60	1.323	17.20	.677	23.80	.937
21	G	35.00	1.378	5.10	.201	36.80	1.449	17.20	.677	23.80	.937
23	H	38.20	1.504	5.90	.232	40.00	1.575	17.20	.677	24.60	.969
25	J	41.40	1.630	5.90	.232	43.20	1.701	17.20	.677	24.60	.969





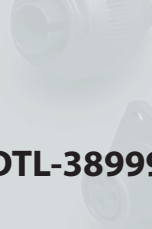
Shell Size	Shell Size Code	Ø S		W	
		+0.30 0.00	+0.012 .000	±0.15	±.006
		mm	inch	mm	inch
9	A	24.70	.972	3.20	.126
11	B	27.80	1.094	3.20	.126
13	C	31.00	1.220	3.20	.126
15	D	34.20	1.346	3.20	.126
17	E	36.40	1.433	3.20	.126
19	F	40.10	1.579	3.20	.126
21	G	43.70	1.720	3.20	.126
23	H	47.90	1.886	4.00	.157
25	J	50.10	1.972	4.00	.157

### Keying Positions



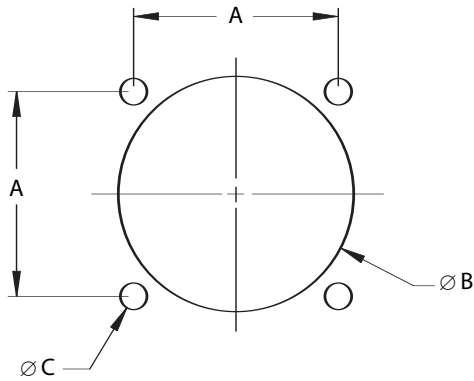
1. Mating face of receptacle shown.
2. All minor keyways (keys) are rotated to provide shell polarization while master keyway (key) remains fixed as shown.
3. Insert arrangement does not rotate relative to the master keyway (key).

Shell Size	Key/Keyway	Key/Keyway Positions			
	Identification Letter	BSC			
		A°	B°	C°	D°
A (9)	N	105	140	215	265
	A	102	132	248	320
	B	80	118	230	312
	C	35	140	205	275
	D	64	155	234	304
B (11) C (13) D (15)	E	91	131	197	240
	N	95	141	208	236
	A	113	156	182	292
	B	90	145	195	252
	C	53	156	220	255
E (17) F (19) G (21) H (23) J (25)	D	119	146	176	298
	E	51	141	184	242
	N	80	142	196	293
	A	135	170	200	310
	B	49	169	200	244
	C	66	140	200	257
	D	62	145	180	280
	E	79	153	197	272

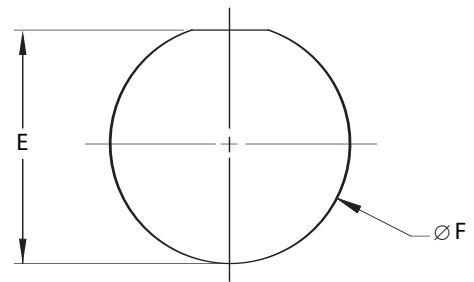


Panel Cutouts

AE321  
 Wall Mount Receptacle



AE323  
 Jam Nut Receptacle



Shell Size	Shell Size Code	A		Ø B		Ø B		Ø C		E		Ø F	
		(TP)		Minimum Back Mounting		Minimum Front Mounting		±0.13	±.005	0.00	.000	+0.25	+.010
		mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
9	A	18.26	.719	16.66	.656	13.11	.516	3.25	.128	17.02	.670	17.78	.700
11	B	20.62	.812	20.22	.796	15.88	.625	3.25	.128	19.59	.771	20.96	.825
13	C	23.01	.906	23.42	.922	19.05	.750	3.25	.128	24.26	.955	25.65	1.010
15	D	24.61	.969	26.59	1.047	23.01	.906	3.25	.128	27.56	1.085	28.83	1.135
17	E	26.97	1.062	30.96	1.219	25.81	1.016	3.25	.128	30.73	1.210	32.01	1.260
19	F	29.36	1.156	32.94	1.297	28.98	1.141	3.25	.128	33.91	1.335	35.18	1.385
21	G	31.75	1.250	36.12	1.422	32.16	1.266	3.25	.128	37.08	1.460	38.35	1.510
23	H	34.93	1.375	39.29	1.547	34.93	1.375	3.91	.154	40.26	1.585	41.53	1.635
25	J	38.10	1.500	42.47	1.672	37.69	1.484	3.91	.154	43.43	1.710	44.70	1.760

Insert Arrangement and Contact Information

Insert Arrangement				Service	Total	Quantity of Contacts				
					No. of	by Size				
Series I	Series II	Series III	Series IV	Rating	Contacts	22D	20	16	12	8
9-35	8-35	A-35	—	M	6	6				
9-98	8-98	A-98	—	I	3		3			
11-2	—	B-2	B-2	I	2			2		
11-4	—	B-4	B-4	I	4		4			
11-5	10-5	B-5	B-5	I	5		5			
11-35	10-35	B-35	B-35	M	13	13				
11-98	10-98	B-98	B-98	I	6		6			
11-99	10-99	B-99	B-99	I	7		7			
13-4	12-4	C-4	C-4	I	4			4		
13-8	12-8	C-8	C-8	I	8		8			
13-35	12-35	C-35	C-35	M	22	22				
13-98	12-98	C-98	C-98	I	10		10			
15-5	14-5	D-5	D-5	II	5			5		
15-15	14-15	D-15	D-15	I	15		14	1		
15-18	14-18	D-18	D-18	I	18		18			
15-19	—	D-19	D-19	I	19		19			
15-35	14-35	D-35	D-35	M	37	37				
15-97	14-97	D-97	D-97	I	12		8	4		
17-6	16-6	E-6	E-6	I	6				6	
17-8	16-8	E-8	E-8	II	8			8		
17-26	16-26	E-26	E-26	I	26		26			
17-35	16-35	E-35	E-35	M	55	55				
17-99	16-99	E-99	E-99	I	23		21	2		

**AE1, AE2, AE3, and AE4 Series**  
**Insert Arrangement and Contact Information**  
**per MIL-STD-1560**



Insert Arrangement and Contact Information

Insert Arrangement				Service	Total	Quantity of Contacts				
					No. of	by Size				
Series I	Series II	Series III	Series IV	Rating	Contacts	22D	20	16	12	8
19-11	18-11	F-11	F-11	II	11			11		
19-28	18-28	F-28	F-28	I	28		26	2		
19-30	18-30	F-30	F-30	I	30		29	1		
19-32	18-32	F-32	F-32	I	32		32			
19-35	18-35	F-35	F-35	M	66	66				
21-11	—	G-11	G-11	I	11				11	
21-16	20-16	G-16	G-16	II	16			16		
21-35	20-35	G-35	G-35	M	79	79				
21-39	20-39	G-39	G-39	I	39		37	2		
21-41	20-41	G-41	G-41	I	41		41			
21-48 *	—	G-48 *	G-48 *	I	4					4
23-21	22-21	H-21	H-21	II	21			21		
23-32	22-32	H-32	H-32	I	32		32			
23-35	22-35	H-35	H-35	M	100	100				
23-53	22-53	H-53	H-53	I	53		53			
23-55	22-55	H-55	H-55	I	55		55			
25-4	24-4	J-4	J-4	I	56		48	8		
25-19	24-19	J-19	J-19	I	19				19	
25-24	24-24	J-24	J-24	I	24			12	12	
25-29	24-29	J-29	J-29	I	29			29		
25-35	24-35	J-35	J-35	M	128	128				
25-43	—	J-43	J-43	I	43		23	20		
25-61	24-61	J-61	J-61	I	61		61			

\* Not MIL-STD-1560 layout



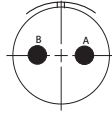
Insert Arrangement Views



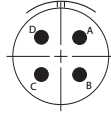
9-35/8-35  
A35,  
6 # 22D, M



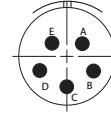
9-98/8-98  
A98,  
3 # 20, I



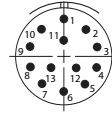
11-2  
B2,  
2 # 16, I



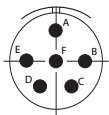
11-4  
B4,  
4 # 20, I



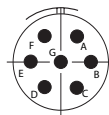
11-5/10-5  
B5,  
5 # 20, I



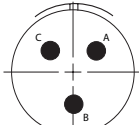
11-35/10-35  
B35,  
13 # 22D, M



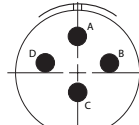
11-98/10-98  
B98,  
6 # 20, I



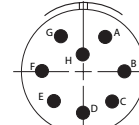
11-99/10-99  
B99,  
7 # 20, I



12-3  
3 # 16, II



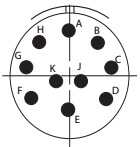
13-4/12-4  
C4,  
4 # 16, I



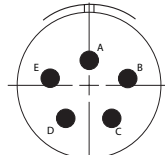
13-8/12-8  
C8,  
8 # 20, I



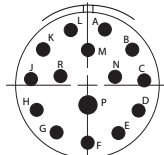
13-35/12-35  
C35,  
22 # 22D, M



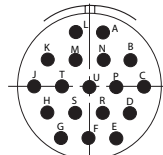
13-98/12-98  
C98,  
10 # 20, I



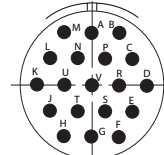
15-5/14-5  
D5,  
5 # 16, II



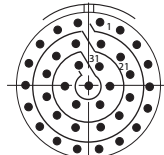
15-15/14-15  
D15,  
1 # 16, 14 # 20, I



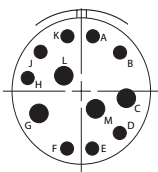
15-18/14-18  
D18,  
18 # 20, I



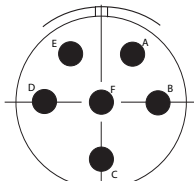
15-19  
D19,  
19 # 20, I



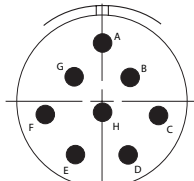
15-35/14-35  
D35,  
37 # 22D, M



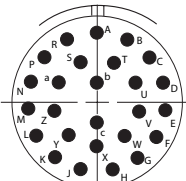
15-97/14-97  
D97,  
4 # 16, 8 # 20, I



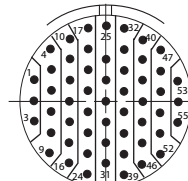
17-6/16-6  
E6,  
6 # 12, I



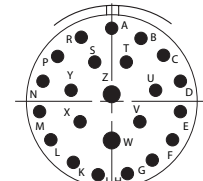
17-8/16-8  
E8,  
8 # 16, II



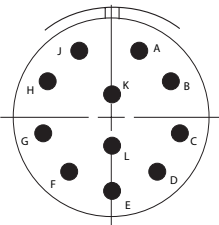
17-26/16-26  
E26,  
26 # 20, I



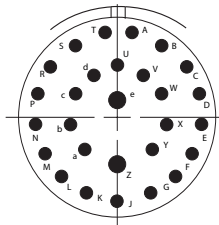
17-35/16-35  
E35,  
55 # 22D, M



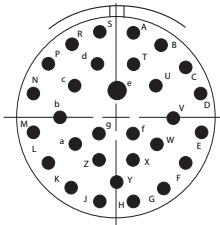
17-99/16-99  
E99,  
2 # 16, 21 # 20, I



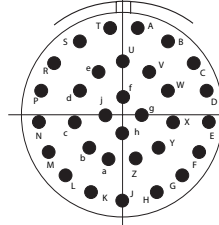
19-11/18-11  
F11,  
11 # 16, II



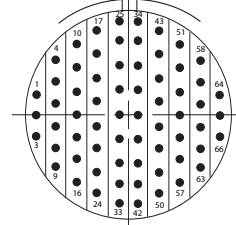
19-28/18-28  
F28,  
2 # 16, 26 # 20, I



19-30/18-30  
F30,  
1 # 16, 29 # 20, I



19-32/18-32  
F32,  
32 # 20, I

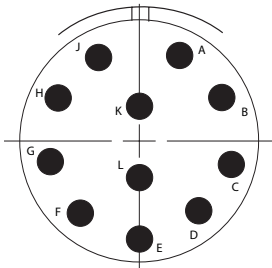


19-35/18-35  
F35,  
66 # 22D, M

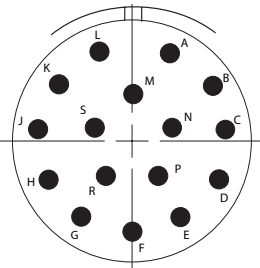
**AE1, AE2, AE3, and AE4 Series**  
**Insert Arrangement (Pin Front View)**  
 per MIL-STD-1560



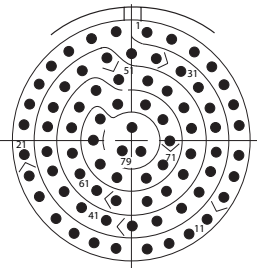
Insert Arrangement Views



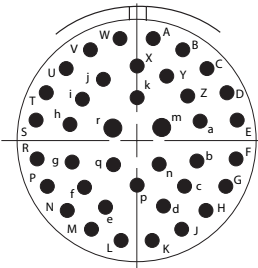
21-11  
G11,  
11 # 12, I



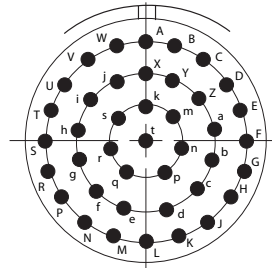
21-16/20-16  
G16,  
16 # 16, II



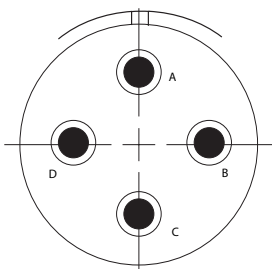
21-35/20-35  
G35,  
79 # 22D, M



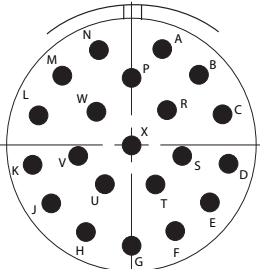
21-39/20-39  
G39,  
2 # 16, 37 # 20, I



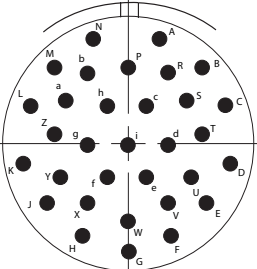
21-41/20-41  
G41,  
41 # 20, I



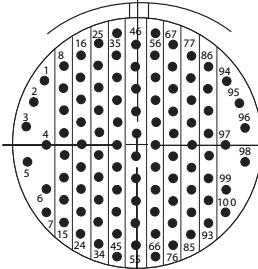
21-48\*  
G48\*,  
4 # 8 Power, I



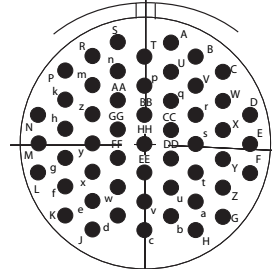
23-21/22-21  
H21,  
21 # 16, II



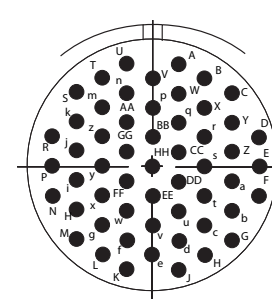
23-32/22-32  
H32,  
32 # 20, I



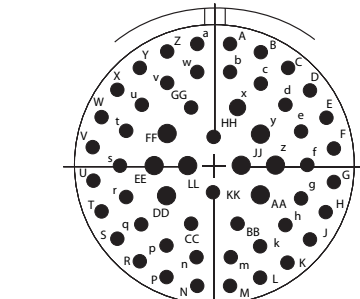
23-35/22-35  
H35,  
100 # 22D, M



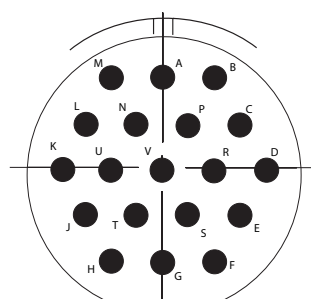
23-53/22-53  
H53,  
53 # 20, I



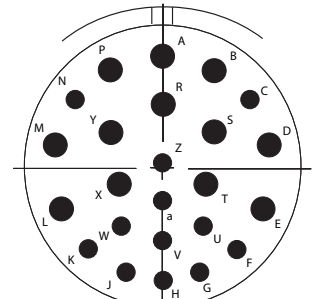
23-55/22-55  
H55,  
55 # 20, I



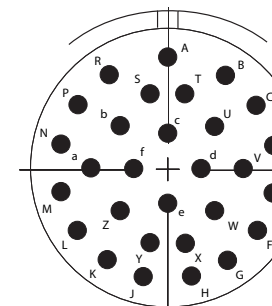
25-4/24-4  
J4,  
8 # 16, 48 # 20, I



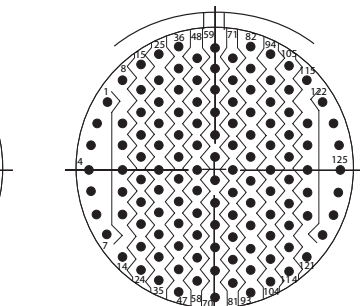
25-19/24-19  
J19,  
19 # 12, I



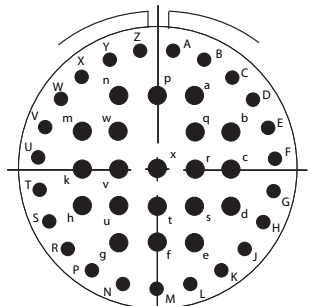
25-24/24-24  
J24,  
12 # 12, 12 # 16, I



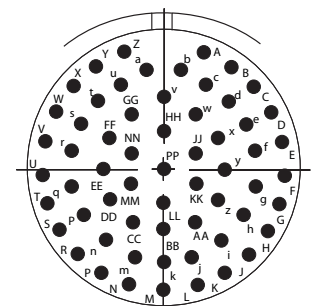
25-29/24-29  
J29,  
29 # 16, I



25-35/24-35  
J35,  
128 # 22D, M



25-43  
J43,  
20 # 16, 23 # 20, I



25-61/24-61  
J61,  
61 # 20, I

\* Not MIL-STD-1560 layout