

MILITARY STANDARD

INSERT ARRANGEMENTS FOR MIL-C-38999
AND MIL-C-27599 ELECTRICAL
CIRCULAR CONNECTORS

TO ALL HOLDERS OF MIL-STD-1560A

1. THE FOLLOWING PAGES OF MIL-STD-1560A ARE NEW OR HAVE BEEN REVISED AND SUPERSEDE THE PAGES LISTED:

<u>NEW PAGE</u>	<u>DATE</u>	<u>SUPERSEDED PAGE</u>	<u>DATE</u>
1	20 November 1981	(REPRINTED WITHOUT CHANGE)	
2	6 February 1985	2	20 November 1981
105.1	1 December 1975	(REPRINT WITHOUT CHANGE)	
105.2	6 February 1985	105.2	1 December 1975
106.5	1 December 1975	(REPRINT WITHOUT CHANGE)	
106.6	6 February 1985	NEW PAGE	6 February 1985
109.11	24 August 1982	(REPRINT WITHOUT CHANGE)	
109.12	6 February 1985	109.12	24 August 1982
205.1	1 December 1975	(REPRINTED WITHOUT CHANGE)	
205.2	6 February 1985	205.2	1 December 1975

2. RETAIN THIS NOTICE AND INSERT BEFORE TABLE OF CONTENTS.

3. Holders of MIL-STD-1560A will verify that page than changes and additions indicated above have been entered. This notice page will be retained as a check sheet. This issuance, together with appended pages, is a separate publication. Each notice is to be retained by stocking points until the military standard is completely revised or canceled.

Custodians:
Army - CR
Navy - AS
Air Force - 85

Preparing activity:
Air Force - 85

(Project 5935-3464)

Review Activities:
Army - AR, MI
Navy - EC, MC, OS
Air Force - 11, 15, 17, 99
DLA - ES

Agent:
DLA - ES

1. SCOPE

1.1 This standard covers insert arrangements for use with MIL-C-38999 and MIL-C-27599 circular connectors.

2. REFERENCED DOCUMENTS

2.1 The issues of the following documents in effect on the date of invitation for bids form a part of this standard to the extent specified herein.

SPECIFICATIONS

MILITARY

MIL-C-38999 - Connectors, Electrical, Circular, Miniature, High Density, Quick Disconnect (Bayonet, Threaded, and Breech Coupling), Environment Resistant, Removable Crimp and Hermetic Solder Contacts, General

MIL-C-27599 - Connector, Electrical, Miniature, Quick Disconnect (For Weapons Systems) Established Reliability.

(Copies of specifications, standards, drawings and publications required by suppliers in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

3. DEFINITIONS

3.1 The terms used in this standard are generally accepted by the electrical and electronics industries and commonly used in electrical connector engineering practice.

4. GENERAL REQUIREMENTS

Not applicable.

5. DETAIL REQUIREMENTS

5.1 Dimensions. Dimensions shall be in accordance with the applicable section of this standard and the following dimensional data:

- (a) ↻ Indicates ☞ of insert arrangement.
- (b) All dimensions (TP) and in inches.
Dimensions and markings: Front face of pin insert shown (socket insert opposite).
- (c) No. 12 contacts - MIL-C-27599 pin contacts $.094 \pm .001$ diameter, socket contacts entry hole (contact sleeve) $.099$ minimum diameter, number of places as applicable.
MIL-C-38999 - pin contacts $.094 \pm .001$ diameter, socket insert entry hole $.103$ minimum diameter, number of places as applicable.
- (d) No. 16 contacts - MIL-C-27599 -pin contacts $.0625 \pm .0010$ diameter, socket contacts entry hole (contact sleeve) $.067$ minimum diameter, number of places as applicable.
MIL-C-38999 - pin contacts $.0625 \pm .0010$ diameter, socket insert entry hole $.071$ minimum diameter, number of places as applicable.
- (e) No. 20 contacts - MIL-C-27599 - pin contacts $.040 \pm .001$ diameter, socket contacts entry hole (contact sleeve) $.045$ minimum diameter, number of places as applicable.

MIL-C-38999 - pin contacts .040 ±.001 diameter, socket insert entry hole .049 minimum diameter, number of places as applicable.

(f) No. 22 and 22M contacts

MIL-C-27599 - pin contacts .0300 ±.0005 diameter, socket contacts entry hole (contact sleeve) .036 minimum diameter, number of places as applicable.

MIL-C-38999 - pin contacts .0300 ±.0005 diameter, socket insert entry hole .035 minimum diameter, number of places as applicable.

(g) No. 22D contacts -

MIL-C-38999 - pin contacts .0300 ±.0005 diameter, socket insert entry hole .035 minimum diameter, number of places as applicable.

(h) No. 8 coaxial contacts

MIL-C-38999 - pin contacts .218 ±.001 diameter, socket insert entry hole .227 minimum diameter, number of places as applicable.

(i) Gauge features for MIL-C-38999 series I, II, and III and MIL-C-27599 series I and II receptacle connectors shall be .002 smaller than H at MMC, and .006 smaller than GG at MMC. ~~⊕ H -.002 (M) GG -.006 (M) SEE NOTE~~

(j) Gauge features for MIL-C-38999 series I, II, and III and MIL-C-27599 series I and II plug connectors shall be .002 larger than W at MMC and .006 larger than GG at MMC. ~~⊕ W+.002 (M) GG+.006 (M) SEE NOTE~~

NOTE:

- (a) ~~.004 DIA (M)~~ For MIL-C-27599 connectors; this requirement pertains to the pin contacts and the socket entry holes (contact sleeve).
- (b) ~~.015 DIA (M)~~ For MIL-C-38999 connectors; this requirement pertains to the closed entry hole of the socket contacts.
- (c) ~~.024 DIA (M)~~ For MIL-C-38999 connectors; this requirement pertains to the tip of the pin contact.
- (d) DATUMS H, GG and W are located on connector intermateability dimension figures for key/keyway polarization in MIL-C-38999.

5.2 Marking. Marking shall be in accordance with MIL-C-38999, MIL-C-27599, and as shown in the applicable section of this military standard.

5.3 Drawing notes. The following information is applicable to all figures of this military standard.

- (a) Dimensions are in inches.
- (b) Metric equivalents are given for general information only.

Custodians:
Army - CR
Navy - AS
Air Force - 85

Preparing activity:
Air Force - 85
(Project 5935-3464)

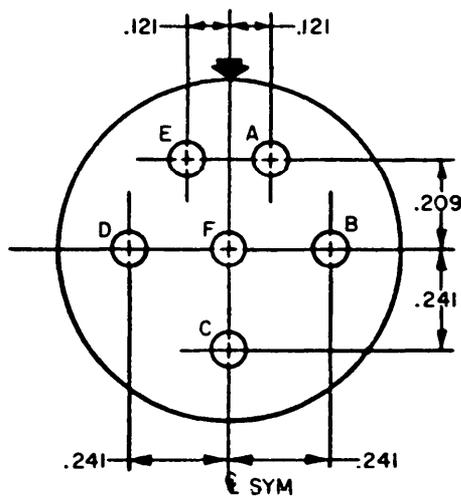
Review activities:
Army - AR, MI
Navy - EC, MC, OS
Air Force - 11, 15, 17, 99
DLA - ES

Supersedes page 2 of 20 November 1981

SECTION 105

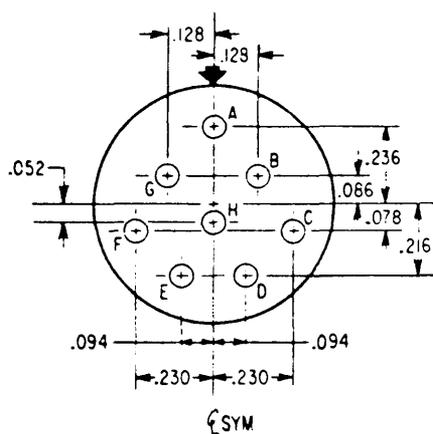
INSERT ARRANGEMENT, ELECTRICAL CONNECTOR

SHELL SIZE 17



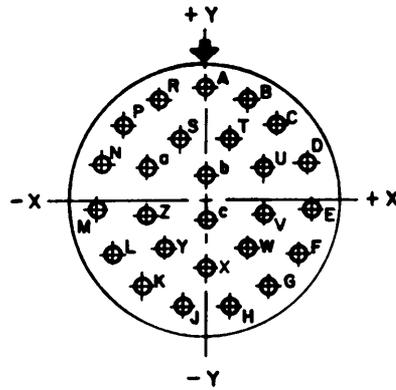
INCHES	MM
.121	3.07
.209	5.31
.241	6.12

Shell size	Arrangement No.	Number of contacts	Size contacts	Service rating	Contact location	Supersedes document
17	-6	6	12	I	A11	MS20053-6



INCHES	MM	INCHES	MM
.052	1.32	.128	3.25
.078	1.98	.216	5.49
.086	2.18	.230	5.84
.094	2.39	.236	5.99

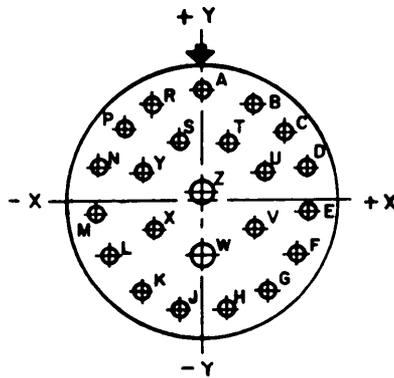
Shell size	Arrangement No.	Number of contacts	Size contacts	Service rating	Contact location	Supersedes document
17	-8	8	16	II	A11	MS20053-8



INCHES	MM	INCHES	MM	INCHES	MM	INCHES	MM
.034	.86	.099	2.51	.177	4.50	.260	6.60
.036	.91	.119	3.02	.178	4.53	.278	7.06
.065	1.65	.131	3.33	.189	4.80	.293	7.44
.067	1.70	.151	3.84	.203	5.16	.305	7.75
.070	1.78	.161	4.09	.214	5.44	.315	7.98
.094	2.39	.175	4.45	.239	6.07	.319	8.10
						.321	8.15

CONT LOC	X AXIS	Y AXIS
A	.000	+.321
B	+.131	+.293
C	+.239	+.214
D	+.305	+.099
E	+.319	-.034
F	+.278	-.161
G	+.189	-.260
H	+.067	-.314
J	-.067	-.314
K	-.189	-.260
L	-.278	-.161
M	-.319	-.034
N	-.305	+.099
P	-.239	+.214
R	-.131	+.293
S	-.070	+.177
T	+.070	+.177
U	+.175	+.094
V	+.178	-.036
W	+.119	-.151
X	.000	-.203
Y	-.119	-.151
Z	-.178	-.036
a	-.175	+.094
b	.000	+.065
c	.000	-.065

Shell size	Arrangement No.	Number of contacts	Size contacts	Service rating	Contact location	Supersedes document
17	-26	26	20	I	All	MS20053-26

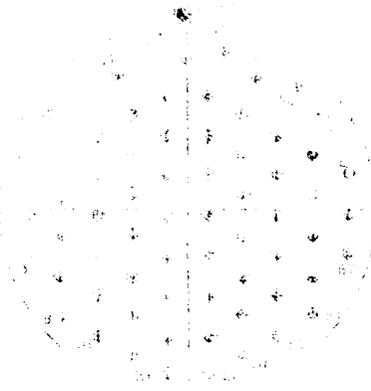


INCHES	MM	INCHES	MM	INCHES	MM	INCHES	MM
.025	.64	.094	2.39	.175	4.45	.278	7.06
.034	.86	.099	2.51	.177	4.50	.293	7.44
.067	1.70	.131	3.33	.189	4.80	.305	7.75
.070	1.78	.150	3.81	.214	5.44	.314	7.98
.075	1.91	.161	4.09	.239	6.07	.319	8.10
				.260	6.60	.321	8.15

CONT LOC	X AXIS	Y AXIS
A	.000	+.321
B	+.131	+.293
C	+.239	+.214
D	+.305	+.099
E	+.319	-.034
F	+.278	-.161
G	+.189	-.260
H	+.067	-.314
J	-.067	-.314
K	-.189	-.260
L	-.278	-.161
M	-.319	-.034
N	-.305	+.099
P	-.239	+.214
R	-.131	+.293
S	-.070	+.177
T	+.070	+.177
U	+.175	+.094
V	+.150	-.075
W	.000	-.161
X	-.150	-.075
Y	-.175	+.094
Z	.000	+.025

Shell size	Arrangement No.	Number of contacts	Size contacts	Service rating	Contact location	Supersedes document
17	-99	2	16	I	W,Z	MS20053-99
		21	20		All others	

SECTION 105A
Supersedes page 105.2
of 1 December 1975

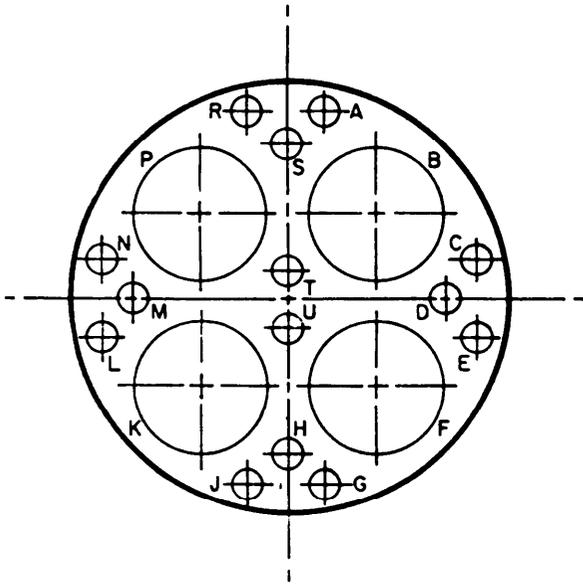


CONTACT LOCATION									
NO.	LEFT LOCATION			RIGHT LOCATION			NO.	Y AXIS	Z AXIS
	X	Y	Z	X	Y	Z			
1	0.00	0.00	0.00	0.00	0.00	0.00	17	+ .123	+ .036
2	0.00	0.00	0.00	0.00	0.00	0.00	18	+ .123	- .054
3	0.00	0.00	0.00	0.00	0.00	0.00	19	+ .123	- .144
4	0.00	0.00	0.00	0.00	0.00	0.00	20	+ .123	- .234
5	0.00	0.00	0.00	0.00	0.00	0.00	21	+ .123	- .324
6	0.00	0.00	0.00	0.00	0.00	0.00	22	+ .244	+ .280
7	0.00	0.00	0.00	0.00	0.00	0.00	23	+ .201	+ .171
8	0.00	0.00	0.00	0.00	0.00	0.00	24	+ .201	- .081
9	0.00	0.00	0.00	0.00	0.00	0.00	25	+ .201	- .009
10	0.00	0.00	0.00	0.00	0.00	0.00	26	+ .201	- .099
11	0.00	0.00	0.00	0.00	0.00	0.00	27	+ .201	- .189
12	0.00	0.00	0.00	0.00	0.00	0.00	28	+ .201	- .279
13	0.00	0.00	0.00	0.00	0.00	0.00	29	+ .354	+ .213
14	0.00	0.00	0.00	0.00	0.00	0.00	30	+ .279	+ .126
15	0.00	0.00	0.00	0.00	0.00	0.00	31	+ .279	+ .036
16	0.00	0.00	0.00	0.00	0.00	0.00	32	+ .279	- .054
17	0.00	0.00	0.00	0.00	0.00	0.00	33	+ .279	- .144
18	0.00	0.00	0.00	0.00	0.00	0.00	34	+ .279	- .234
19	0.00	0.00	0.00	0.00	0.00	0.00	35	+ .357	+ .081
20	0.00	0.00	0.00	0.00	0.00	0.00	36	+ .357	- .009
21	0.00	0.00	0.00	0.00	0.00	0.00	37	+ .357	- .099
22	0.00	0.00	0.00	0.00	0.00	0.00	38		
23	0.00	0.00	0.00	0.00	0.00	0.00	39		

CONTACT NO.	X	Y	Z	CONTACT NO.	MM	INCHES	MM
17	0.00	0.00	0.00	17	5.11	.301	7.65
18	0.00	0.00	0.00	18	5.19	.304	7.72
19	0.00	0.00	0.00	19	5.94	.324	8.23
20	0.00	0.00	0.00	20	5.20	.335	8.61
21	0.00	0.00	0.00	21	5.83	.357	9.07
22	0.00	0.00	0.00	22	6.09	.360	9.14
23	0.00	0.00	0.00	23	6.11	.369	9.37

(Applicable to MIL-C-38999 only.)

Shell size	Package Ident. No.	Number of contacts	Lead length	Service rating	Contact location	Supersedes document
19	84	37	1.00	B	All	MS27530-45



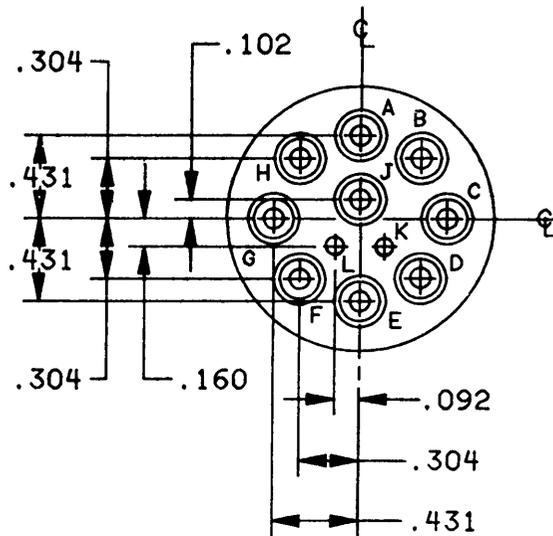
ARRANGEMENT LOCATION		
A	+ .068	+ .380
B	+ .180	+ .180
C	+ .377	+ .065
D	+ .317	.000
E	+ .377	- .065
F	+ .180	- .180
G	+ .068	- .380
H	.000	- .319
J	- .068	- .380
K	- .180	- .180
L	- .377	- .065
M	- .317	.000
N	- .377	+ .065
P	- .180	+ .180
R	- .068	+ .380
S	.000	+ .319
T	.000	+ .044
U	.000	- .044
CONT IDENT	X - AXES	Y - AXES
	LOCATION	

INCHES	MM
.044	1.11
.065	1.65
.068	1.72
.180	4.47
.317	8.05
.319	8.10
.377	9.58
.380	9.65

SHELL SIZE	ARRANGEMENT NO.	NUMBER OF CONTACTS	SIZE CONTACTS	SERVICE RATING	CONTACT LOCATION
19	18	4	8	TWINAX	B, F, K, P
		14	22D	M	ALL OTHERS

INSERT ARRANGEMENT, ELECTRICAL CONNECTOR

SHELL SIZE 25



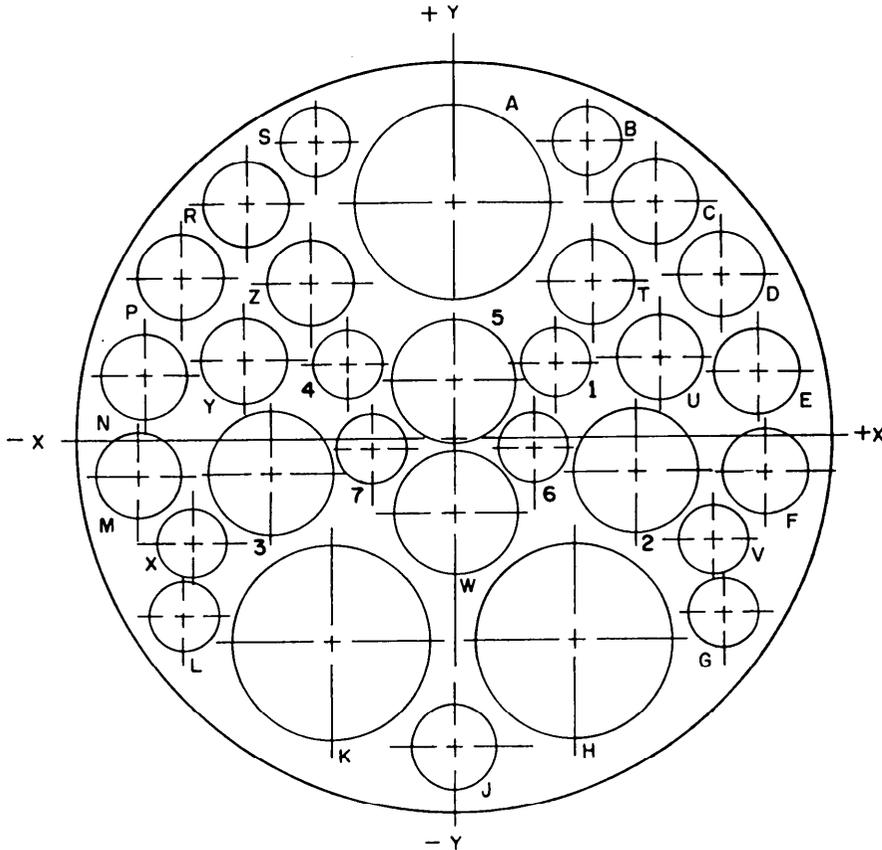
CONTACT LEGEND		
Contact IDENT	Size	Qty
	10	9
	20	2

- NOTES:
1. All dimensions are true positions.
2. Front face of pin insert shown.

Shell size	Arrangement No.	Number of contacts	Size contacts	Service rating	Contact location
25	-11	9	10	II	A, B, C, D, E, F, G, H, J
		2	20		L, K

INCHES	MM
.092	2.34
.102	2.59
.160	4.06
.303	7.72
.431	10.95

INSERT ARRANGMENT, ELECTRICAL CONNECTOR
SHELL SIZE 25



INCHES	MM	INCHES	MM
.018	.46	.275	6.99
.060	1.52	.312	7.92
.061	1.55	.317	8.05
.099	2.51	.352	8.94
.111	2.82	.353	8.97
.115	2.92	.357	9.07
.131	3.33	.407	10.34
.136	3.45	.411	10.44
.141	3.58	.450	11.43
.183	4.65	.466	11.84
.195	4.95	.467	11.86
.208	5.28	.511	12.98
.234	5.94	.530	13.46
.243	6.17	.537	13.64
.270	6.86	.541	13.74

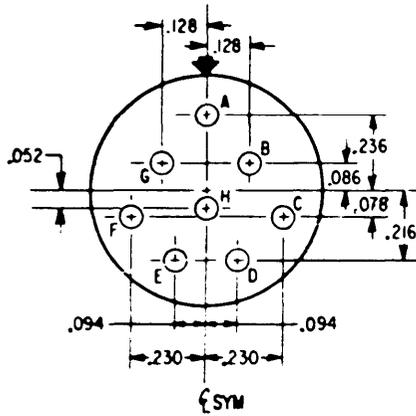
CONT LOC	X	Y
A	.000	+.407
B	+.234	+.511
C	+.352	+.411
D	+.466	+.275
E	+.530	+.111
F	+.537	-.060
G	+.467	-.312
H	+.208	-.353
J	.000	-.541
K	-.208	-.353
L	-.467	-.312
M	-.537	-.060
N	-.530	+.111
P	-.466	+.275
R	-.352	+.411
S	-.234	+.511
T	+.243	+.270
U	+.357	+.136
V	+.450	-.183
W	.000	-.131
X	-.450	-.183
Y	-.357	+.136
Z	-.243	+.270
1	+.195	+.115
2	+.317	-.061
3	-.317	-.061
4	-.195	+.115
5	.000	+.099
6	+.141	-.018
7	-.141	-.018

SHELL SIZE	ARRANGEMENT NO.	NUMBER OF CONTACTS	SIZE CONTACTS	SERVICE RATING	CONTACT LOCATION
25	-20	3	8	TWINAX	A,H,K
		4	12	COAX	W,2,3,5
		13	16	N	C,D,E,F,J,M, N,P,R,T,U,Y,Z
		10	20		B,G,L,S,V, X,1,4,6,7

SECTION 205

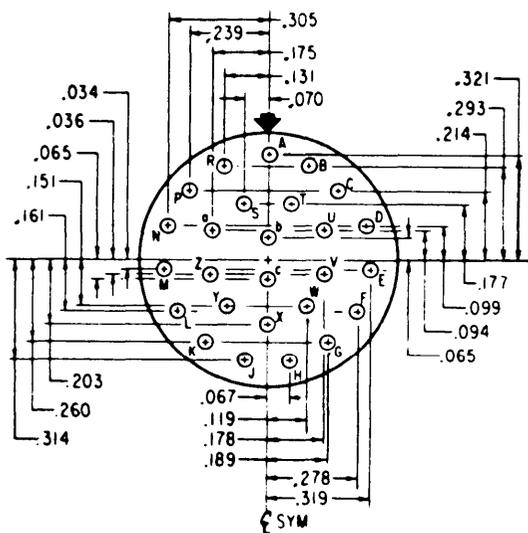
INSERT ARRANGEMENT, ELECTRICAL CONNECTOR

SHELL SIZE 16



INCHES	MM	INCHES	MM
.052	1.32	.128	3.25
.078	1.98	.216	5.49
.086	2.18	.230	5.84
.094	2.39	.236	5.99

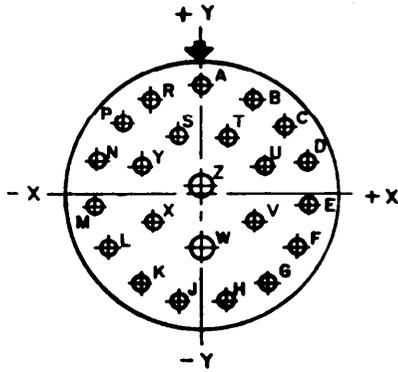
Shell size	Arrangement No.	Number of contacts	Size contacts	Service rating	Contact location	Supersedes document
16	-8	8	16	II	A11	MS27347-8



INCHES	MM	INCHES	MM
.034	.86	.099	2.51
.036	.91	.119	3.02
.065	1.65	.131	3.33
.067	1.70	.151	3.84
.070	1.78	.161	4.09
.094	2.39	.175	4.45

INCHES	MM	INCHES	MM
.177	4.50	.260	6.60
.178	4.52	.278	7.06
.189	4.80	.293	7.44
.203	5.16	.305	7.75
.214	5.44	.314	7.98
.239	6.07	.319	8.10
		.321	8.15

Shell size	Arrangement No.	Number of contacts	Size contacts	Service rating	Contact location	Supersedes document
16	-26	26	20	I	A11	MS27347-26



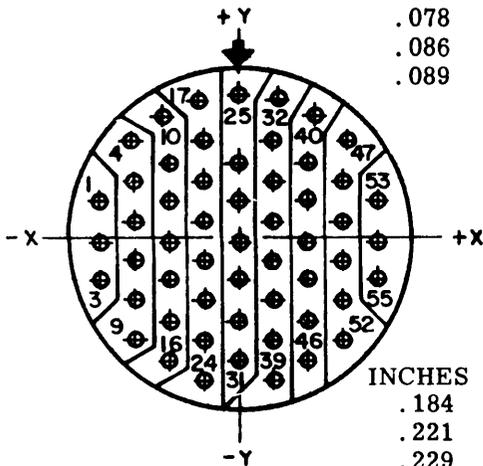
CONT LOC	X AXIS	Y AXIS
A	.900	+.321
B	+.131	+.293
C	+.239	+.214
D	+.305	+.099
E	+.319	-.034
F	+.278	-.161
G	+.189	-.260
H	+.067	-.314
J	-.067	-.314
K	-.189	-.260
L	-.278	-.161
M	-.319	-.034
N	-.305	+.099
P	-.239	+.214
R	-.131	+.293
S	-.070	+.177
T	+.070	+.177
U	+.175	+.094
V	+.150	-.075
W	.000	-.161
X	-.150	-.075
Y	-.175	+.094
Z	.000	+.025

INCHES	MM	INCHES	MM	INCHES	MM	INCHES	MM
.025	.64	.099	2.51	.189	4.80	.305	7.75
.034	.86	.131	3.33	.214	5.44	.314	7.98
.067	1.70	.150	3.81	.239	6.07	.319	8.10
.070	1.78	.161	4.09	.260	6.60	.321	8.15
.075	1.91	.175	4.45	.278	7.06		
.094	2.39	.177	4.50	.293	7.44		

Shell size	Arrangement No.	Number of contacts	Size contacts	Service rating	Contact location	Supersedes document
16	-99	2	16	I	w,z	MS27347-99
		21	20		All others	

INCHES	MM	INCHES	MM
.004	.10	.094	2.39
.041	1.04	.131	3.33
.049	1.24	.139	3.53
.078	1.98	.156	3.96
.086	2.18	.172	4.37
.089	2.26	.176	4.47

CONT LOC	X AXIS	Y AXIS	CONT LOC	X AXIS	Y AXIS
1	-.312	+.086	29	.000	-.094
2	-.312	-.004	30	.000	-.184
3	-.312	-.094	31	.000	-.274
4	-.242	+.221	32	+.089	+.316
5	-.234	+.131	33	+.078	+.221
6	-.234	+.041	34	+.078	+.131
7	-.234	-.049	35	+.078	+.041
8	-.234	-.139	36	+.078	-.049
9	-.234	-.229	37	+.078	-.139
10	-.172	+.279	38	+.078	-.229
11	-.156	+.176	39	+.078	-.319
12	-.156	+.086	40	+.172	+.279
13	-.156	-.004	41	+.156	+.176
14	-.156	-.094	42	+.156	+.086
15	-.156	-.184	43	+.156	-.004
16	-.156	-.274	44	+.156	-.094
17	-.089	+.316	45	+.156	-.184
18	-.078	+.221	46	+.156	-.274
19	-.078	+.131	47	+.242	+.221
20	-.078	+.041	48	+.234	+.131
21	-.078	-.049	49	+.234	+.041
22	-.078	-.139	50	+.234	-.049
23	-.078	-.229	51	+.234	-.139
24	-.078	-.319	52	+.234	-.229
25	.000	+.329	53	+.312	+.086
26	.000	+.176	54	+.312	-.094
27	.000	+.086	55	+.312	-.094
28	.000	-.004			



INCHES	MM	INCHES	MM
.184	4.67	.279	7.09
.221	5.61	.312	7.92
.229	5.82	.316	8.03
.234	5.94	.319	8.10
.242	6.15	.329	8.36
.274	6.96		

(Inactive for new design for MIL-C-38999.)

Shell size	Arrangement No.	Number of contacts	Size contacts	Service rating	Contact location	Supersedes document
16	-55	55	22M	M	All	MS27347-55