

INCH-POUND

MIL-DTL-28748/5E

9 September 2004

SUPERSEDING

MIL-C-28748/5D

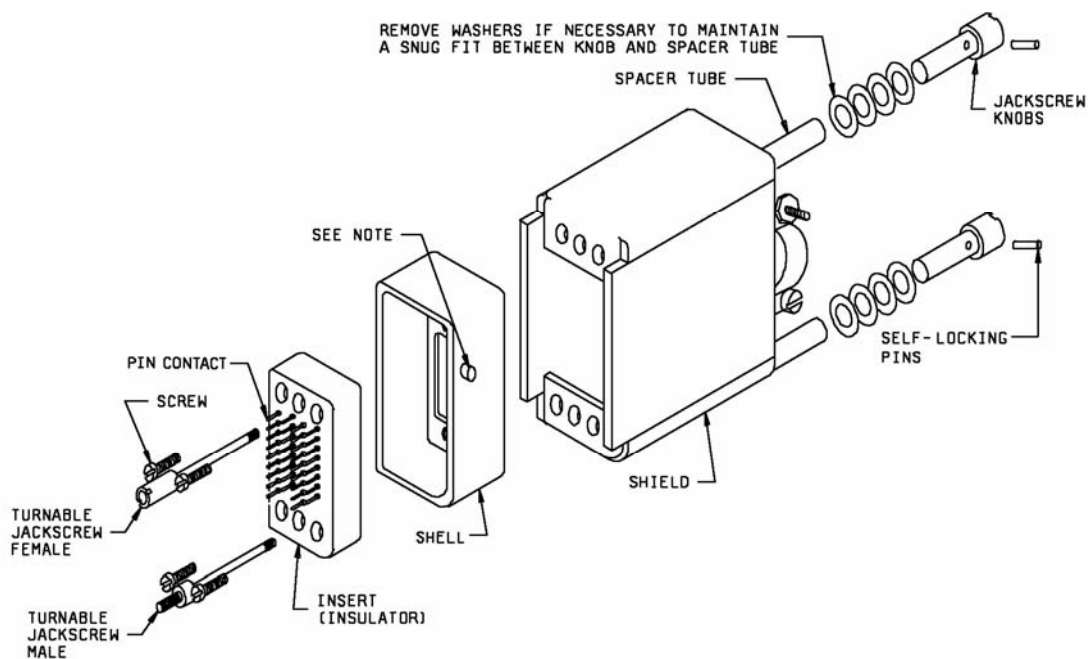
25 March 1993

## DETAIL SPECIFICATION SHEET

CONNECTORS, ELECTRICAL RECTANGULAR,  
RACK AND PANEL, SOLDER TYPE PIN CONTACTS, SIZE 20

This specification is approved for use by all Departments and Agencies of the Department of Defense.

The requirements for acquiring the product described herein shall consist of this specification sheet and MIL-DTL-28748.

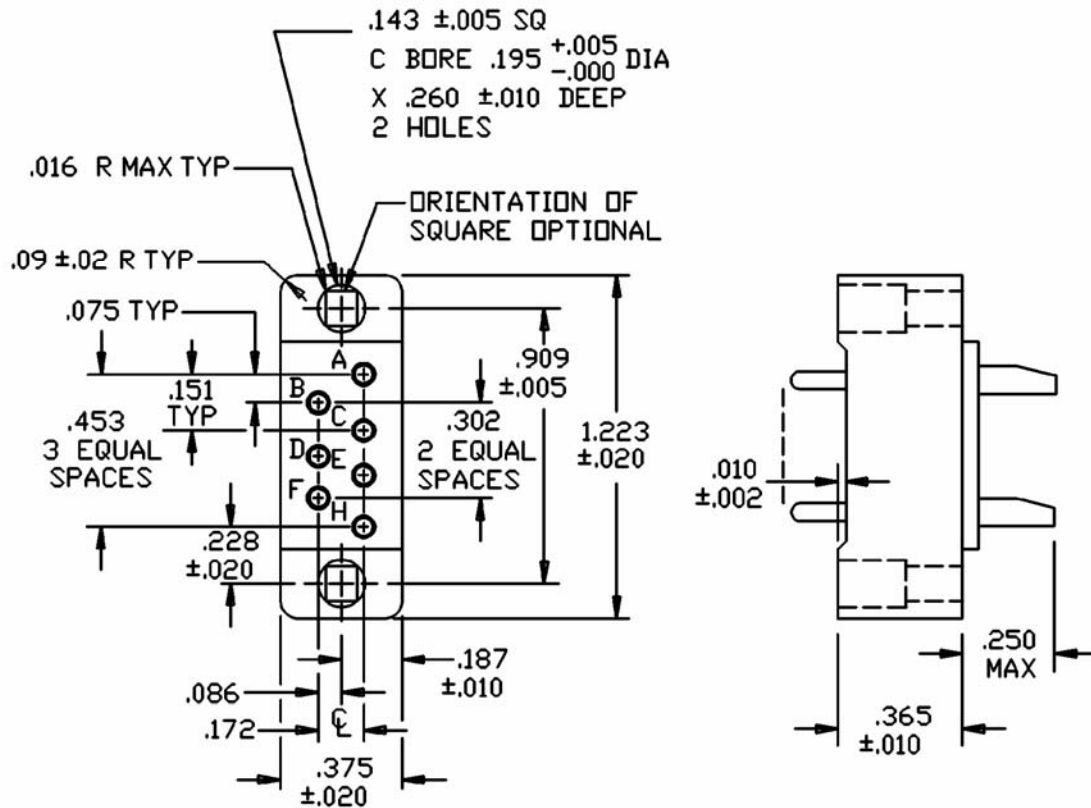
Connector

NOTE: The polarization feature (pin on the plug shell, groove on the receptacle shell) shall be adjacent to the side closest to the number 1 or A contact position.

## Configuration A

FIGURE 1. Connector with shield, plug shell, jackscrews, and guidepins.

MIL-DTL-28748/5E



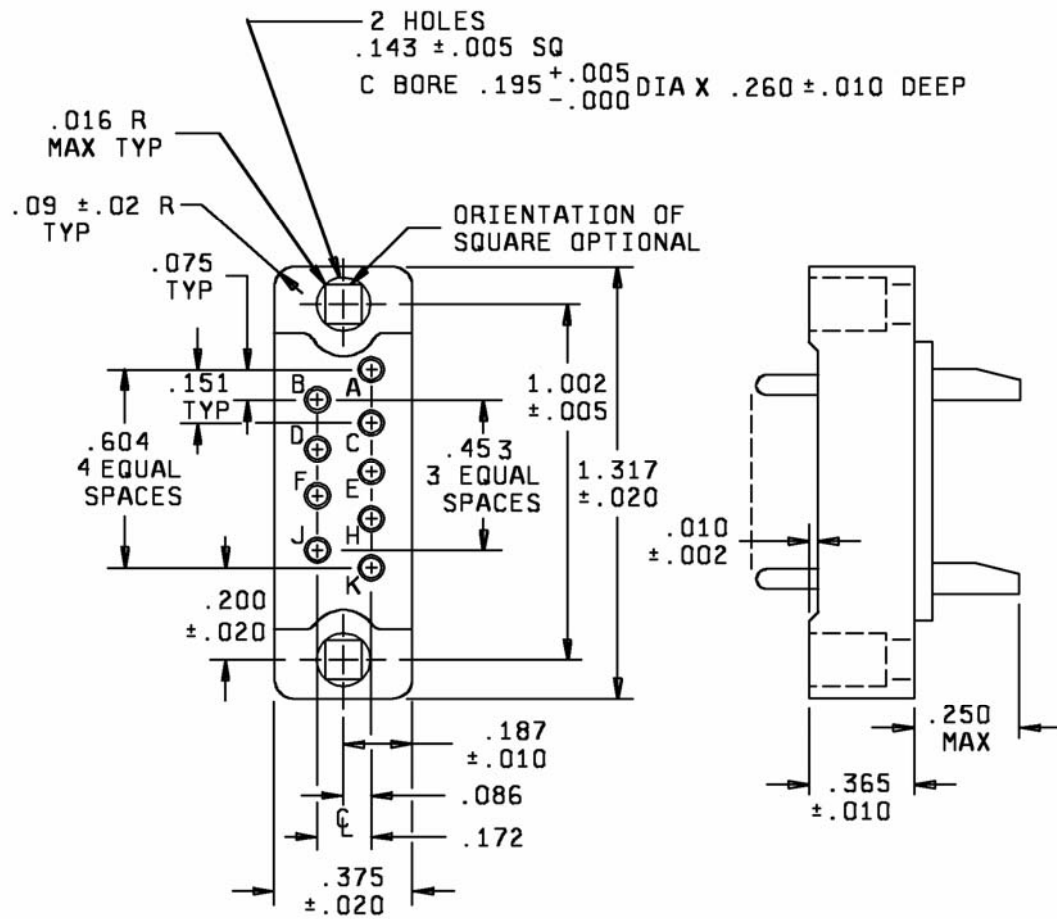
Inches	mm	Inches	mm	Inches	mm
.002	0.05	.09	2.3	.260	6.60
.005	0.13	.143	3.63	.302	7.67
.010	0.25	.151	3.84	.365	9.27
.016	0.41	.172	4.37	.375	9.53
.02	0.5	.187	4.75	.453	11.50
.020	0.51	.195	4.95	.603	15.32
.075	1.91	.228	5.79	.909	23.10
.086	2.18	.250	6.35	1.223	31.10

Insert with 7 contacts

Insert designator A

FIGURE 2. Insert arrangements - Continued.

MIL-DTL-28748/5E



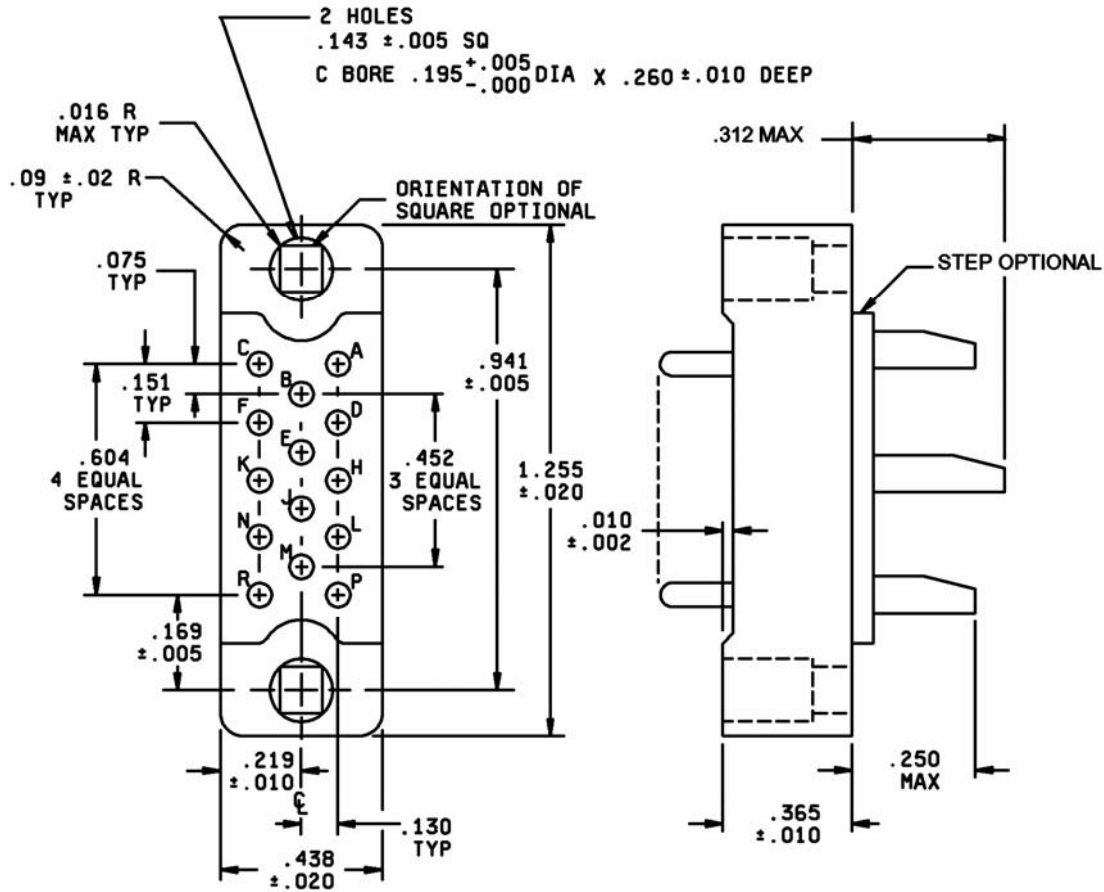
Inches	mm	Inches	mm	Inches	mm
.002	0.05	.09	2.3	.260	6.60
.005	0.13	.143	3.63	.365	9.27
.010	0.25	.151	3.84	.375	9.53
.016	0.41	.172	4.37	.453	11.51
.02	0.5	.187	4.75	.604	15.34
.020	0.51	.195	4.95	1.002	25.45
.075	1.91	.200	5.08	1.317	33.45
.086	2.18	.250	6.35		

Insert with 9 contacts

Insert designator B

FIGURE 2. Insert arrangements.

MIL-DTL-28748/5E



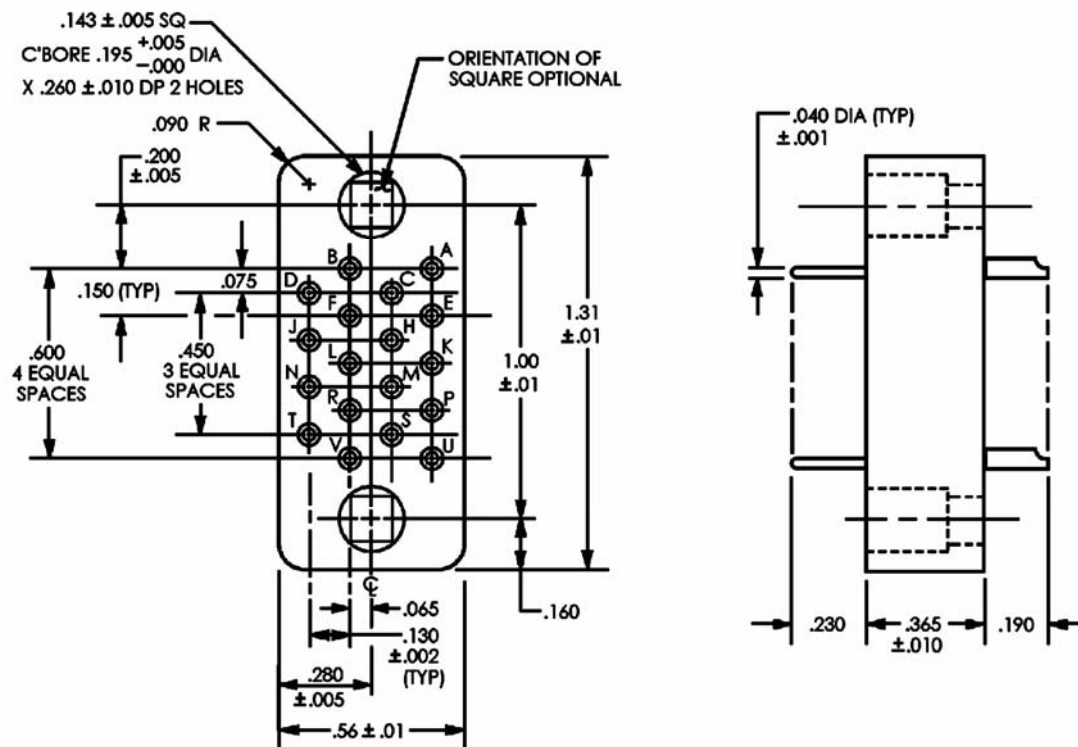
Inches	mm	Inches	mm	Inches	mm
.002	0.05	.130	3.30	.312	7.92
.005	0.13	.143	3.63	.365	9.27
.010	0.25	.151	3.84	.438	11.13
.016	0.41	.169	4.29	.452	11.48
.02	0.5	.195	4.95	.604	15.31
.020	0.51	.219	5.56	.941	23.90
.075	1.91	.250	6.35	1.255	31.88
.09	2.3	.260	6.60		

Insert with 14 contacts

Insert designator C

FIGURE 2. Insert arrangements - Continued.

MIL-DTL-28748/5E



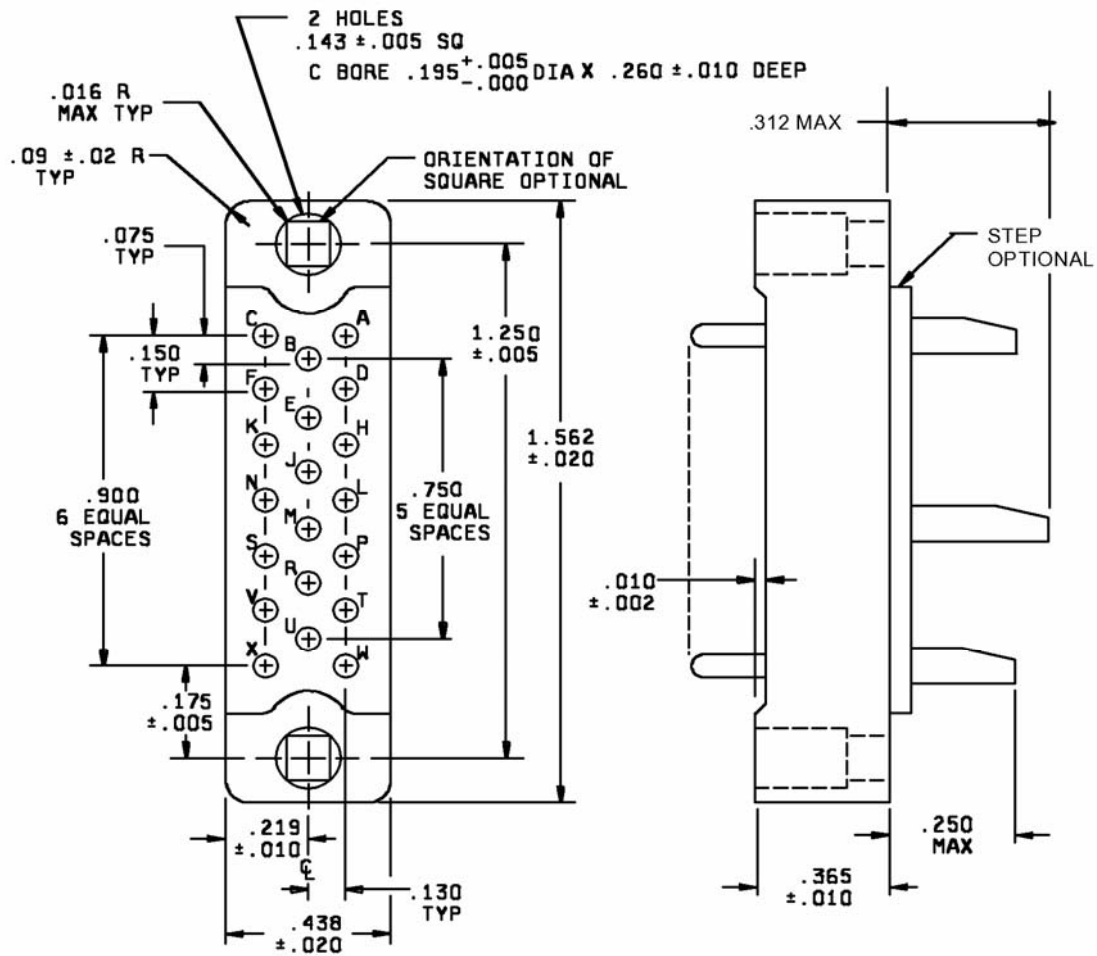
Inches	mm	Inches	mm	Inches	mm
.001	0.03	.090	2.29	.260	6.60
.002	0.05	.130	3.30	.280	7.11
.005	0.13	.143	3.63	.365	9.27
.01	0.3	.160	4.06	.450	11.43
.010	0.25	.190	4.83	.56	14.2
.040	1.02	.195	4.95	.600	15.24
.065	1.65	.200	5.08	1.00	25.40
.075	1.91	.230	5.84	1.31	33.27

Insert with 18 contacts

Insert designator S

FIGURE 2. Insert arrangements - Continued.

MIL-DTL-28748/5E



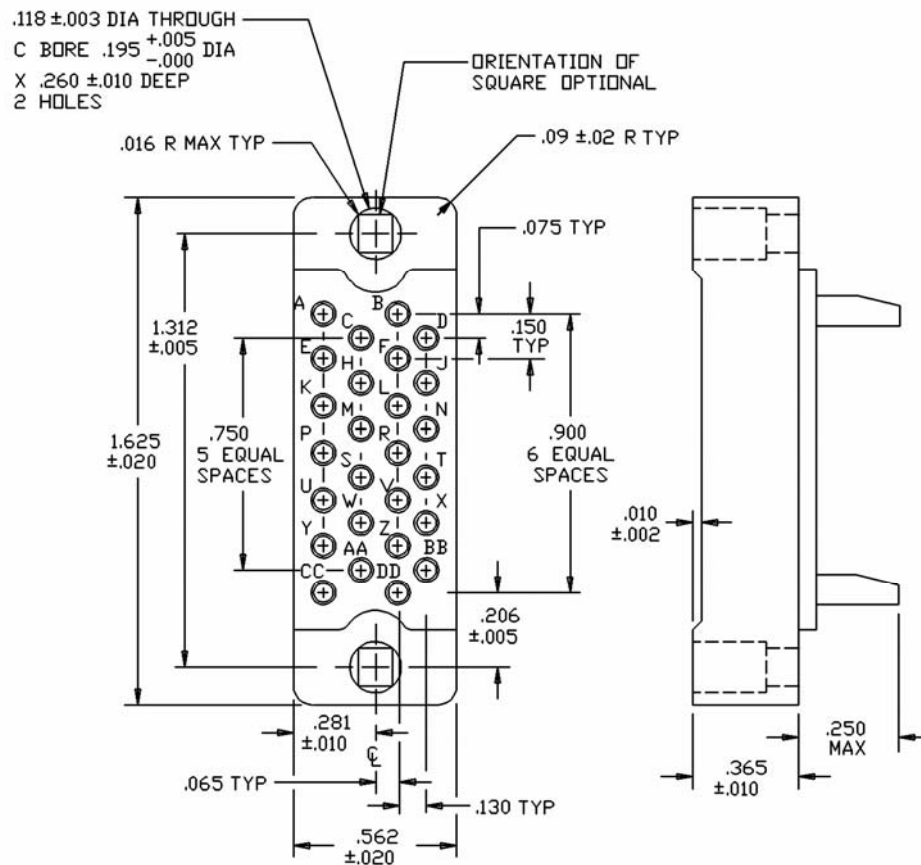
Inches	mm	Inches	mm	Inches	mm
.002	0.05	.09	2.3	.250	6.35
.005	0.13	.130	3.30	.260	6.60
.010	0.25	.143	3.63	.365	9.27
.016	0.41	.150	3.81	.438	11.13
.02	0.5	.175	4.44	.750	19.00
.020	0.51	.195	4.95	.900	22.86
.075	1.91	.219	5.56	1.250	31.80
				1.562	39.70

Insert with 20 contacts

Insert designator D

FIGURE 2. Insert arrangements - Continued.

## MIL-DTL-28748/5E



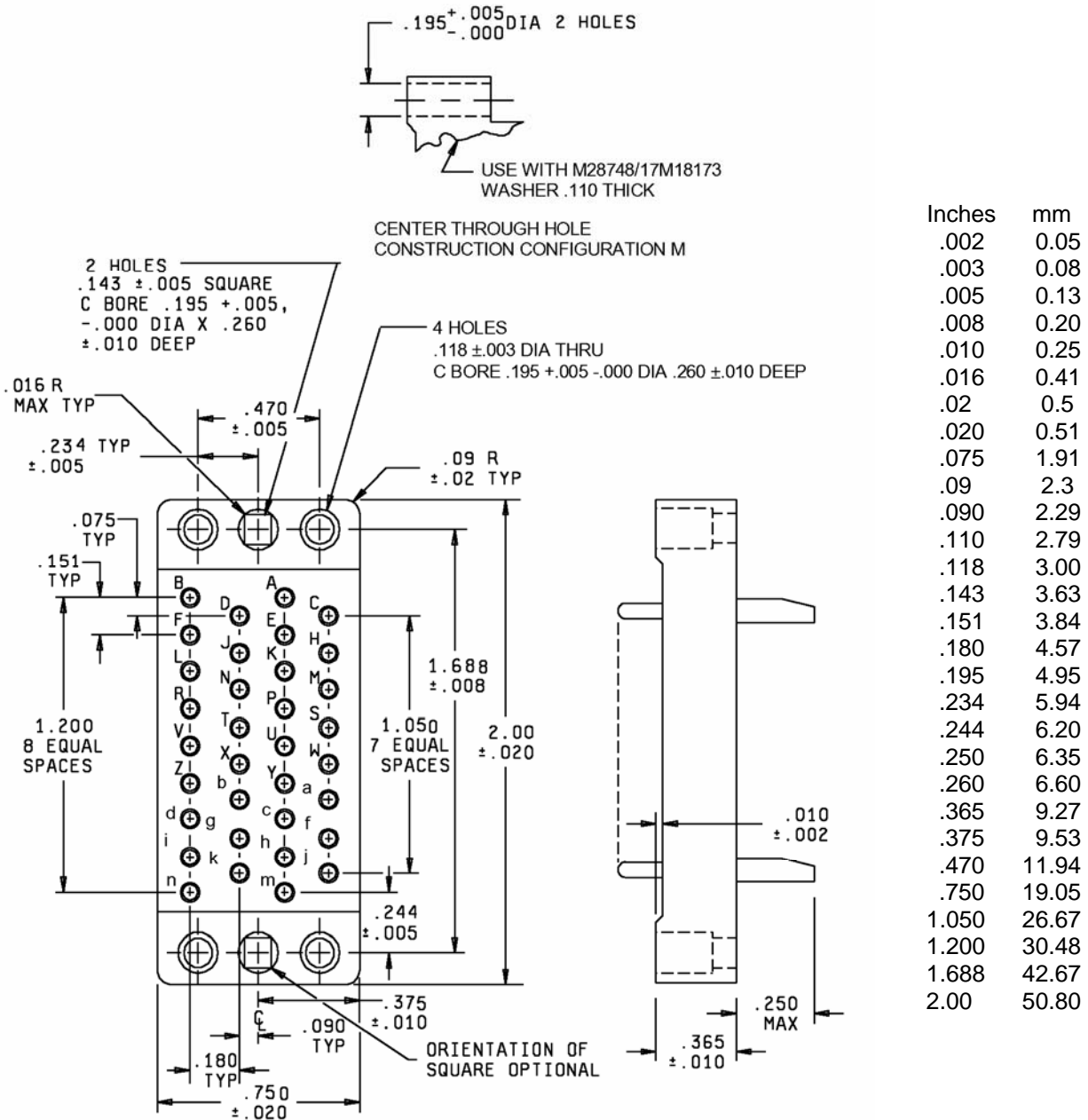
Inches	mm	Inches	mm	Inches	mm	Inches	mm
.002	0.05	.020	0.51	.150	3.81	.365	9.27
.003	0.08	.065	1.65	.195	4.95	.562	14.30
.005	0.13	.075	1.90	.206	5.23	.750	19.00
.010	0.25	.09	2.29	.250	6.35	.900	22.90
.016	0.41	.118	3.00	.260	6.60	1.312	33.32
.02	0.5	.130	3.30	.281	7.14	1.625	41.27

Insert with 26 contacts

Insert designator E

FIGURE 2. Insert arrangements - Continued.

## MIL-DTL-28748/5E



Configuration F - Suitable for all applications, except one-piece jackscrews.

Configuration M - For long jackscrews and shield only (through hole alternate construction).

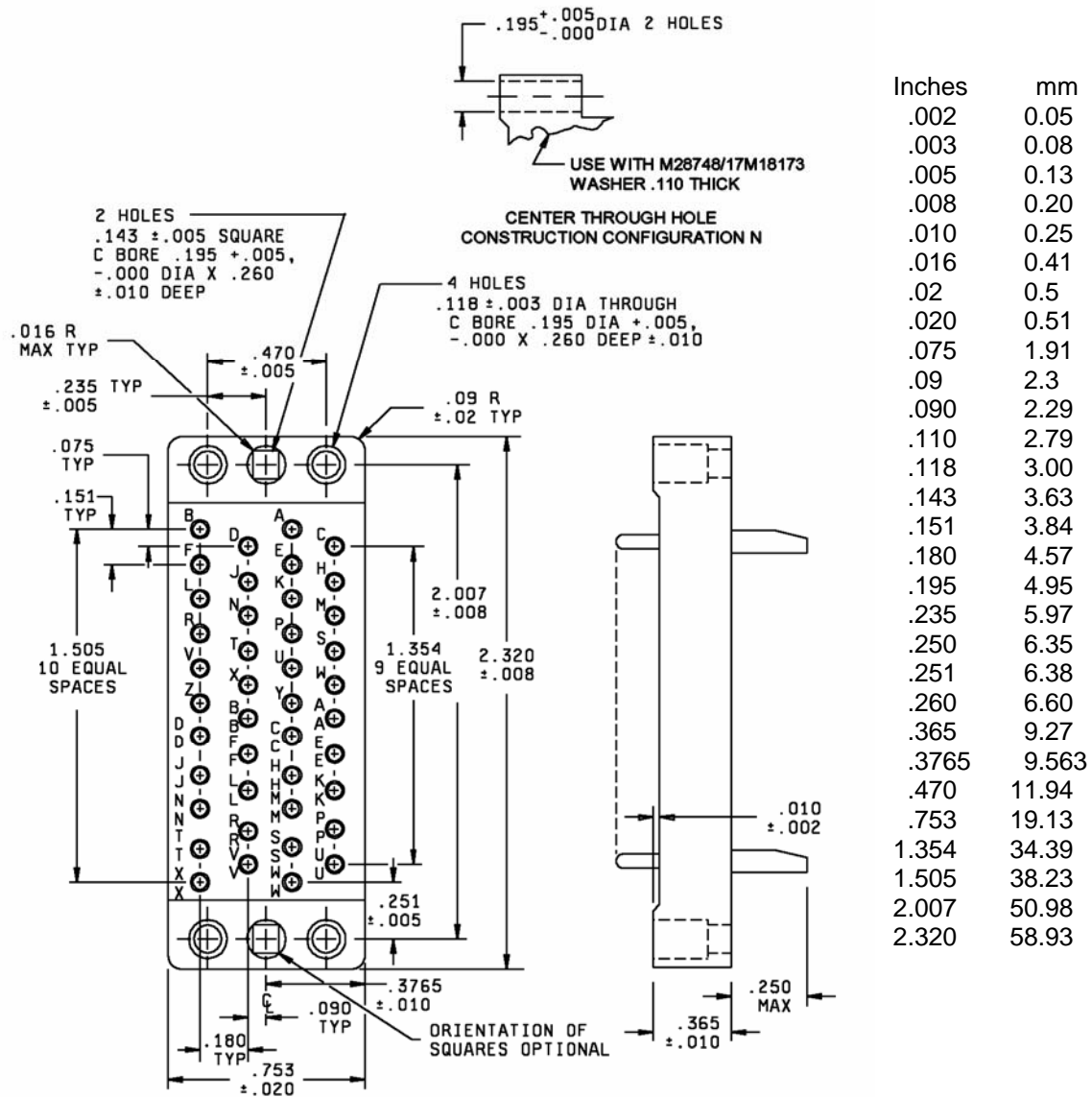
Insert with 34 contacts

Insert designators F and M

FIGURE 2. Insert arrangements - Continued.



## MIL-DTL-28748/5E



Configuration G - Suitable for all applications, except one-piece jackscrews.

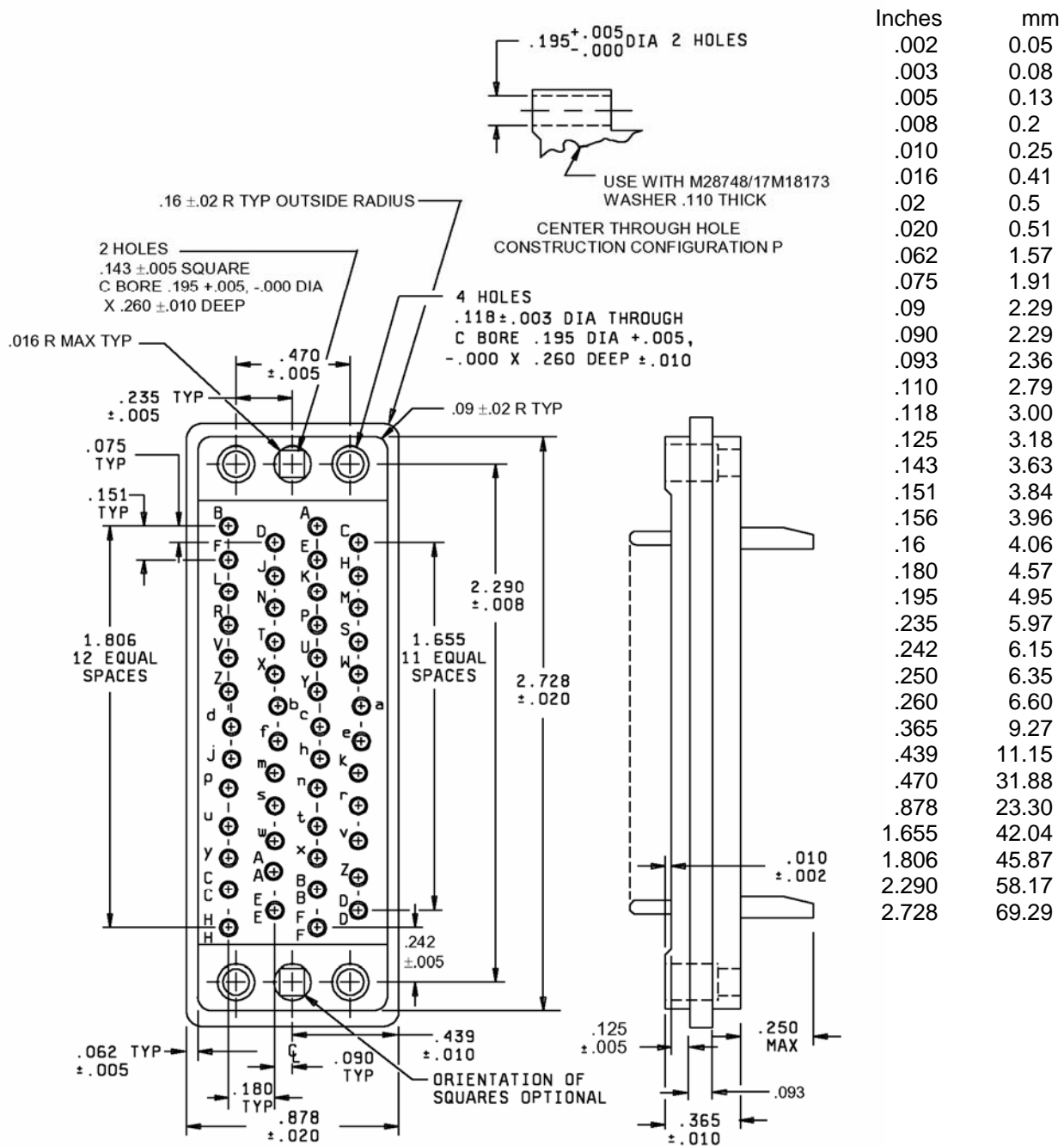
Configuration N - For long jackscrews and shield only (through hole alternate construction).

Insert with 42 contacts

Insert designators G and N

FIGURE 2. Insert arrangements - Continued.

## MIL-DTL-28748/5E



Configuration H - Suitable for all applications, except one-piece jackscrews.

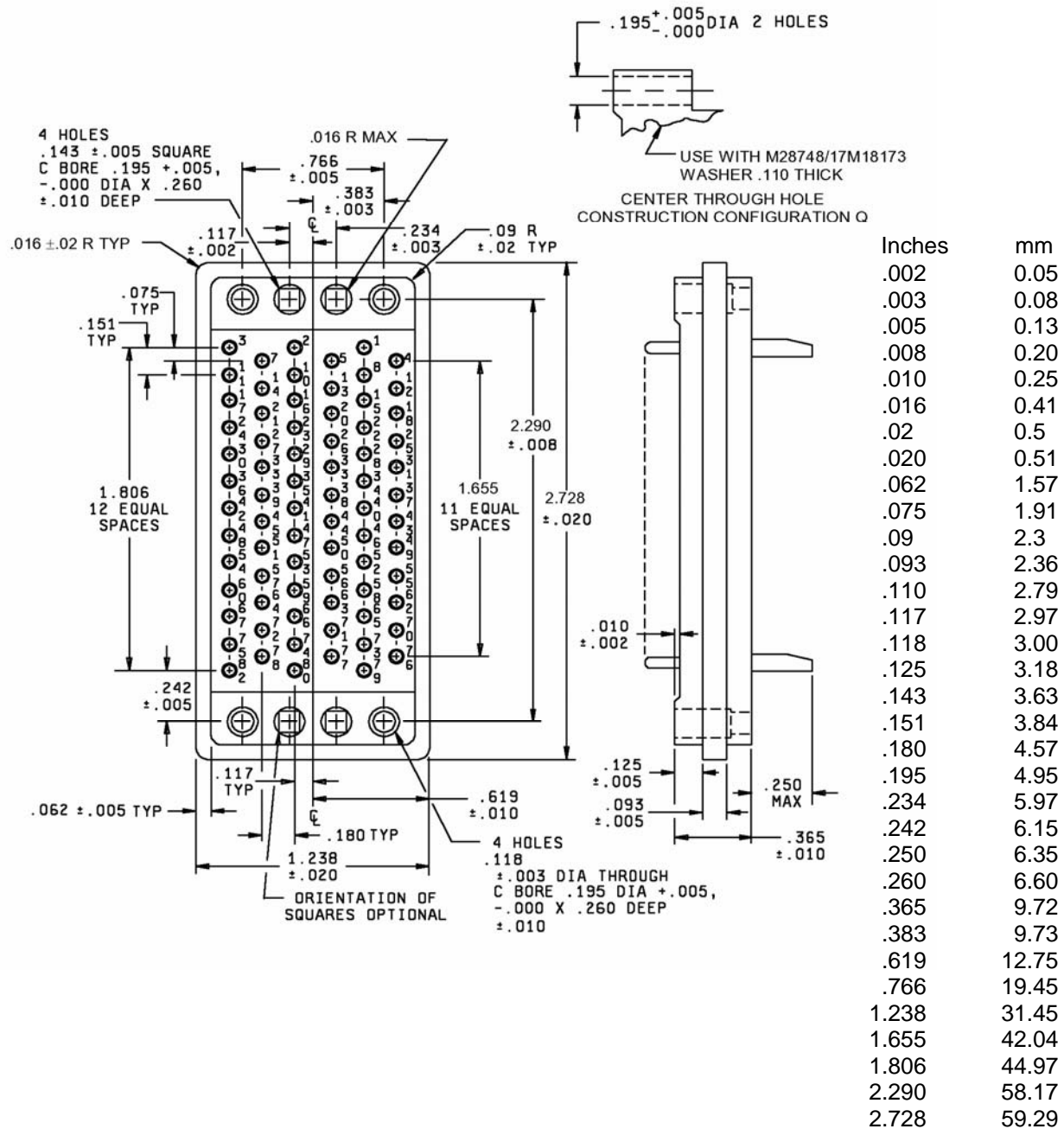
Configuration P - For long jackscrews and shield only (through hole alternate construction).

Insert with 50 contacts

Insert designators H and P

FIGURE 2. Insert arrangements - Continued.

## MIL-DTL-28748/5E



Configuration J - Suitable for all applications, except one-piece jackscrews.

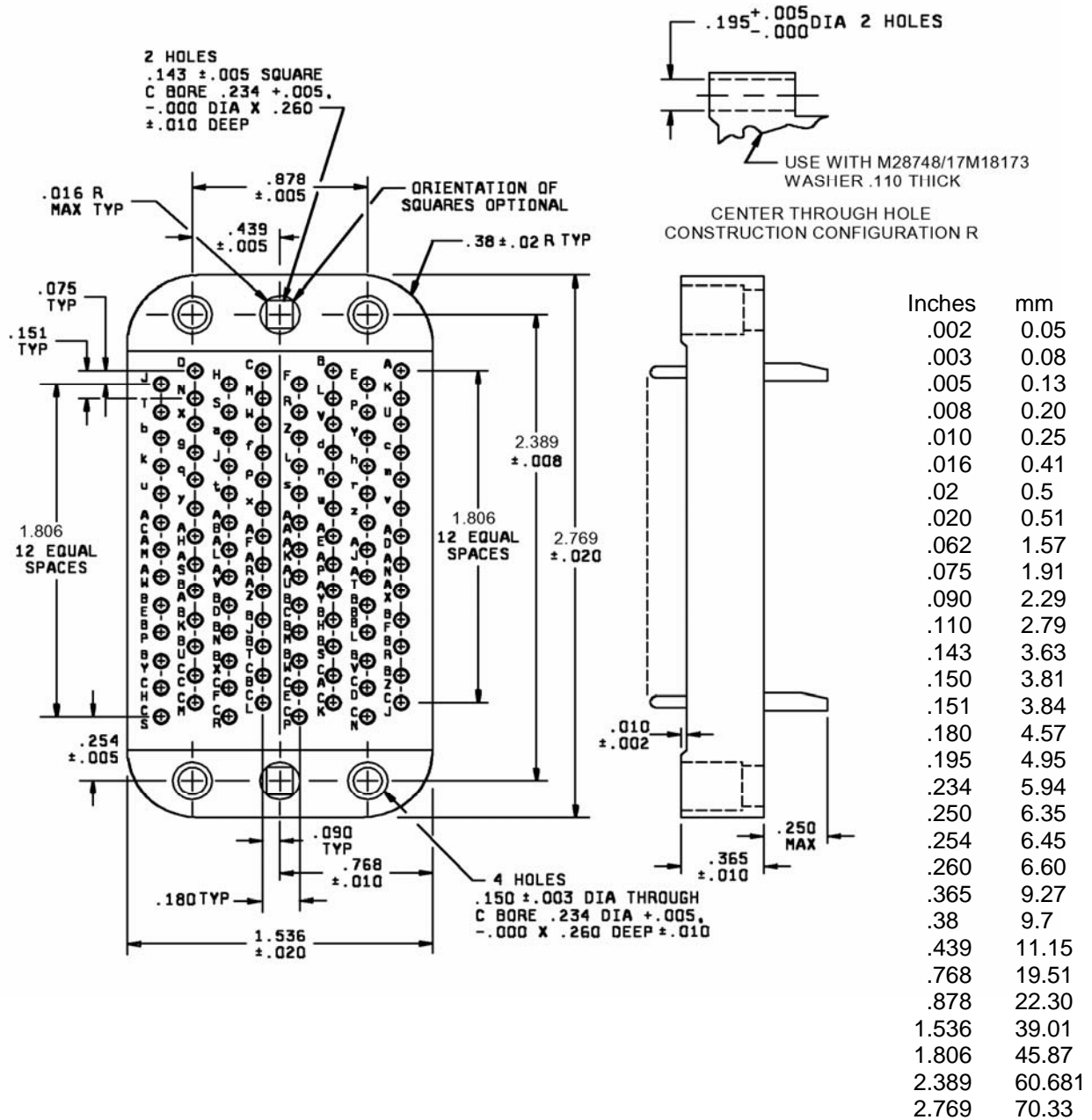
Configuration Q - For long jackscrews and shield only (through hole alternate construction).

Insert with 75 contacts

Insert designators J and Q

FIGURE 2. Insert arrangements - Continued.

MIL-DTL-28748/5E



Configuration K - Suitable for all applications, except one-piece jackscrews.

Configuration R - For long jackscrews and shield only (through hole alternate construction).

Insert with 104 contacts

Insert designators J and Q

FIGURE 2. Insert arrangements - Continued.

## MIL-DTL-28748/5E

## REQUIREMENTS:

Dimensions and configuration: See figures 1 and 2.

Insert material: See MIL-DTL-28748.

Mating connector: See MIL-DTL-28748/4 and MIL-DTL-28748/6.

Hardware accessories: See MIL-DTL-28748/17.

Part or Identifying Number (PIN): As shown in the following example and table I: 1/ 2/

See table I for permissible PINs:

(See PIN code)					
<u>M28748/5 -</u> Basic number of specification sheet	<u>A</u> Insert designator	<u>1</u> Shield and shield clamp location or retaining plate	<u>H</u> Shell and polarization position	<u>L</u> Jackscrews or guidepins	<u>1 A</u> Contacts
PIN codes:					
<u>Insert designat</u> <u>or</u>	<u>Number of</u> <u>contact</u> <u>positions</u>	<u>Shield and</u> <u>shield clamp</u> <u>Location or retaining</u> <u>plate 3/</u>	<u>Shell and [polarization</u> <u>designator 4/</u>	<u>Jackscrews</u> <u>or</u> <u>guidepins 5/</u>	
A	7	0 – No shield or retaining plate	0 - No shell included	0 – No Jackscrews or guidepins.	
B	9				
C	14		<u>Plug</u>	F - Fixed jackscrews, M18196 (not used with shield).	
S	18	Shield and shield clamp location	A - A of M18203	G - Guidepins, M18197 (not used with shield).	
D	20	1 - top M24132	B - B of M18203	L - Long jackscrews M18194	
E	26	2 - side M24132	C - C of M18203	S - Short jackscrews M18195 (not used with shield).	
F	34	3 - top M24133	D - D of M18203		
G	42	4 - side M24133	E - E of M18203		
H	50	5 - top M18192	F - F of M18203		
J	75	6-side M18192	G - G of M18203		
K	104	A - top M18193	H - Unpolarized M18204		
		B-side M18193			
<u>Insert designator</u> <u>through hole 6/</u>		<u>Retaining plate</u>	<u>Receptacle</u>		
M	34	7 - M18198	J - A of M18204		
N	42	8 - M18199	K - B of M18204		
P	50	9 - M18200	L - C of M18204		
Q	75		M - D of M18204		
R	104		N - E of M18204		
			P - F of M18204		
			Q - G of M18204		
			R - Unpolarized M18203		

Contacts: In accordance with MIL-DTL-28748.

1A - 100 percent size 20  
1L - none included

Jack and guide location: The jackscrew female (turning or fixed) or guide socket shall be located by the A or 1 pin contact.

See footnotes on next page.

## MIL-DTL-28748/5E

- 1/ The number zero (0) is used to indicate which parts are not included.
- 2/ To order individual piece parts for the shield, retaining plate, shell, jackscrews and guide pins, use MIL-DTL-28748/17.
- 3/ Retaining plate and shells are not available for insert size A.
- 4/ Polarization positions are for location of plug and receptacle shell pins and slots. See M28748/17.
- 5/ Jackscrew designator L: Multi-piece jackscrews will be supplied with insert designators A through K. Long one-piece jackscrews will be supplied for insert designators M through R.
- 6/ Inserts M through S have through holes for use with long one-piece jackscrew designs only.
- 7/ Mold bodies and hardware from different manufacturers are not necessarily interchangeable.

TABLE I. Permissible PIN's (connector assembly).

Configuration	Accessories				
Receptacle	Insert	Shield/retaining plate	Shell	Jackscrews	Contacts
M28748/5-	A	0, 1, 2	0	0, F, G	
	B	0, 1, 2, 5, 6, 7	0, A thru H		
	C				
	S	0, 1, 2			
	D	0, 1, 2, 5, 6, 7			
	E				
	F	0, 3, 4, 5, 6, 8			
	G				
	H				
	J				
	L	0, A, B, 9			
Plug					
M28748/5-	A	0,1, 2	0	0, L, G, S	1A, 1L,
	B	0, 1, 2, 5, 6, 7	0, J thru R		
	C				
	S	0, 1, 2			
	D	0, 1, 2, 5, 6, 7			
	E				
	F	0, 3, 4, 5, 6, 8			
	G				
	H				
	K				
	L	0, A, B, 9			
	M	0, 3, 4, 5, 6, 8			
	N				
	P				
	Q				
R	0, A, B, 9	0			

## MIL-DTL-28748/5E

For superseded insert Military Standard sheet PIN's to M28748 PIN's see table II.

TABLE II. Supersession data (inserts).

MS PIN	M28748/5 PIN	Number of contact positions
MS24004-1	M28748/5-A0001L	7
MS18275-1	M28748/5-B0001L	9
MS24010-1	M28748/5-C0001L	14
MS24012-1	M28748/5-S0001L	18
MS24014-1	M28748/5-D0001L	20
MS24020-1	M28748/5-E0001L	26
MS24022-1	M28748/5-F0001L	34
MS18258-1	M28748/5-G0001L	42
MS24026-1	M28748/5-H0001L	50
MS18261-1	M28748/5-J0001L	75
MS18263-1	M28748/5-K0001L	104
MS24022-2	M28748/5-M0001L	34 <u>1/</u>
MS18258-2	M28748/5-N0001L	42 <u>1/</u>
MS24052-2	M28748/5-P0001L	50 <u>1/</u>
MS18261-2	M28748/5-Q0001L	75 <u>1/</u>
MS18263-2	M28748/5-R0001L	104 <u>1/</u>

1/ Insert through hole designator. Inserts -2 (M through S) have through holes for use with long one-piece jackscrew designs only.

Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extent of the changes.

Reference documents. In addition to MIL-DTL-28748, this document references the following:

MIL-DTL-28748/4  
MIL-DTL-28748/6  
MIL-DTL-28748/17

MIL-DTL-28748/5E

CONCLUDING MATERIAL

Custodians:

Army - CR  
Navy - EC  
Air Force - 11  
DLA - CC

Preparing activity:  
DLA - CC

(Project 5935-4336-001)

Review activities:

Army - AT, MI  
Navy - AS, SH  
Air Force - 99

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at <http://assist.daps.dla.mil>.