

INCH-POUND

MIL-DTL-28748/3F

9 September 2004

SUPERSEDING

MIL-DTL-28748/3E

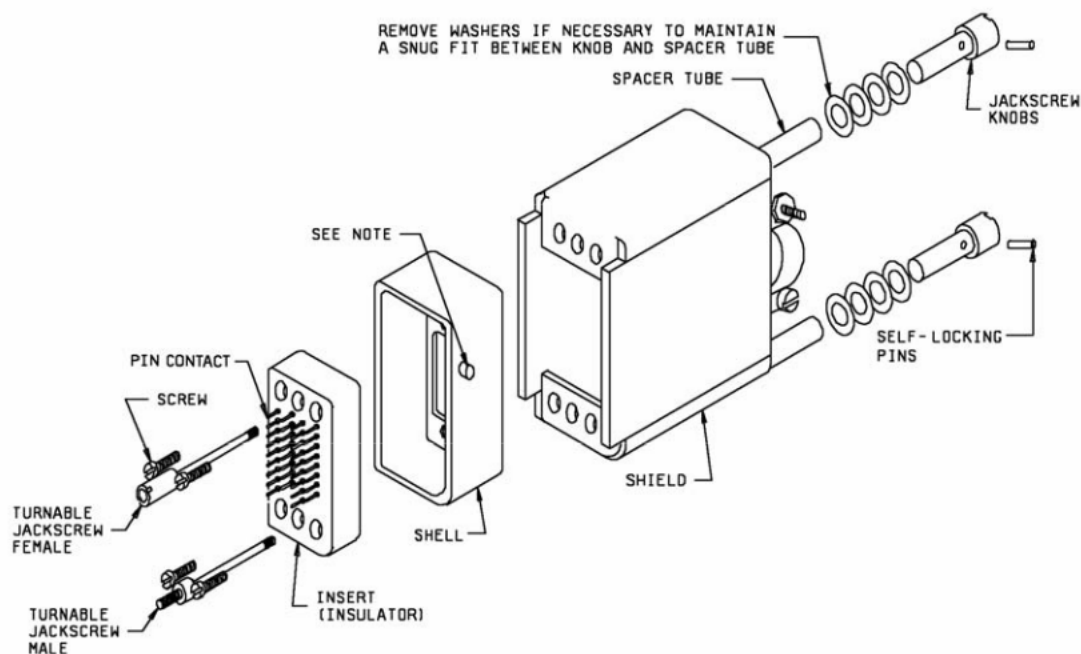
11 May 1999

DETAIL SPECIFICATION SHEET

CONNECTORS, ELECTRICAL, RECTANGULAR, RACK AND PANEL, CRIMP TYPE REMOVABLE PIN CONTACTS, SIZES 16 AND 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.

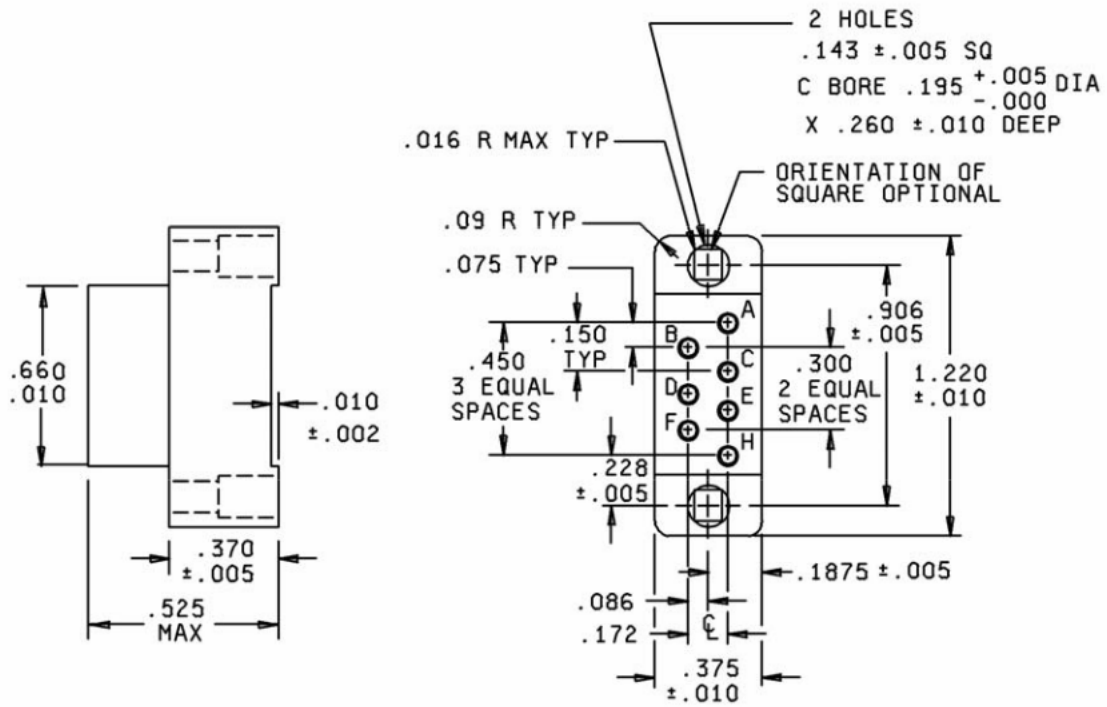


Connector

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. Plug connector with shield, plug shell, and turnable jackscrews.



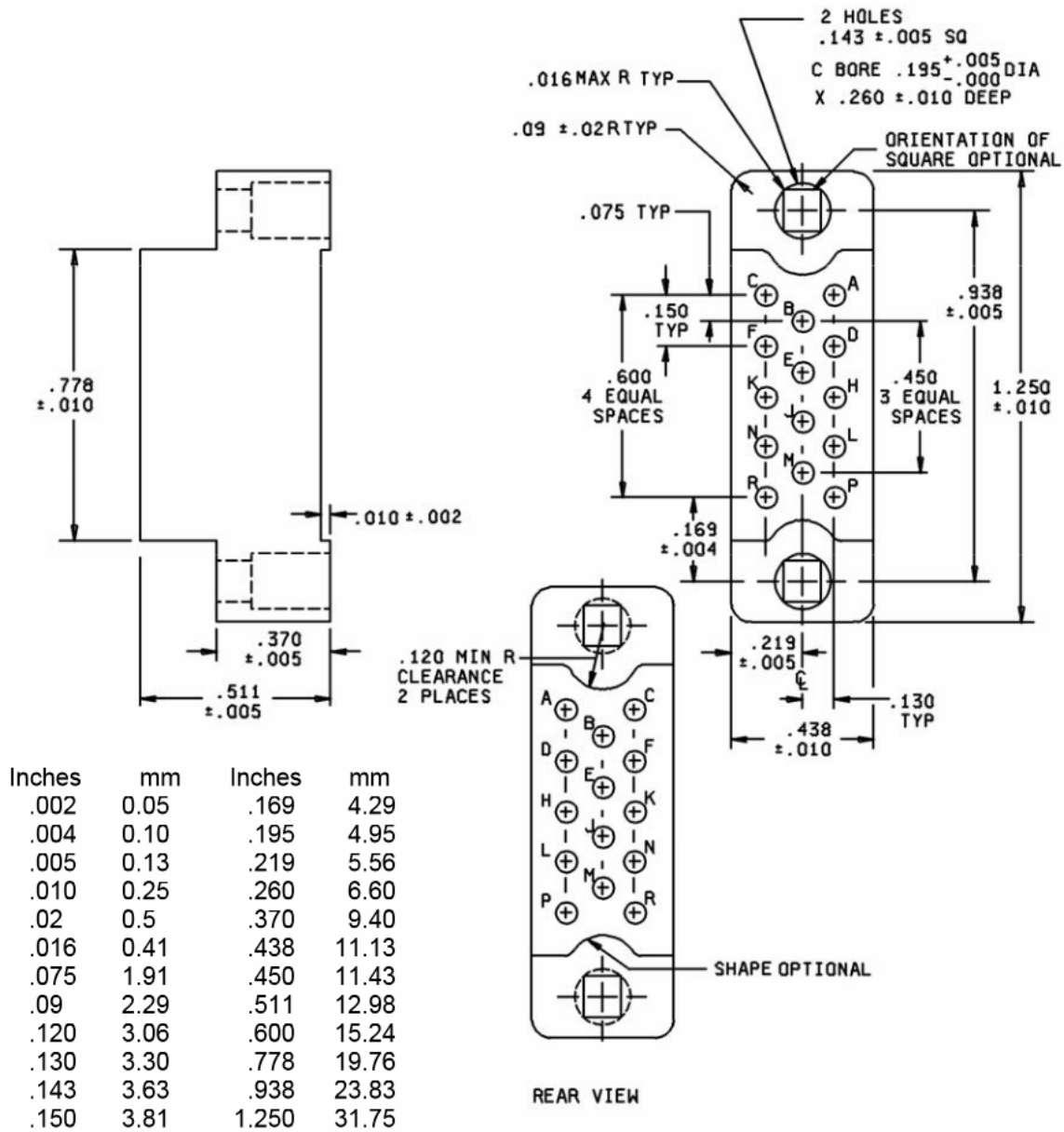
Inches	mm	Inches	mm	Inches	mm
.002	0.05	.143	3.63	.300	7.62
.005	0.13	.150	3.81	.370	9.40
.010	0.25	.172	4.37	.375	9.53
.016	0.41	.1875	4.765	.450	11.43
.075	1.91	.195	4.95	.525	13.34
.086	2.18	.228	5.79	.660	16.76
.09	2.29	.260	6.60	.906	23.01
				1.220	30.99

Insert with 7 contacts

Insert designator A

FIGURE 2. Insert arrangements.

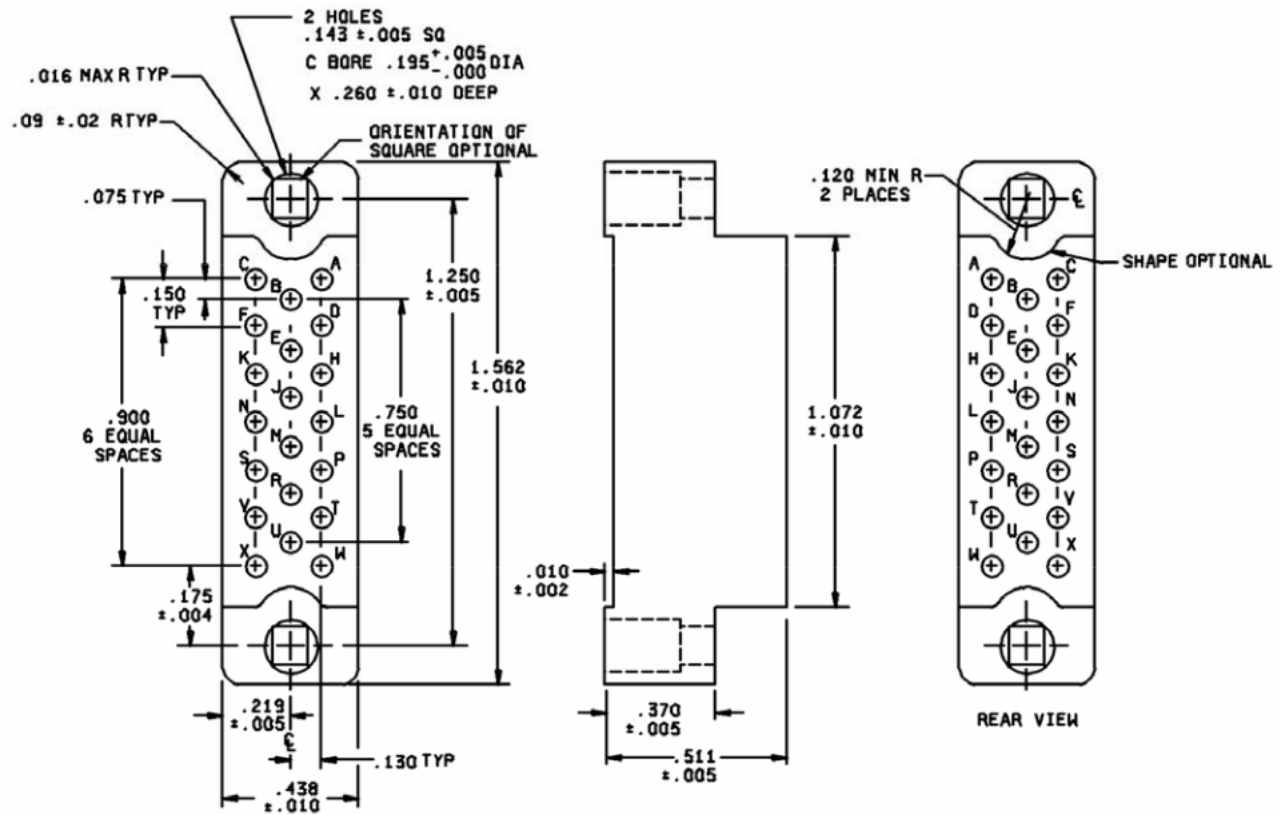
3



Insert with 14 contacts

Insert designator C

FIGURE 2. Insert arrangements - Continued.

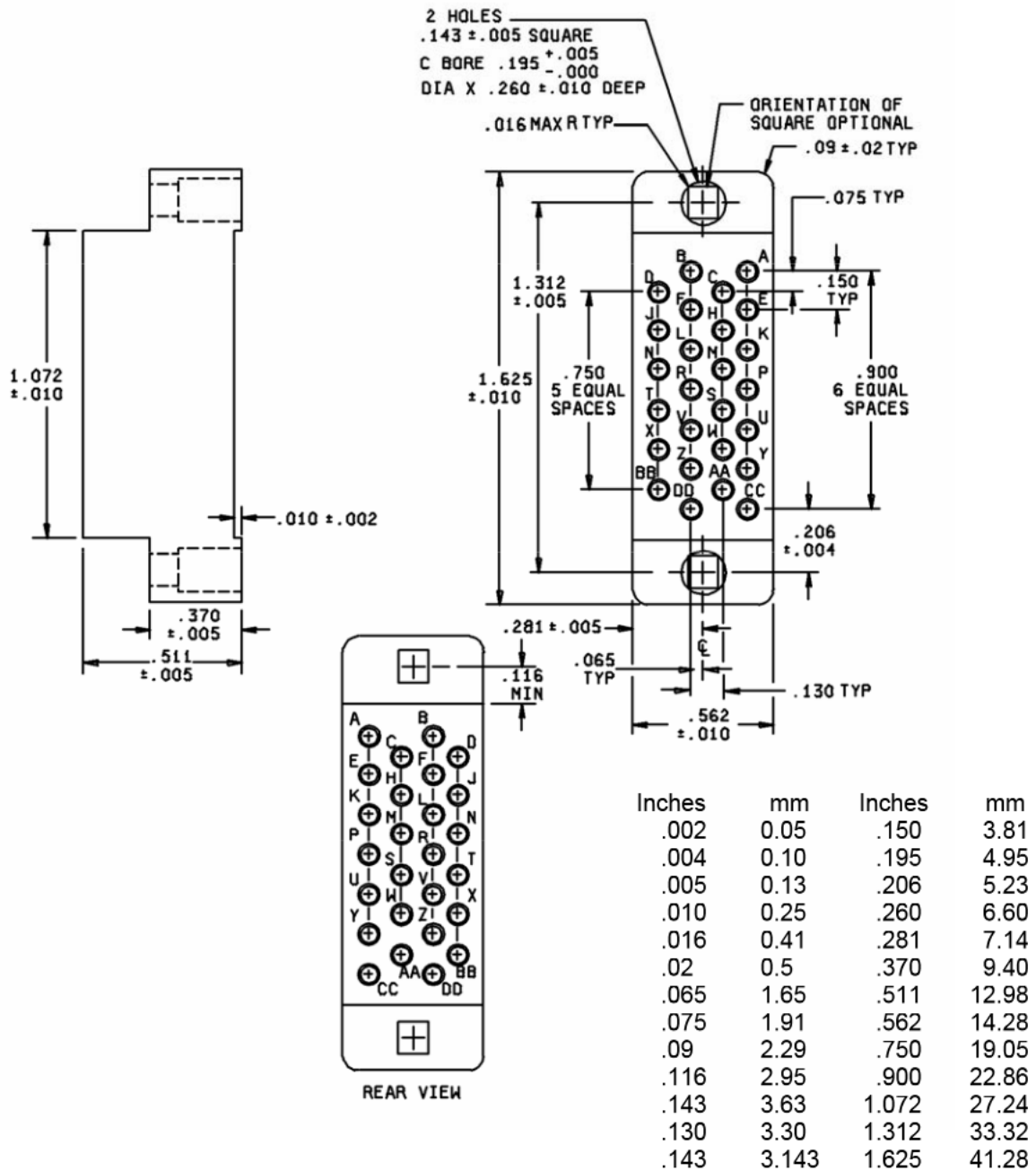


Inches	mm	Inches	mm	Inches	mm
.002	0.05	.120	3.06	.370	9.40
.004	0.10	.130	3.30	.438	11.13
.005	0.13	.143	3.63	.511	12.98
.010	0.25	.150	3.81	.750	19.05
.016	0.41	.175	4.45	.900	22.86
.02	0.5	.195	4.95	1.072	27.23
.075	1.91	.219	5.56	1.250	31.75
.09	2.29	.260	6.60	1.562	39.67
				2.290	58.17

Insert with 20 contacts

Insert designator D

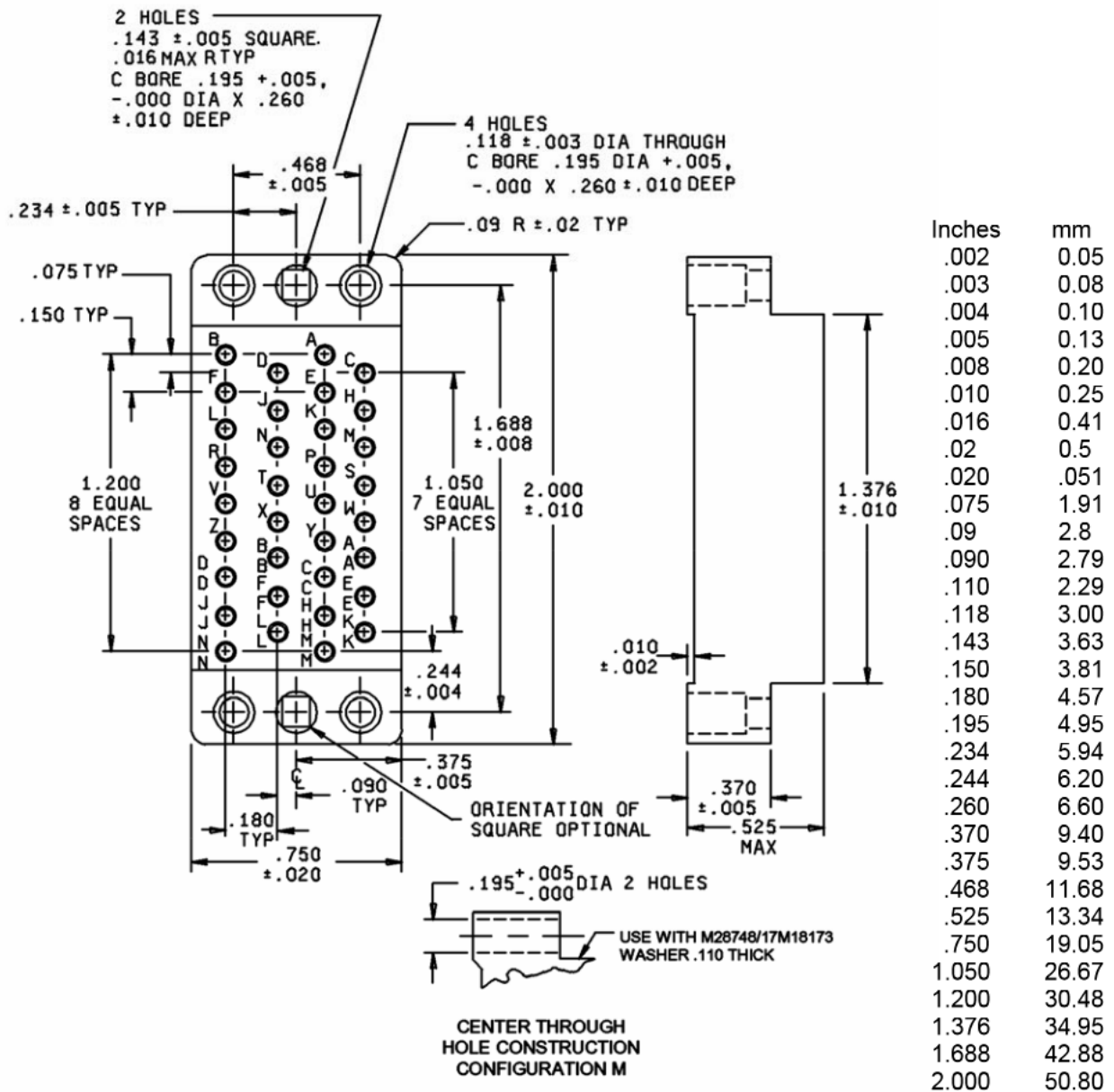
FIGURE 2. Insert arrangements - Continued.



Insert with 26 contacts

Insert designator E

FIGURE 2. Insert arrangements - Continued.



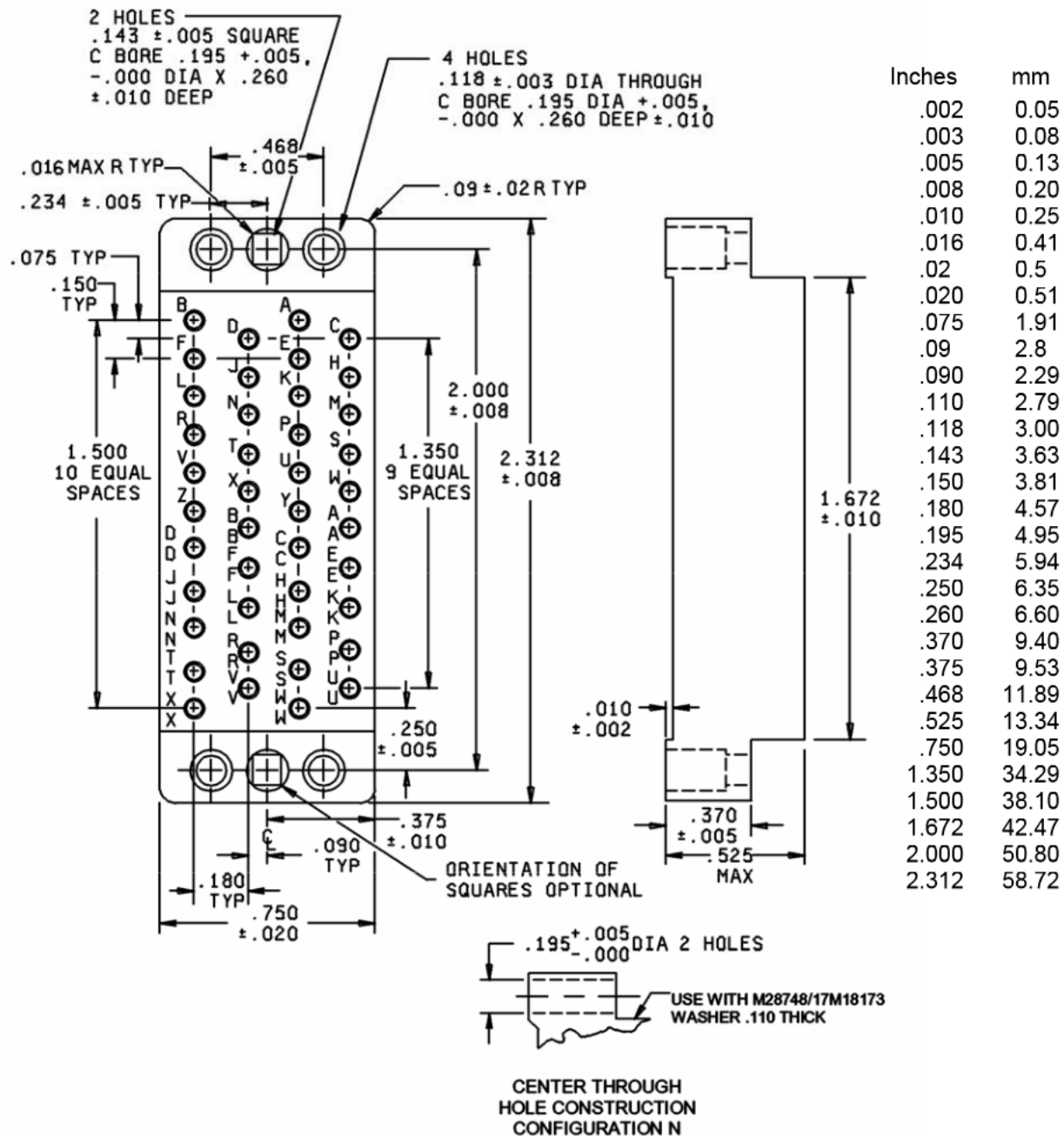
Configuration F - Suitable for all applications, except for one-piece jackscrews.

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.



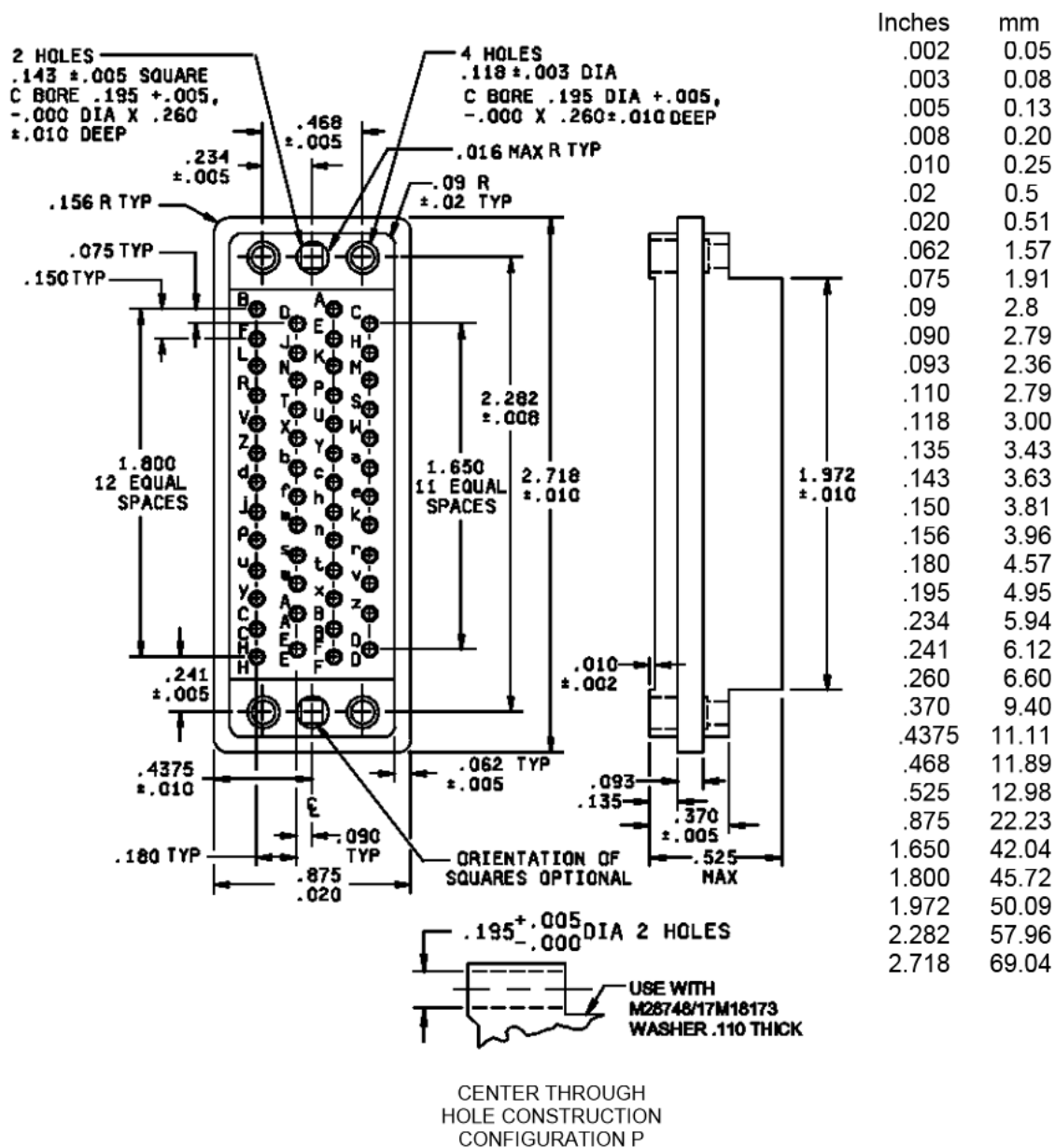
Configuration G - Suitable for all applications, except one-piece jackscrews.

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.



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

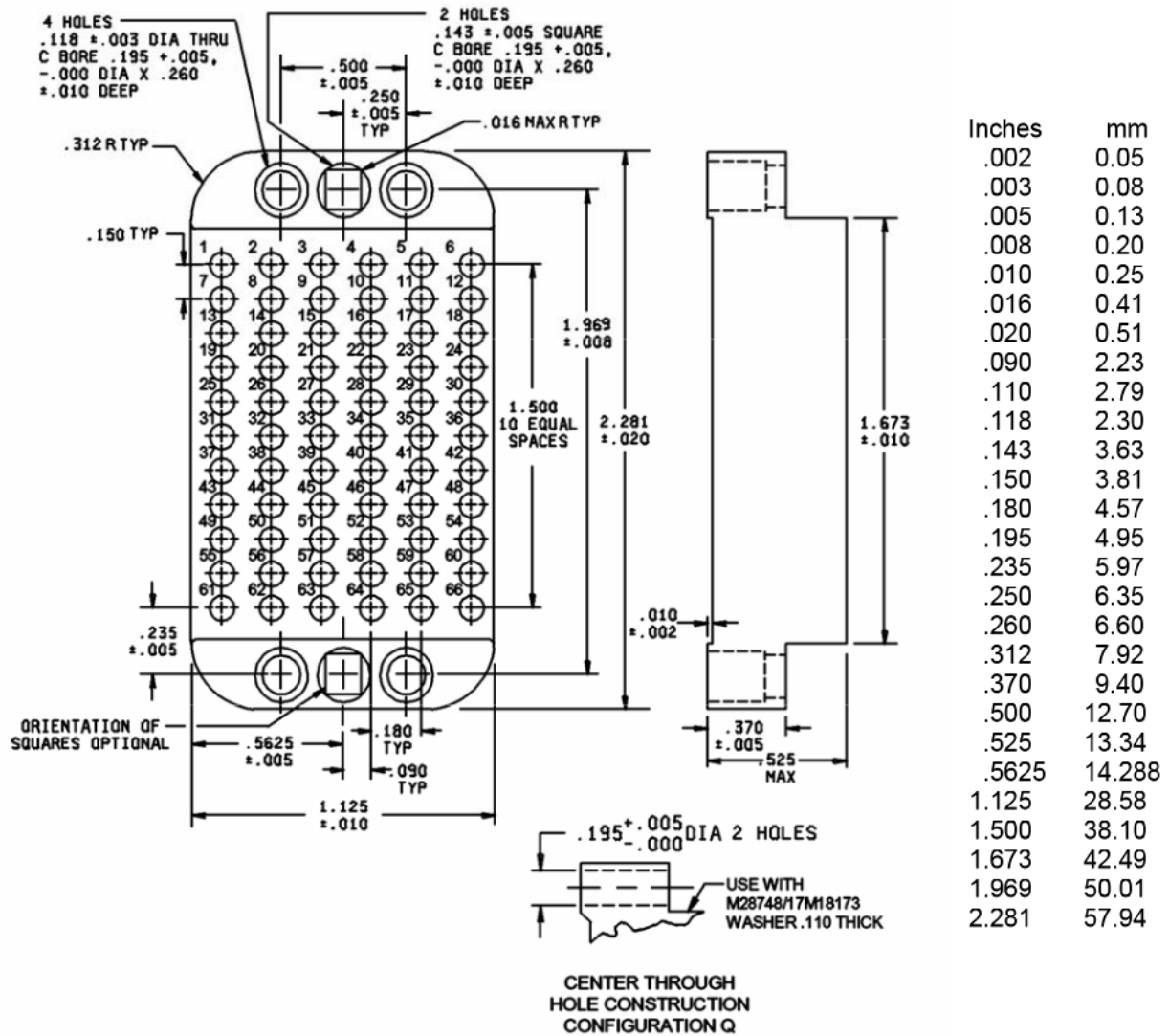
Configuration P - For long jackscrews and shield only (through hole alternate construction).

Insert with 50 contacts

Insert designators H and P

FIGURE 2. Insert arrangements - Continued.

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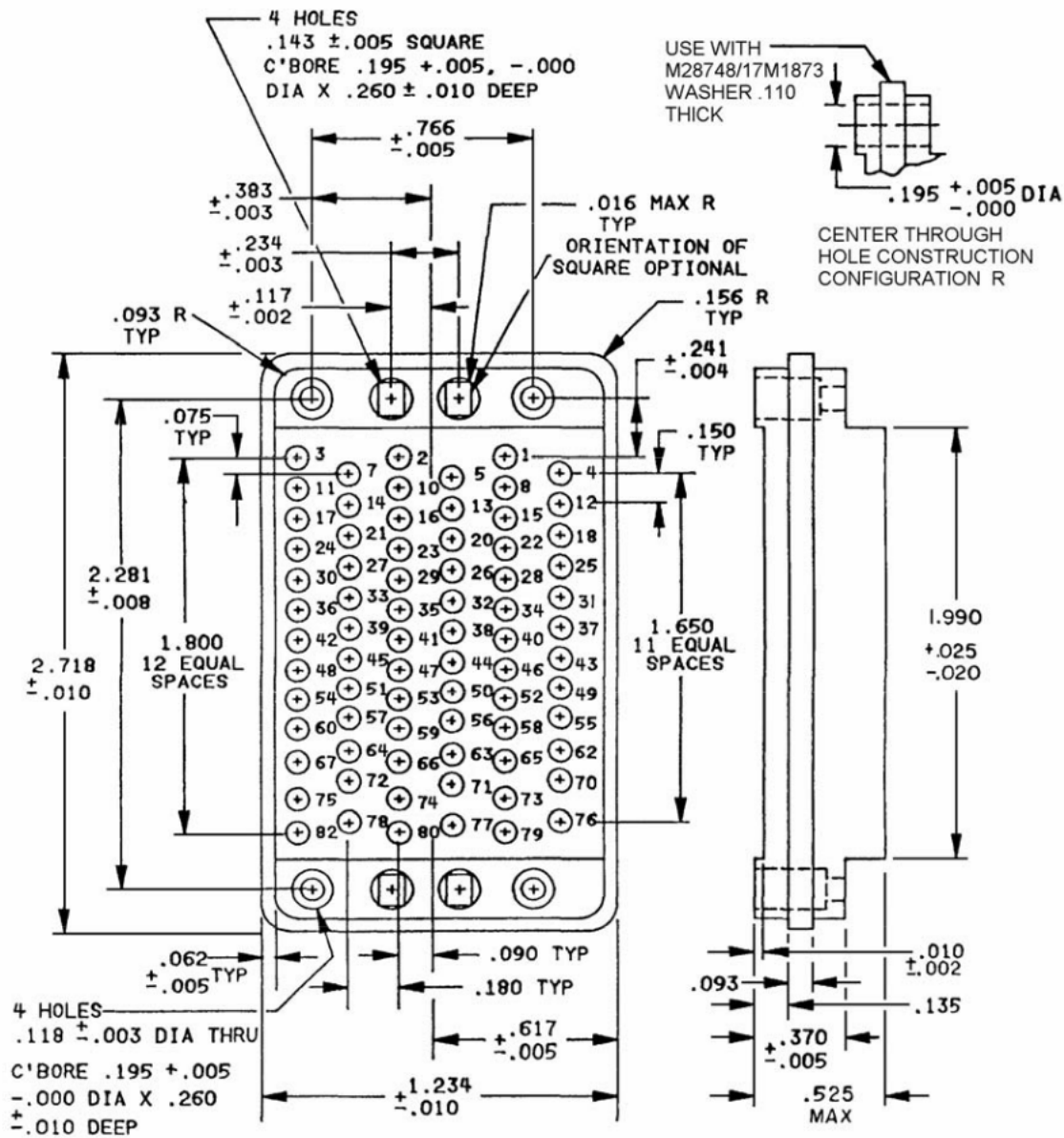
Configuration J - Suitable for all applications, except for one-piece jackscrews.

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

Insert with 66 contacts

Insert designators J and Q

FIGURE 2. Insert arrangements - Continued.



Inches	mm
.002	0.05
.003	0.08
.004	0.10
.005	0.13
.008	0.20
.010	0.25
.016	0.41
.020	0.51
.025	0.64
.062	1.57
.075	1.91
.090	2.29
.093	2.79
.110	3.00
.117	2.97
.118	3.00
.135	3.45
.143	3.63
.150	3.81
.156	3.96
.180	4.57
.195	4.95
.234	5.94
.241	6.12
.260	6.60
.370	9.40
.383	9.73
.525	13.34
.617	15.67
.766	19.46
1.234	31.34
1.650	41.91
1.800	45.72
1.990	50.55
2.281	57.94
2.718	69.04

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

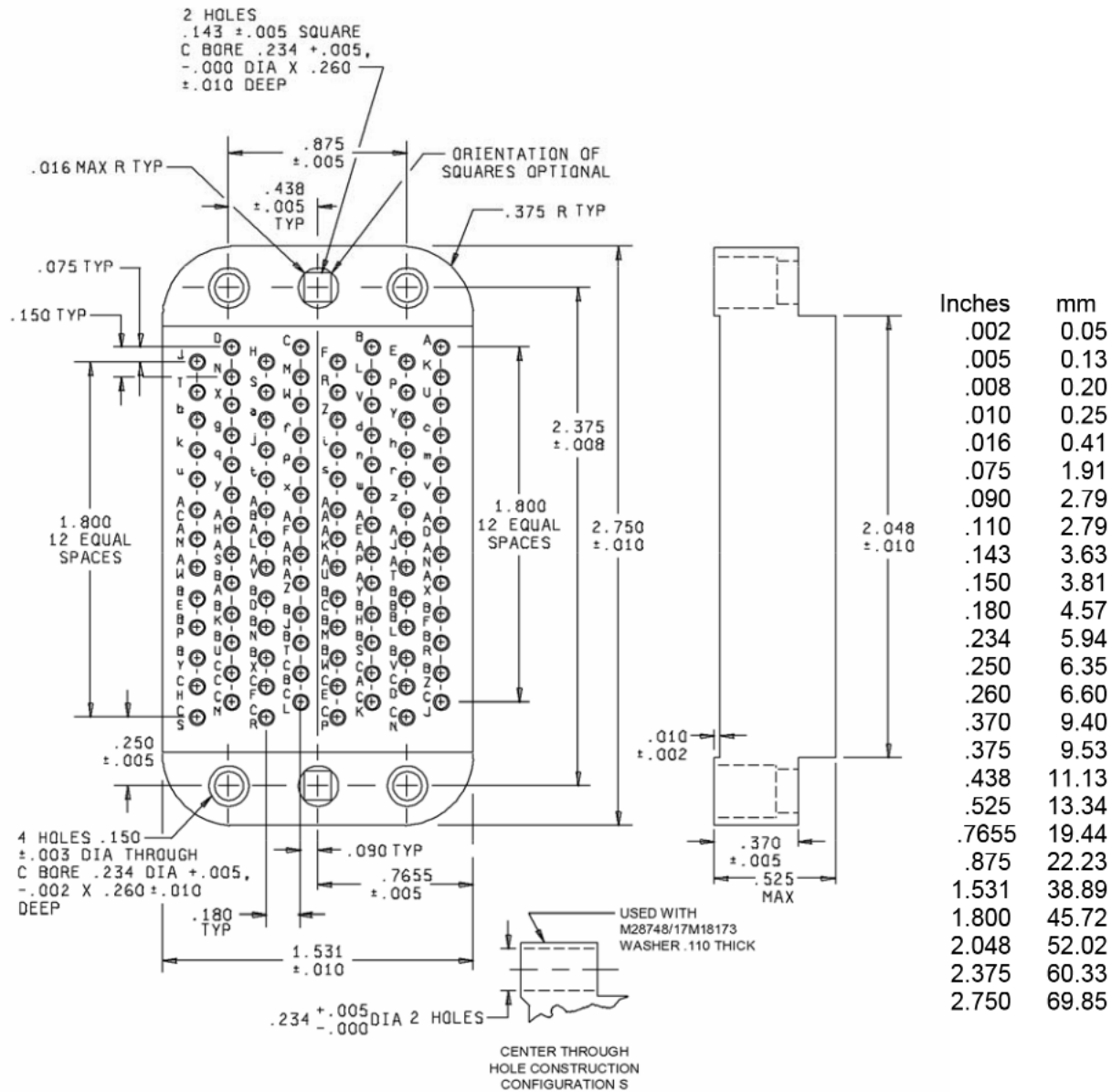
Configuration R - For long jackscrews and shield only (through hole alternate construction).

Insert with 75 contacts

Insert designators K and R

FIGURE 2. Insert arrangements - Continued.

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Configurations L - Suitable for all applications, except one-piece jackscrews.

Configurations S - For long jackscrews and shield only (through hole alternate construction).

Insert with 104 contacts

Insert designators L and S

FIGURE 2. Insert arrangements - Continued.

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REQUIREMENTS:

Dimensions and configuration: See figures 1 and 2.

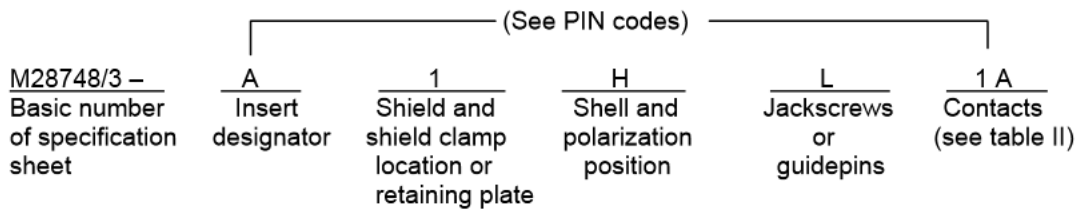
Insert material: See MIL-DTL-28748.

Mating connector: See MIL-DTL-28748/2 and MIL-DTL-28748/4.

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:



PIN codes:

Insert designator (See table III)	Number of contact positions	Shield and shield clamp location or retaining plate <u>3/</u>	Shell and polarization designators <u>4/</u>	Jackscrews or guidepins <u>5/</u>
A	7	0 – No shield or retaining plate	0 – No shell included	0 – No Jackscrews or guidepins.
B	9			F – Fixed jackscrews, M18196 (not used with shield).
C	14		<u>Plug shell</u>	G – Guidepins, M18197 (not used with shield).
D	20	Shield and shield clamp location	A – A of M18203	L – Long jackscrews M18194
E	26		B – B of M18203	S – Short jackscrews M18195 (not used with shield).
F	34		C – C of M18203	
G	42	1 – top M18192	D – D of M18203	
H	50	2-side M18192	E – E of M18203	
J	66	3 – top M18193	F – F of M18203	
K	75	4-side M18193	G – G of M18203	
L	104		H – Unpolarized M18203	
		<u>Retaining plate</u>	<u>Receptacle shell</u>	
Insert designator through hole <u>6/</u>		5 – M18198	J – A of M18204	
		6 – M18199	K – B of M18204	
		7 – M18200	L – C of M18204	
M	34		M – D of M18204	
N	42		N – E of M18204	
P	50		P – F of M18204	
Q	66		Q – G of M18204	
R	75		R – Unpolarized M18204	
S	104			

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.

- 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 L. Long one-piece jackscrews will be supplied for insert designators M through S.
- 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 and clamp position/ or retaining plate	Shell and polarization position	Jackscrews	Contacts
M28748/3-	A	0	0	0, F, G	See table II
	B C D E	0 Retaining Plate 5	0, J thru R		
	F G H K	0 Retaining Plate 6			
	J L	0 Retaining Plate 7			
Plug					
M28748/3-	A	0		0, L, G, S	
	B C D E	0 Shield 1, 2			
	F G H K		0 0, A thru H		
	J L	0 Shield 3, 4			
	M N P R	0 Shield 1, 2			
	Q S	0 Shield 3, 4			

TABLE II. Contact size percent ^{1/}

Contact	Sizes 16-16 M39029/34-273 (percent)	Sizes 16-20 M39029/34-272 (percent)	Sizes 20-20 M39029/34-271 (percent)
1A	100	0	0
1B	90	0	0
1C	80	0	0
1D	70	0	0
1E	60	0	0
1F	50	0	0
1G	40	0	0
1H	30	0	0
1J	20	0	0
1K	10	0	0
1L	0	0	0
2A	0	100	0
2B	0	90	0
2C	0	80	0
2D	0	70	0
2E	0	60	0
2F	0	50	0
2G	0	40	0
2H	0	30	0
2J	0	20	0
2K	0	10	0
3A	0	0	100
3B	0	0	90
3C	0	0	80
3D	0	0	70
3E	0	0	60
3F	0	0	50
3G	0	0	40
3H	0	0	30
3J	0	0	20
3K	0	0	10

^{1/} Contact percent size = number of contact positions times the percent in table II.
Example: 34 X .80 = 27.2 or 27 contacts supplied. Values of .5 and above are rounded to the next contact.

Crimp tool M22520/1-01.

Positioner M22520/1-03 (positioner A color blue/red).

Installation tool M81969/18-01.

Removal tool M81969/20-01.

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

TABLE III. Supersession data (inserts).

MS PIN	M28748/3 PIN	Number of contact positions
MS14010-1	M28748/3-A0001L	7
MS14007-1	M28748/3-B0001L	9
MS18174-1	M28748/3-C0001L	14
MS18176-1	M28748/3-D0001L	20
MS14008-1	M28748/3-E0001L	26
MS18178-1	M28748/3-F0001L	34
MS18180-1	M28748/3-G0001L	42
MS18182-1	M28748/3-H0001L	50
MS18184-1	M28748/3-J0001L	66
MS18187-1	M28748/3-K0001L	75
MS18189-1	M28748/3-L0001L	104
MS18178-2	M28748/3-M0001L	34 <u>1/</u>
MS18180-2	M28748/3-N0001L	42 <u>1/</u>
MS18182-2	M28748/3-P0001L	50 <u>1/</u>
MS18184-2	M28748/3-Q0001L	66 <u>1/</u>
MS18187-2	M28748/3-R0001L	75 <u>1/</u>
MS18189-2	M28748/3-S0001L	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-28748/2
MIL-DTL-28748/4
MIL-DTL-28748/17

CONCLUDING MATERIAL

Custodians:

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

Preparing activity:
DLA - CC

(Project 5935-4572-002)

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>.