

INCH-POUND

MIL-DTL-28748/9G
10 October 2001
SUPERSEDING
MIL-DTL-28748/9F
17 July 2001

DETAIL SPECIFICATION SHEET

CONNECTORS, ELECTRICAL, RECTANGULAR, RACK AND PANEL,
POLARIZED CENTER JACKSCREW OR GUIDE PIN STYLE
CRIMP TYPE REMOVABLE PIN CONTACTS, SIZE 16

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 and MIL-DTL-28748.

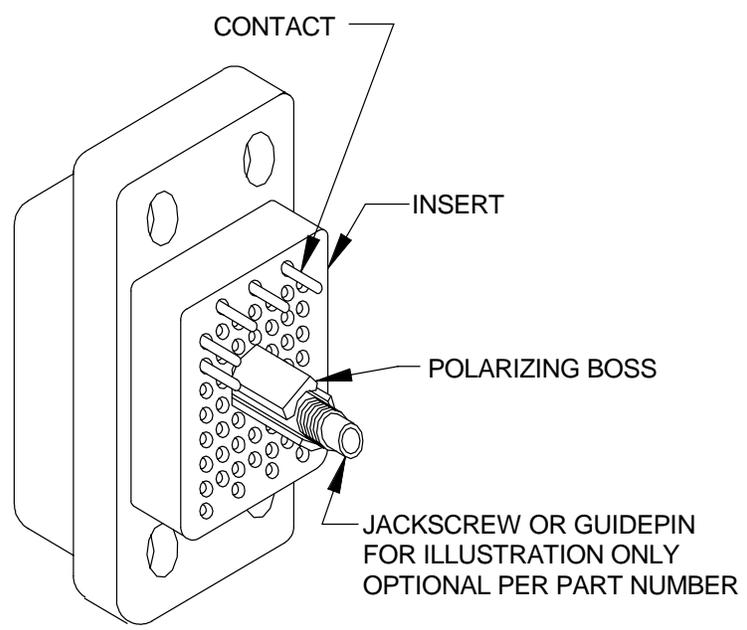


FIGURE 1. Connector.

TABLE I. Polarization type.

Type	A	B
1	90°	135°
2	85°	137°30'

Center polarizing hardware may be rotated by removing retaining ring and spacer or removing cap (left-hand thread) at rear of insert.

POLARIZATION TYPE
(SEE TABLE I)

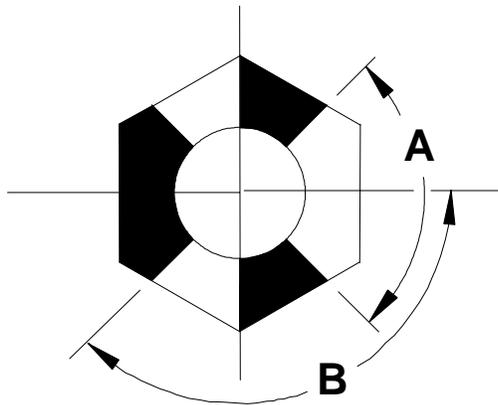
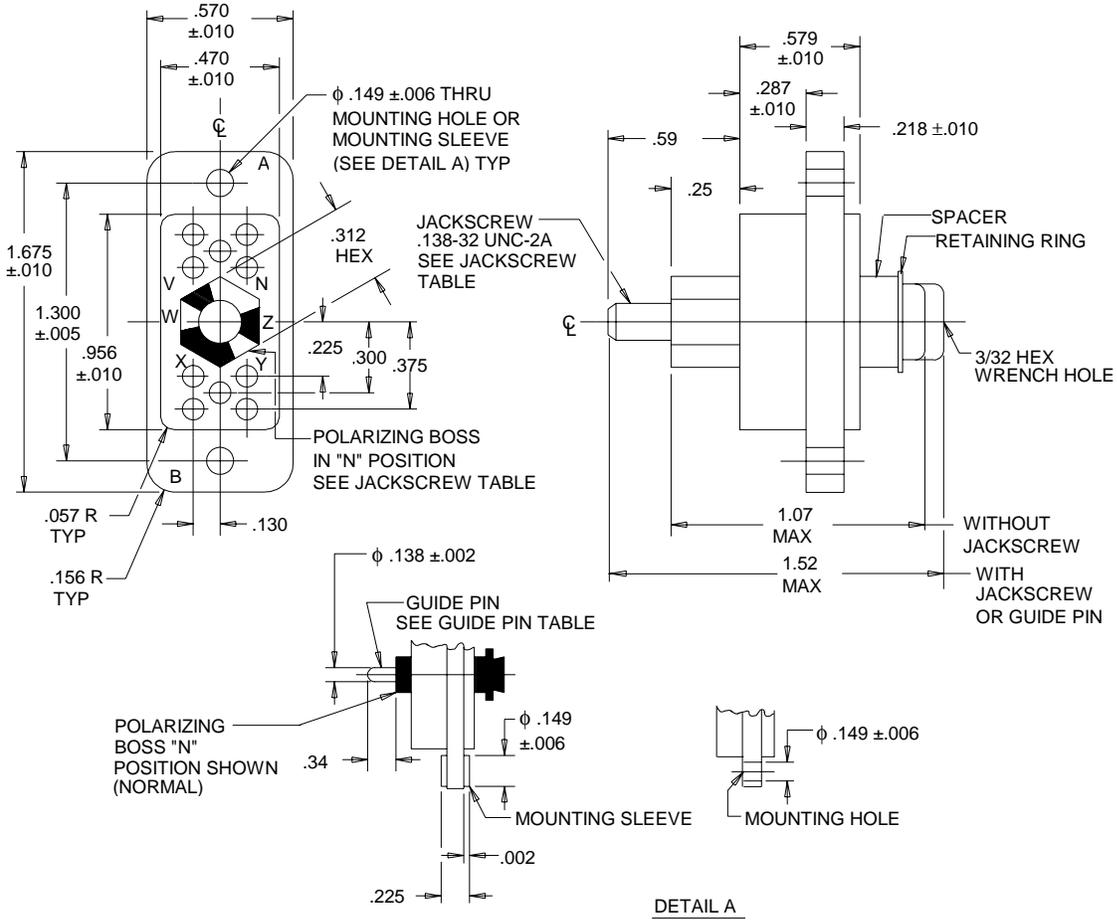


FIGURE 2. Polarization type.

MIL-DTL-28748/9G



Insert with through hole configuration A.
 Insert with mounting sleeve configuration J.

FIGURE 3. Insert configuration 10 position insert.

Polarization positions - Jackscrew.

Type (see table I)	Polarization <u>1/</u>	Jackscrew
1	N	Supplied with connector
1	V	
1	W	
2	X	
2	Y	
2	Z	
1	N	Not supplied with connector polarizing boss threaded internally .138-32 UNC-2B
1	V	
1	W	
2	X	
2	Y	
2	Z	

1/ Large opening in polarization boss must be adjacent to polarization letter on connector body.

Polarization positions - Guide pin.

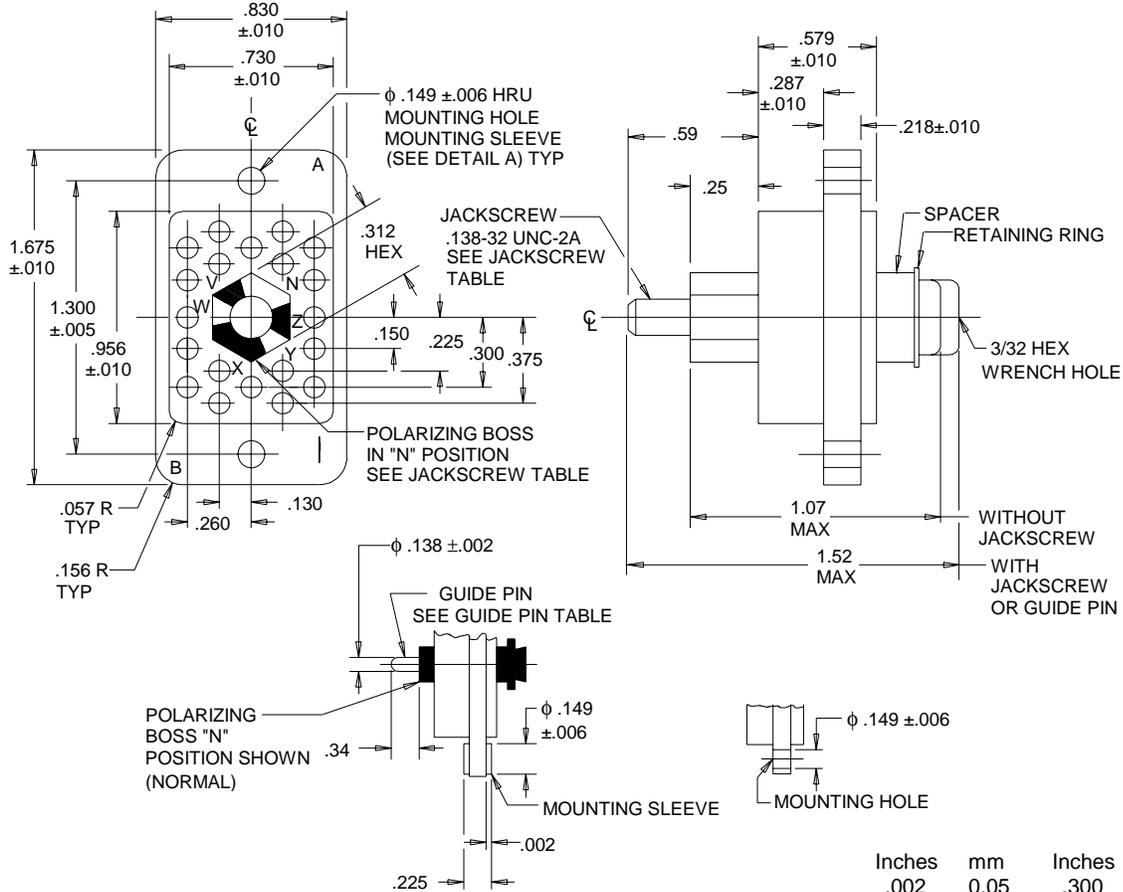
Type (see table I)	Polarization <u>1/</u>	Guide pin
1	N	Supplied with connector
1	V	
1	W	
2	X	
2	Y	
2	Z	
1	N	Not supplied with connector polarizing boss with .144 ± .002 (3.66 ± .051 mm) inch I.D to accept guide pin
1	V	
1	W	
2	X	
2	Y	
2	Z	

1/ Large opening in polarization boss must be adjacent to polarization letter on connector body.

NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Unless otherwise specified, tolerances are ± .02 (0.51 mm) inch for two place decimals, and ±.015 (0.38 mm) inch for three place decimals.
4. Tolerance between any two adjacent contact centers shall be ± .004 (0.10 mm) inch. Tolerance between any two contact centers, other than adjacent contacts, shall be ±.006 (0.15 mm) inch.
5. Dimensions symmetrical about centerlines.
6. Contact identification may be located on either side of the contact hold but shall appear on the front and rear face of the contact insert.
7. Flatness, squareness and parallelism shall be within dimensional tolerances.
8. Maximum insertion and withdrawal force (connector assembly) shall be 9 lbf (40 N).
9. Maximum torque required at jackscrew to properly engage or disengage connector shall be 1.5 in lbf (0.17 N m).
10. Jackscrew wrench size 3/32 hex.

FIGURE 3. Insert configuration 10 position insert - Continued.



Inches	mm	Inches	mm
.002	0.05	.300	7.62
.005	0.13	.312	7.92
.006	0.15	.340	8.64
.010	0.25	.375	9.53
.057	1.45	.579	15.71
.130	3.30	.590	14.99
.149	3.78	.730	18.54
.150	3.81	.830	21.08
.156	3.96	.956	24.28
.218	5.54	1.070	27.18
.225	5.72	1.300	33.02
.250	6.35	1.520	38.61
.260	6.60	1.675	42.55
.287	7.29		

Insert with through mounting hole configuration B.
 Insert with mounting sleeve configuration K.

NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Unless otherwise specified, tolerances are $\pm .02$ (0.51 mm) inch for two place decimals. and $\pm .015$ (0.38 mm) inch for three place decimals.
4. Tolerance between any two adjacent contact centers shall be $\pm .004$ (0.10 mm) inch. Tolerance between any two contact centers, other than adjacent contacts, shall be $\pm .006$ (0.15 mm) inch.
5. Dimensions symmetrical about centerlines.
6. Contact identification may be located on either side of the contact hold but shall appear on the front and rear face of the contact insert.
7. Flatness, squareness and parallelism shall be within dimensional tolerances.
8. Maximum insertion and withdrawal force (connector assembly) shall be 18 lbf (80 N).
9. Maximum torque required at jack screw to properly engage or disengage connector shall be 2 in lbf (0.23 N m).
10. Jack screw wrench size 3/32 hex.

FIGURE 4. Insert configurations Insert with 20 positions.

Polarization positions - Jackscrew.

Type (see table I)	Polarization <u>1/</u>	Jackscrew
1	N	Supplied with connector
1	V	
1	W	
2	X	
2	Y	
2	Z	
1	N	Not supplied with connector polarizing boss threaded internally .138-32 UNC-2B
1	V	
1	W	
2	X	
2	Y	
2	Z	

1/ Large opening in polarization boss must be adjacent to polarization letter on connector body.

Polarization positions - Guide pin.

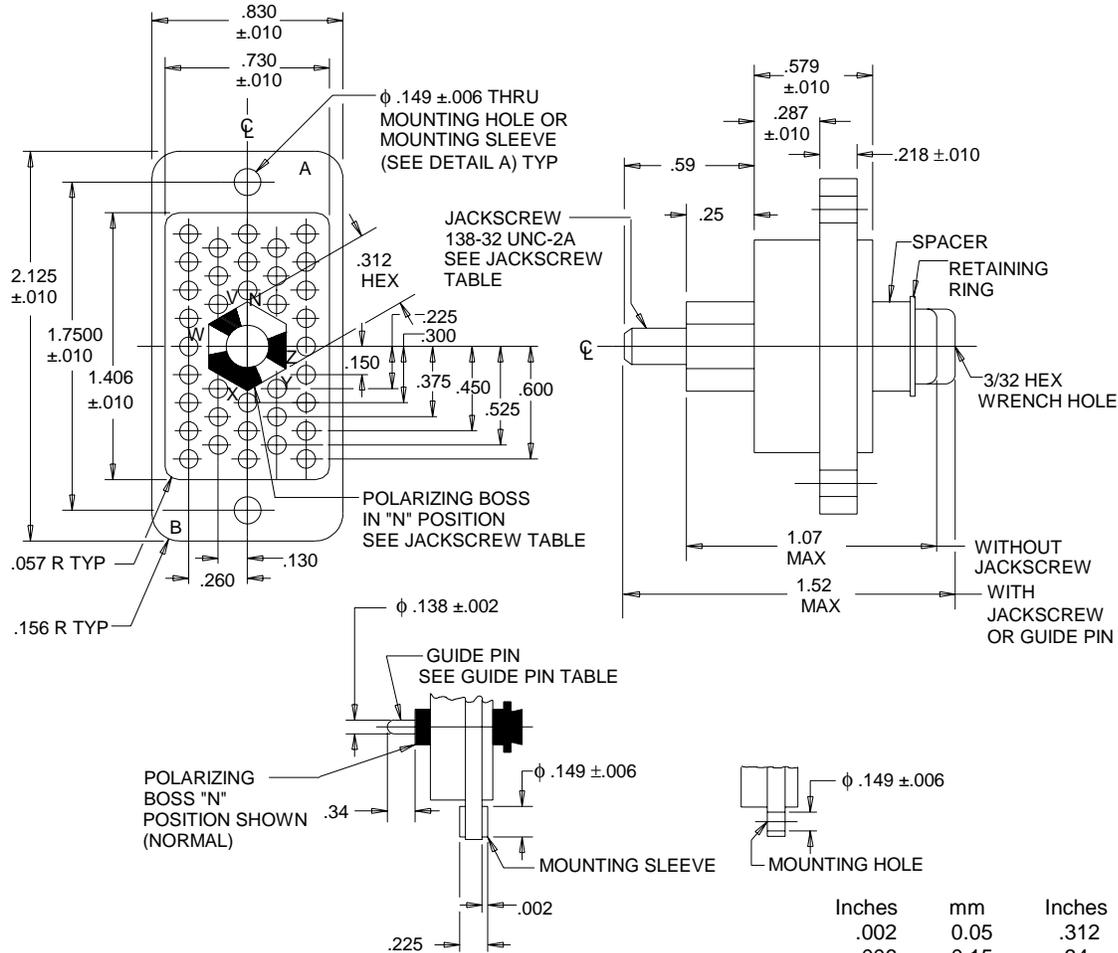
Type (see table I)	Polarization <u>1/</u>	Guide pin
1	N	Supplied with connector
1	V	
1	W	
2	X	
2	Y	
2	Z	
1	N	Not supplied with connector polarizing boss with .144 ± .002 (3.66 ± .051 mm) inch I.D to accept guide pin
1	V	
1	W	
2	X	
2	Y	
2	Z	

1/ Large opening in polarization boss must be adjacent to polarization letter on connector body.

Insert with through mounting hole configuration B.
Insert with mounting sleeve configuration K.

FIGURE 4. Insert configuration with 20 positions - Continued.

MIL-DTL-28748/9G



Insert with through mounting hole configuration C.
 Insert with mounting sleeve configuration L.

DETAIL A

Inches	mm	Inches	mm
.002	0.05	.312	7.92
.006	0.15	.34	8.64
.010	0.25	.375	9.53
.057	1.45	.450	11.43
.130	3.30	.525	13.34
.138	3.51	.579	15.71
.149	3.78	.59	14.99
.150	3.81	.600	15.24
.156	3.96	.730	18.54
.218	5.54	.830	21.08
.225	5.72	1.07	27.18
.25	6.35	1.406	35.71
.260	6.60	1.520	38.61
.287	7.29	1.750	44.45
.300	7.62	2.125	53.98

NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Unless otherwise specified, tolerances are $\pm .02$ (0.51 mm) inch for two place decimals and $\pm .015$ (0.38 mm) inch for three place decimals.
4. Tolerance between any two adjacent contact centers shall be $\pm .004$ (0.10 mm) inch. Tolerance between any two contact centers, other than adjacent contacts, shall be $\pm .006$ (0.15 mm) inch.
5. Contact identification may be located on either side of the contact hold but shall appear on the front and rear face of the contact insert.
6. Dimensions symmetrical about center lines.
7. Flatness, squareness and parallelism shall be within dimensional tolerances.
8. Maximum insertion and withdrawal force (connector assembly) shall be 34 lbf (151 N).
9. Maximum torque required at jackscrew to properly engage or disengage connector shall be 3 in lbf (0.339 N m).
10. Jackscrew wrench size 3/32 hex.

FIGURE 5. Insert configurations Insert with 36 positions.

Polarization positions - Jackscrew.

Type (see table I)	Polarization <u>1/</u>	Jackscrew
1	N	Supplied with connector
1	V	
1	W	
2	X	
2	Y	
2	Z	
1	N	Not supplied with connector polarizing boss threaded internally .138-32 UNC-2B
1	V	
1	W	
2	X	
2	Y	
2	Z	

1/ Large opening in polarization boss must be adjacent to polarization letter on connector body.

Polarization positions - Guide pin.

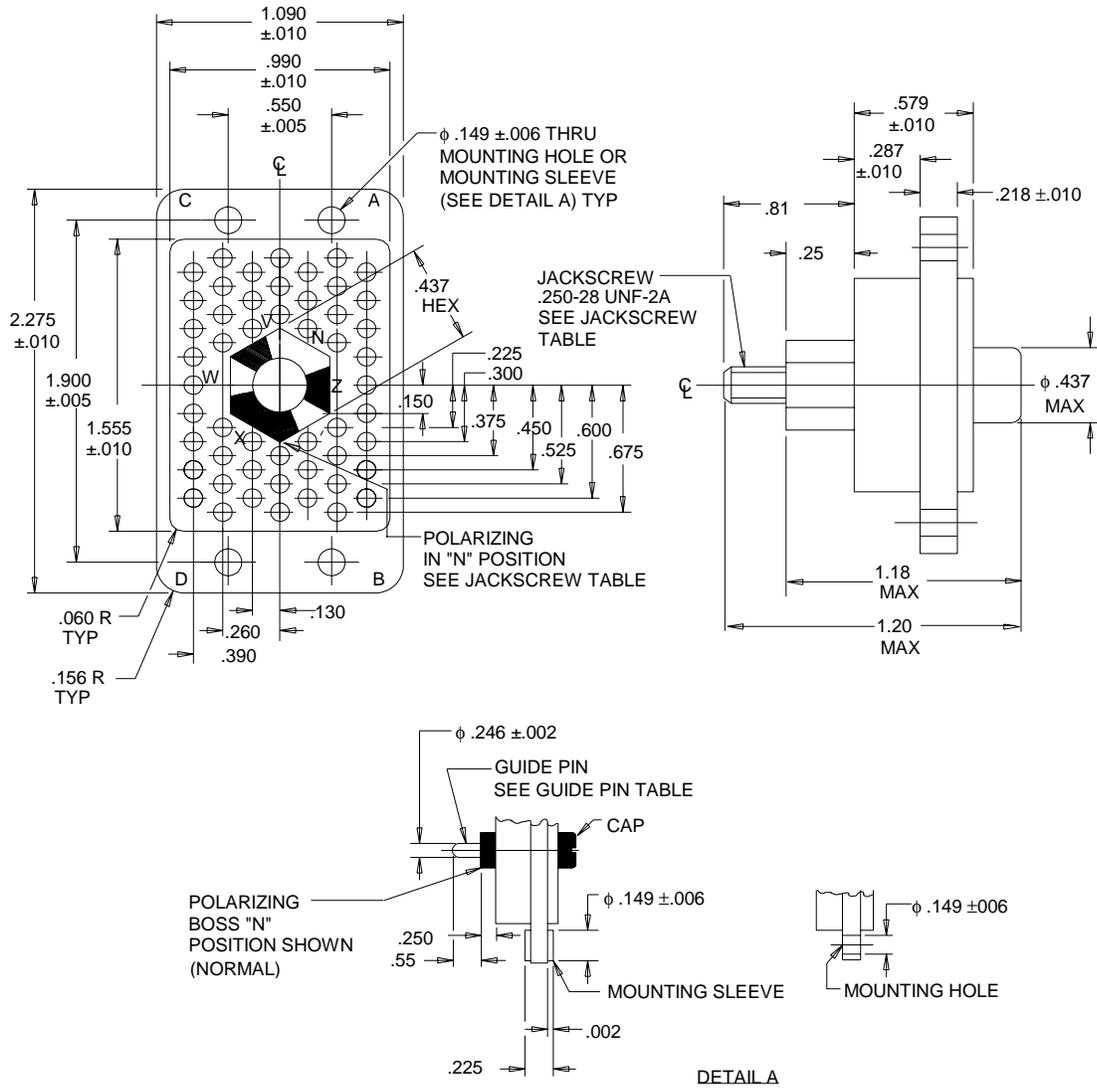
Type (see table I)	Polarization <u>1/</u>	Guide pin
1	N	Supplied with connector
1	V	
1	W	
2	X	
2	Y	
2	Z	
1	N	Not supplied with connector polarizing boss with .144 ± .002 (3.66 ± .051 mm) inch I.D to accept guide pin
1	V	
1	W	
2	X	
2	Y	
2	Z	

1/ Large opening in polarization boss must be adjacent to polarization letter on connector body.

Insert with through mounting hole configuration C.
Insert with mounting sleeve configuration L.

FIGURE 5. Insert configuration Insert with 36 positions - Continued.

MIL-DTL-28748/9G



Inches	mm	Inches	mm	Inches	mm
.002	0.05	.246	6.25	.550	13.97
.005	0.13	.250	6.35	.579	15.71
.006	0.15	.260	6.60	.590	14.99
.010	0.25	.287	7.29	.600	15.24
.060	1.52	.300	7.62	.675	17.15
.130	3.30	.375	9.53	.810	20.57
.149	3.78	.390	9.91	.990	25.15
.150	3.81	.450	11.43	1.05	26.67
.156	3.96	.473	12.01	1.090	27.69
.218	5.54	.525	13.34	1.555	39.50
.225	5.72	.545	13.84	1.900	48.26
				2.275	57.79

Insert with through mounting hole configuration D.
 Insert with mounting sleeve configuration M.

FIGURE 6. Insert configuration with 52 positions.

Polarization positions - Jackscrew.

Type (table I)	Polarization 1/	Jackscrew
1	N	Supplied with connector
1	V	
1	W	
2	X	
2	Y	
2	Z	
1	N	Not supplied with connector polarizing boss threaded internally .250-28 UNF-2B
1	V	
1	W	
2	X	
2	Y	
2	Z	

1/ Large opening in polarization boss must be adjacent to polarization letter on connector body.

Polarization positions - Guide pin.

Type (see table I)	Polarization 1/	Guide pin
1	N	Supplied with connector
1	V	
1	W	
2	X	
2	Y	
2	Z	
1	N	Not supplied with connector polarizing boss with .254 ± .002 (3.66 ± .051 mm) inch I.D to accept guide pin
1	V	
1	W	
2	X	
2	Y	
2	Z	

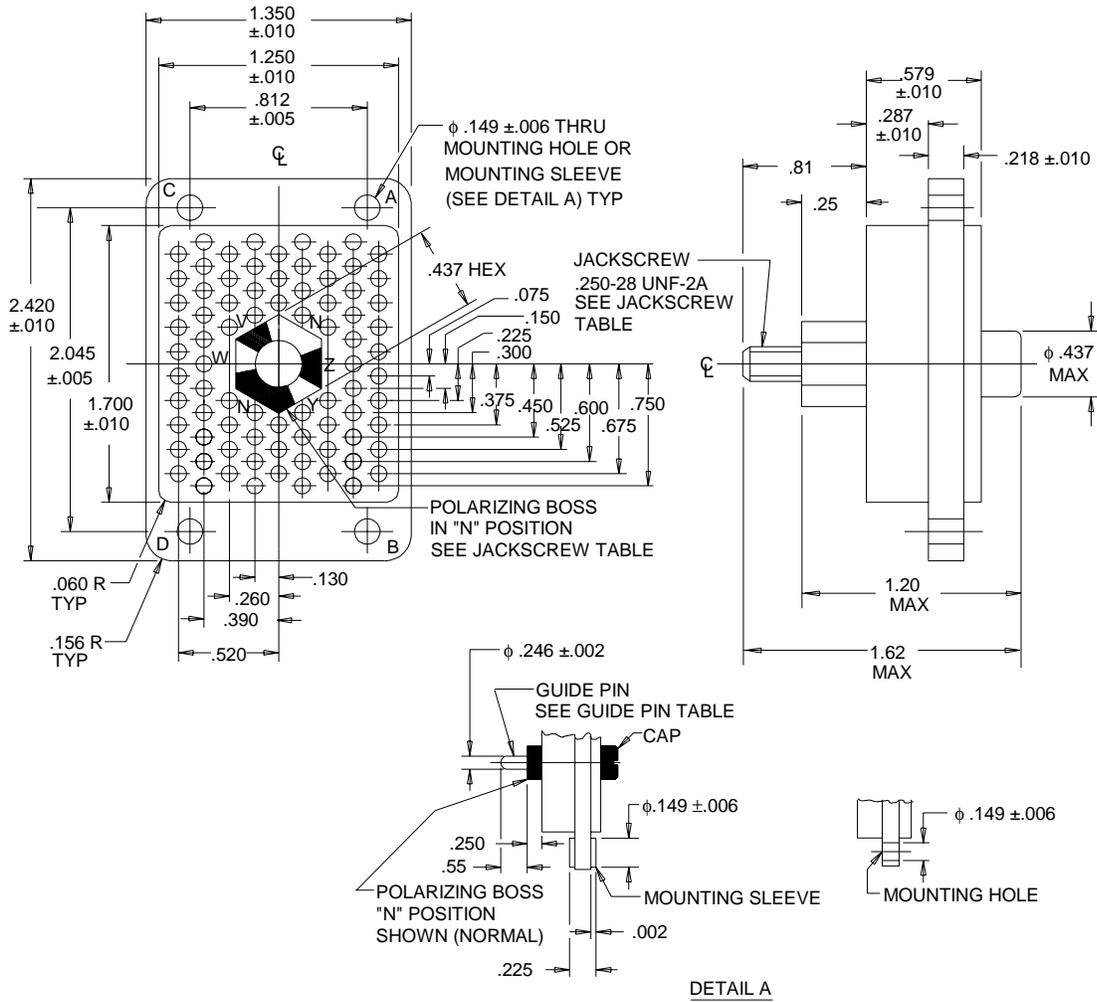
1/ Large opening in polarization boss must be adjacent to polarization letter on connector body.

Insert with through mounting hole configuration D.
Insert with mounting sleeve configuration M.

NOTES:

- Dimensions are in inches.
- Metric equivalents are given for general information only.
- Unless otherwise specified, tolerances are ±.02 (0.51 mm) inch for two place decimals. and ±.015 (0.38 mm) inch for three place decimals.
- Tolerance between any two adjacent contact centers shall be ±.004 (0.10 mm) inch. Tolerance between any two contact centers, other than adjacent contacts, shall be ±.006 (0.15 mm) inch.
- Dimensions symmetrical about centerlines.
- Contact identification may be located on either side of the contact hold but shall appear on the front and rear face of the contact insert.
- Flatness, squareness and parallelism shall be within dimensional tolerances.
- Maximum insertion and withdrawal force shall be 48 lbf (216 N).
- Maximum torque required at jackscrew to properly engage or disengage connector shall be 4 in lbf (0.45 N m).
- Jackscrew wrench size 5/32 hex.

FIGURE 6. Insert configuration Insert with 52 positions - Continued.



Inches	mm	Inches	mm	Inches	mm
.002	0.05	.246	6.25	.579	15.71
.005	0.13	.250	6.35	.590	14.99
.006	0.15	.260	6.60	.600	15.24
.010	0.25	.287	7.29	.675	17.15
.060	1.52	.300	7.62	.750	19.05
.075	1.90	.375	9.53	.810	20.57
.130	3.30	.390	9.91	.812	20.62
.149	3.78	.437	11.10	1.180	29.97
.150	3.81	.450	11.43	1.250	31.75
.156	3.96	.520	13.21	1.350	34.29
.218	5.54	.525	13.34	1.700	43.18
.225	5.72	.545	13.84	2.045	51.94
		.550	13.97	2.420	61.67

Insert with through mounting hole configuration E.
 Insert with mounting sleeve configuration N.

FIGURE 7. Insert configuration with 80 positions.

Polarization positions - Jackscrew.

Type (see table I)	Polarization <u>1</u> /	Jackscrew
1	N	Supplied with connector
1	V	
1	W	
2	X	
2	Y	
2	Z	
1	N	Not supplied with connector polarizing boss threaded internally .250-28 UNF-2B
1	V	
1	W	
2	X	
2	Y	
2	Z	

1/ Large opening in polarization boss must be adjacent to polarization letter on connector body.

TABLE II. Polarization positions.

Type (see table I)	Polarization <u>1</u> /	Guide pin
1	N	Supplied with connector
1	V	
1	W	
2	X	
2	Y	
2	Z	
1	N	Not supplied with connector polarizing boss with .254 ± .002 (3.66 ± .051 mm) inch I.D to accept guide pin
1	V	
1	W	
2	X	
2	Y	
2	Z	

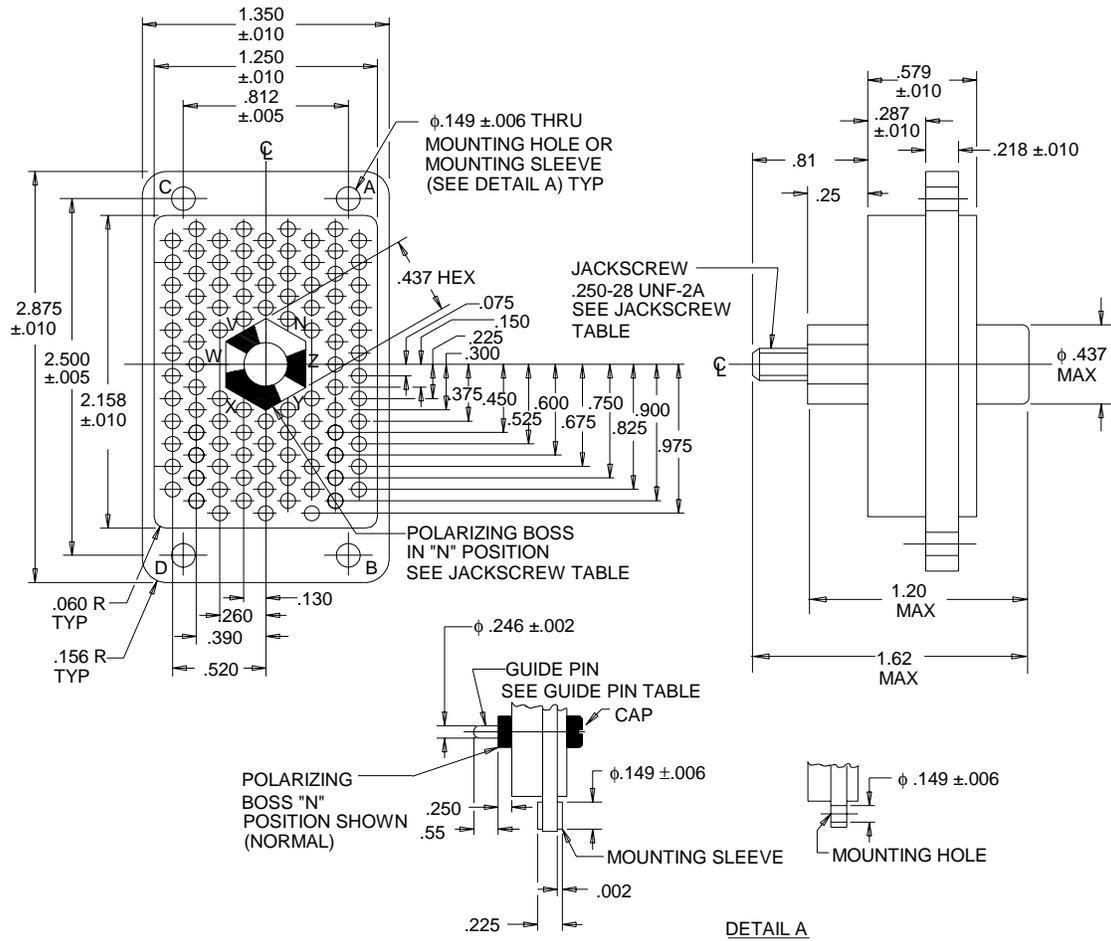
1/ Large opening in polarization boss must be adjacent to polarization letter on connector body.

Insert with through mounting hole configuration E.
Insert with mounting sleeve configuration N.

NOTES:

- Dimensions are in inches.
- Metric equivalents are given for general information only.
- Unless otherwise specified, tolerances are $\pm .02$ (0.51 mm) inch for two place decimals. and $\pm .015$ (0.38 mm) inch for three place decimals.
- Tolerance between any two adjacent contact centers shall be $\pm .004$ (0.10 mm) inch. Tolerance between any two contact centers, other than adjacent contacts, shall be $\pm .006$ (0.15 mm) inch.
- Dimensions symmetrical about centerlines.
- Contact identification may be located on either side of the contact hold but shall appear on the front and rear face of the contact insert.
- Flatness, squareness, and parallelism shall be within dimensional tolerances.
- Maximum insertion and withdrawal force (connector assembly) shall be 75 lbf (334 N).
- Maximum torque required at jackscrew to properly engage or disengage connector shall be 6 in lbf (0.68 N m)
- Jackscrew wrench size 5/32 hex.

FIGURE 7. Insert configuration Insert with 80 positions - Continued.



Inches	mm	Inches	mm	Inches	mm
.002	0.05	.250	6.35	.675	17.15
.005	0.13	.260	6.60	.750	19.05
.006	0.15	.287	7.29	.810	20.57
.010	0.25	.300	7.62	.812	20.63
.060	1.52	.375	9.53	.825	20.96
.130	3.30	.390	9.91	.900	22.86
.149	3.78	.437	11.10	1.180	29.97
.150	3.81	.450	11.43	1.250	31.75
.156	3.96	.520	13.21	1.350	34.29
.218	5.54	.525	13.34	1.438	36.53
.225	5.72	.550	13.97	2.158	54.81
.246	6.25	.579	15.71	2.500	63.50
		.600	15.24	2.875	73.03

Insert with through mounting hole configuration F.
 Insert with mounting sleeve configuration P.

FIGURE 8. Insert configuration with 104 positions.

Polarization positions - Jackscrew.

Type (see table I)	Polarization <u>1/</u>	Jackscrew
1	N	Supplied with connector
1	V	
1	W	
2	X	
2	Y	
2	Z	
1	N	Not supplied with connector polarizing boss threaded internally .250-28 UNF-2B
1	V	
1	W	
2	X	
2	Y	
2	Z	

1/ Large opening in polarization boss must be adjacent to polarization letter on connector body.

Polarization positions - Guidepin.

Type (see table I)	Polarization <u>1/</u>	Guide pin
1	N	Supplied with connector
1	V	
1	W	
2	X	
2	Y	
2	Z	
1	N	Not supplied with connector polarizing boss with .254 ± .002 (3.66 ± .051 mm) inch I.D to accept guide pin
1	V	
1	W	
2	X	
2	Y	
2	Z	

1/ Large opening in polarization boss must be adjacent to polarization letter on connector body.

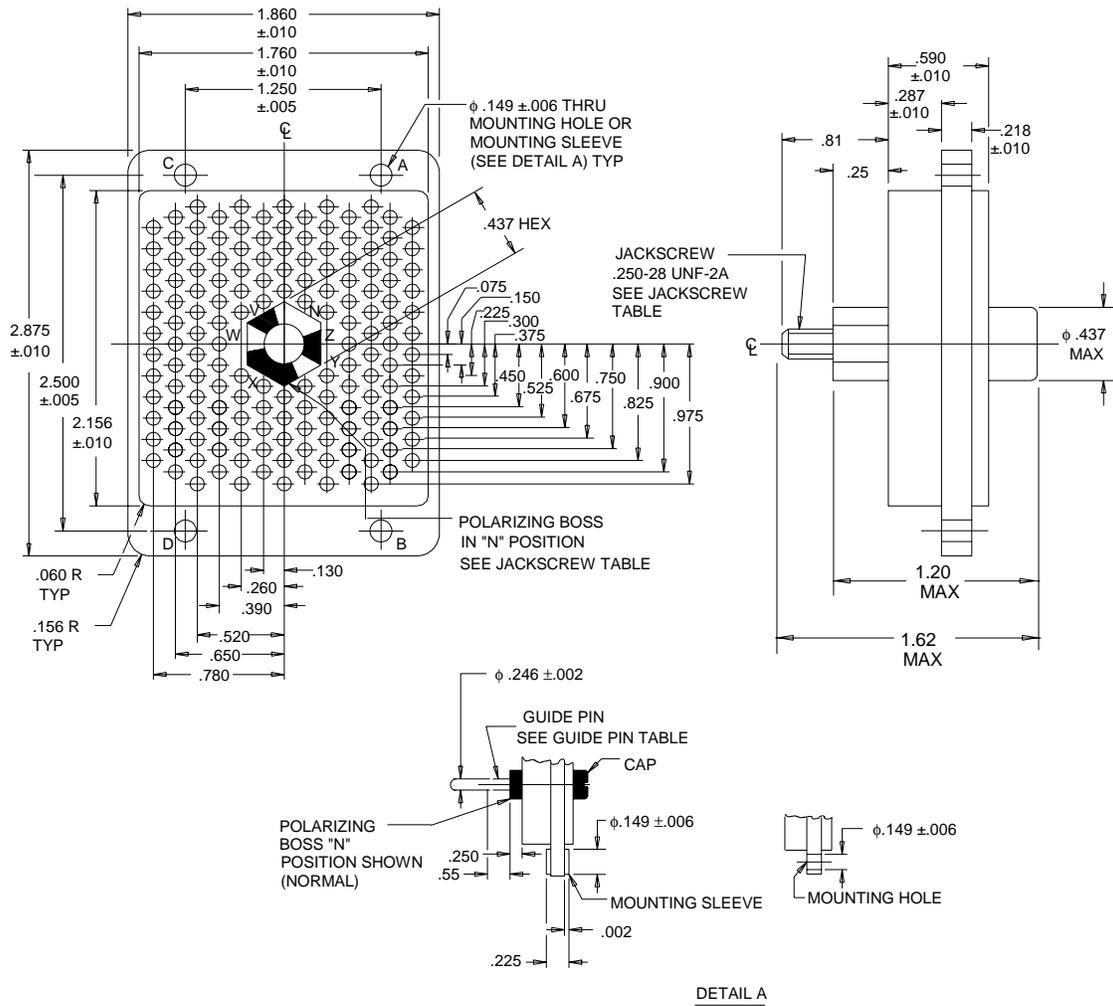
Insert with through mounting hole configuration F.
Insert with mounting sleeve configuration P.

NOTES:

- Dimensions are in inches.
- Metric equivalents are given for general information only.
- Unless otherwise specified, tolerances are $\pm .02$ (0.51 mm) inch for two place decimals and $\pm .015$ (0.38 mm) inch for three place decimals.
- Tolerance between any two adjacent contact centers shall be $\pm .004$ (0.10 mm) inch. Tolerance between any two contact centers, other than adjacent contacts, shall be $\pm .006$ (0.15 mm) inch.
- Dimensions symmetrical about centerlines.
- Contact identification may be located on either side of the contact hold but shall appear on the front and rear face of the contact insert.
- Flatness, squareness, and parallelism shall be within dimensional tolerances.
- Maximum insertion and withdrawal force (connector assembly) shall be 100 lbf (445 N).
- Maximum torque required at jackscrew to properly engage or disengage connector shall be 7 in lbf (0.79 N m)
- Jackscrew wrench size 5/32 hex.

FIGURE 8. Insert configuration with 104 positions - Continued.

MIL-DTL-28748/9G



Inches	mm	Inches	mm	Inches	mm
.002	0.05	.260	6.60	.750	19.05
.005	0.13	.287	7.29	.780	19.81
.006	0.15	.300	7.62	.810	20.57
.010	0.25	.375	9.53	.825	20.96
.060	1.52	.390	9.91	.900	22.86
.075	1.91	.437	11.10	.930	23.62
.130	3.30	.450	11.43	.975	24.77
.149	3.78	.520	13.21	1.180	29.97
.150	3.81	.525	13.34	1.250	31.75
.156	3.96	.550	13.97	1.438	36.53
.218	5.54	.579	14.71	1.760	44.70
.225	5.72	.600	15.24	1.860	47.24
.246	6.25	.650	16.51	2.158	54.81
.250	6.35	.675	17.15	2.500	63.50
				2.875	73.03

Insert with through mounting hole configuration G.
 Insert with mounting sleeve configuration R.

FIGURE 9. Insert configuration with 158 positions.

Polarization positions - Jackscrew.

Type (see table I)	Polarization <u>1</u> /	Jackscrew
1	N	Supplied with connector
1	V	
1	W	
2	X	
2	Y	
2	Z	
1	N	Not supplied with connector polarizing boss threaded internally .250-28 UNF-2B
1	V	
1	W	
2	X	
2	Y	
2	Z	

1/ Large opening in polarization boss must be adjacent to polarization letter on connector body.

Polarization positions - Guide pin.

Type (see table I)	Polarization <u>1</u> /	Guide pin
1	N	Supplied with connector
1	V	
1	W	
2	X	
2	Y	
2	Z	
1	N	Not supplied with connector polarizing boss with .254 ± .002 (3.66 ± .051 mm) inch I.D to accept guide pin
1	V	
1	W	
2	X	
2	Y	
2	Z	

1/ Large opening in polarization boss must be adjacent to polarization letter on connector body.

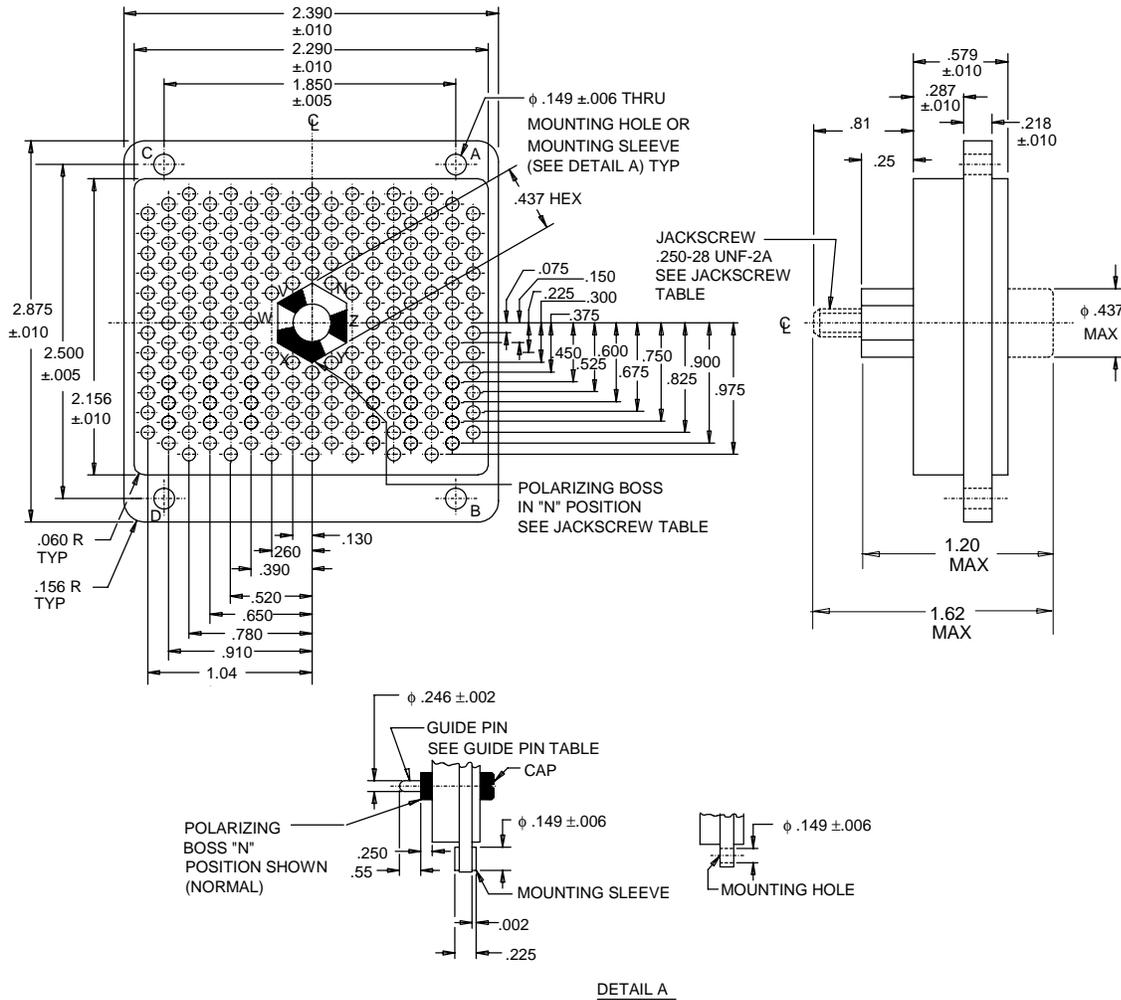
Insert with through mounting hole configuration G.
Insert with mounting sleeve configuration R.

NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Unless otherwise specified, tolerances are ±.02 (0.51 mm) inch for two place decimals. and ±.015 (0.38 mm) inch for three place decimals.
4. Tolerance between any two adjacent contact centers shall be ±.004 (0.10 mm) inch. Tolerance between any two contact centers, other than adjacent contacts, shall be ±.006 (0.15 mm) inch.
5. Dimensions symmetrical about centerlines.
6. Contact identification may be located on either side of the contact hold but shall appear on the front and rear face of the contact insert.
7. Flatness, squareness, and parallelism shall be within dimensional tolerances.
8. Maximum insertion and withdrawal force (connector assembly) shall be 148 lbf (658 N).
9. Maximum torque required at jackscrew to properly engage or disengage connector shall be 10 in lbf (1.13 N m).
10. Jackscrew wrench size 5/32 hex.

FIGURE 9. Insert configuration with 158 positions - Continued.

MIL-DTL-28748/9G



DETAIL A

Inches	mm	Inches	mm	Inches	mm
.002	0.05	.287	7.29	.810	20.57
.005	0.13	.300	7.62	.825	20.96
.006	0.15	.375	9.53	.900	22.86
.010	0.25	.390	9.91	.910	23.11
.060	1.52	.437	11.10	.975	24.77
.075	1.91	.450	11.43	1.040	26.42
.130	3.30	.520	13.21	1.05	26.67
.149	3.78	.525	13.34	1.195	30.35
.150	3.81	.550	13.97	1.438	36.53
.156	3.96	.579	14.71	1.850	46.99
.218	5.54	.600	15.24	2.156	54.76
.225	5.72	.650	16.51	2.290	58.17
.246	6.25	.675	17.15	2.390	60.71
.250	6.35	.750	19.05	2.500	63.50
.260	6.60	.780	19.81	2.875	73.03

Insert with through mounting hole configuration H.
 Insert with mounting sleeve configuration S.

FIGURE 10. Insert configuration with 212 positions.

Polarization positions - Jackscrew.

Type (see table I)	Polarization 1/	Jackscrew
1	N	Supplied with connector
1	V	
1	W	
2	X	
2	Y	
2	Z	
1	N	Not supplied with connector polarizing boss threaded internally .250-28 UNF-2B
1	V	
1	W	
2	X	
2	Y	
2	Z	

1/ Large opening in polarization boss must be adjacent to polarization letter on connector body.

Polarization positions - Guide pin.

Type (see table I)	Polarization 1/	Guide pin
1	N	Supplied with connector
1	V	
1	W	
2	X	
2	Y	
2	Z	
1	N	Not supplied with connector polarizing boss with .254 ± .002 (3.66 ± .051 mm) inch I.D to accept guide pin
1	V	
1	W	
2	X	
2	Y	
2	Z	

1/ Large opening in polarization boss must be adjacent to polarization letter on connector body.

Insert with through mounting hole configuration H.
Insert with mounting sleeve configuration S.

NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Unless otherwise specified, tolerances are ±.02 (0.51 mm) inch for two place decimals. and ±.015 (0.38 mm) inch for three place decimals.
4. Tolerance between any two adjacent contact centers shall be ±.004 (0.10 mm) inch. Tolerance between any two contact centers, other than adjacent contacts, shall be ±.006 (0.15 mm) inch.
5. Dimensions symmetrical about centerlines.
6. Contact identification may be located on either side of the contact hold but shall appear on the front and rear face of the contact insert.
7. Flatness, squareness, and parallelism shall be within dimensional tolerances.
8. Maximum insertion and withdrawal force (connector assembly) shall be 198 lbf (881 N).
9. Maximum torque required at jackscrew to properly engage or disengage connector shall be 13 in lbf (1.47 N m)
10. Jackscrew wrench size 5/32 hex.

FIGURE 10. Insert configuration with 212 positions - Continued.

REQUIREMENTS:

Dimensions and configuration: See figures 1 through 10 for inserts and table II for contact sizes.

Insert material shall be in accordance with MIL-DTL-28748.

Contact hole details shall be in accordance with MIL-DTL-28748.

Mating connectors: MIL-DTL-28748/10.

Part or Identifying Number (PIN) as shown in the following example:

EXAMPLE of PIN:

<u>M28748/9</u>	<u>A</u>	<u>0</u>	<u>A</u>	<u>L</u>	<u>1A</u>
Basic Number of specification sheet	Insert	Shield and shield clamp location or retaining plate	Shell type (polarization)	Jackscrews or guidepins	Contacts (see table II)

PIN code:

<u>Insert with through mounting hole</u>	<u>Number of contacts</u>	<u>Shield and shield clamp location or retaining plate</u>	<u>Shell type (polarization) see table I 3/ 4/ 5/ 6/</u>
A	10	0 - None included ^{1/}	A - 1 N
B	20	1 - Insert identifier	B - 1 V
C	36	for piece parts ^{2/}	C - 1 W
D	52		D - 1 X
E	80		E - 1 Y
F	104		F - 1 Z
G	158		N - 2 N
H	212		V - 2 V
			W - 2 W
			X - 2 X
			Y - 2 Y
			Z - 2 Z
			G - 3 N
			H - 3 V
			J - 3 W
			K - 3 X
			L - 3 Y
			M - 3 Z
			P - 4 N
			Q - 4 V
			R - 4 W
			S - 4 X
			T - 4 Y
			U - 4 Z
			0 - None included ^{1/}

	<u>Jackscrews or guidepins</u>
	L - Long jackscrew
	G - Guidepin
	O - Boss for jackscrew
	B - Boss for guidepin
	N - None included

^{1/} The number zero (0) is used to indicate which parts are not included.
^{2/} No insert included, use the number 1 in conjunction with insert designator to order jackscrew, guidepins, or polarization boss piece parts.
^{3/} A through F are for use with jackscrews, supplied with connector.
^{4/} N through Z are for use with the boss for jackscrews, not supplied with connector.
^{5/} G through M are for use with guidepins, supplied with connector.
^{6/} P through U are for use with the boss for guidepins, not supplied with connector.

TABLE II. Contact size percent.

Contact designator	Size 16 - 16	Size 16 - 20	Size 20 - 20
	M39029/36-278 <u>1/</u> (percent)	M39029/36-277 <u>1/</u> (percent)	M39029/79-436 <u>2/</u> M39029/79-437 <u>2/</u> (percent)
1A	100	0	0
1B	90	0	10
1C	80	0	20
1D	70	0	30
1E	60	0	40
1F	50	0	50
1G	40	0	60
1H	30	0	70
1J	20	0	80
1K	10	0	90
1L	0	0	100
1Z	0	0	0
2A	0	100	0
2B	0	90	10
2C	0	80	20
2D	0	70	30
2E	0	60	40
2F	0	50	50
2G	0	40	60
2H	0	30	70
2J	0	20	80
2K	0	10	90

1/ Basic crimp tool: M22520/1-01
 Positioner: M22520/1-03(A).
 Installing tool: M81969/18-01.
 Removal tool: M81969/20-01.

2/ Basic crimp tool: TMDC16CX4 (Delphi Connection Systems).
 Installing tool: M81969/17-04.
 Removal tool: M81969/19-08.

Superseding data: See table III.

TABLE III. Superseded MS sheets to M28748 designator.

MS sheet	Number of contacts	M28748/9 designator 1/ 2/
Jackscrew		
MS18155-1(N, V, W)	10	M28748/9(A or J)0(A, B, or C)L1Z
MS18155-1(X, Y, Z)	10	M28748/9(A or J)0(D, E, or F)L1Z
MS18157-1(N, V, W)	20	M28748/9(B or K)0(A, B, or C)L1Z
MS18157-1(X, Y, Z)	20	M28748/9(B or K)0(D, E, or F)L1Z
MS18159-1(N, V, W)	36	M28748/9(C or L)0(A, B, or C)L1Z
MS18159-1(X, Y, Z)	36	M28748/9(C or L)0(D, E, or F)L1Z
MS18161-1(N, V, W)	52	M28748/9(D or M)0(A, B, or C)L1Z
MS18161-1(X, Y, Z)	52	M28748/9(D or M)0(D, E, or F)L1Z
MS18163-1(N, V, W)	80	M28748/9(E or N)0(A, B, or C)L1Z
MS18163-1(X, Y, Z)	80	M28748/9(E or N)0(D, E, or F)L1Z
MS17778-1(N, V, W)	104	M28748/9(F or P)0(A, B, or C)L1Z
MS17778-1(X, Y, Z)	104	M28748/9(F or P)0(D, E, or F)L1Z
MS18165-1(N, V, W)	158	M28748/9(G or R)0(A, B, or C)L1Z
MS18165-1(X, Y, Z)	158	M28748/9(G or R)0(D, E, or F)L1Z
MS18157-1(N, V, W)	212	M28748/9(H or S)0(A, B, or C)L1Z
MS18157-1(X, Y, Z)	212	M28748/9(H or S)0(D, E, or F)L1Z
MS sheet jacksocket		
	Number of contacts	Jacksocket
MS18155-2(N, V, W)	10	M28748/9(A or J)0(A, B, or C)O1Z
MS18155-2(X, Y, Z)	10	M28748/9(A or J)0(D, E, or F)O1Z
MS18157-2(N, V, W)	20	M28748/9(B or K)0(A, B, or C)O1Z
MS18157-2(X, Y, Z)	20	M28748/9(B or K)0(D, E, or F)O1Z
MS18159-2(N, V, W)	36	M28748/9(C or L)0(A, B, or C)O1Z
MS18159-2(X, Y, Z)	36	M28748/9(C or L)0(D, E, or F)O1Z
MS18161-2(N, V, W)	52	M28748/9(D or M)0(A, B, or C)O1Z
MS18161-2(X, Y, Z)	52	M28748/9(D or M)0(D, E, or F)O1Z
MS18163-2(N, V, W)	80	M28748/9(E or N)0(A, B, or C)O1Z
MS18163-2(X, Y, Z)	80	M28748/9(E or N)0(D, E, or F)O1Z
MS17778-2(N, V, W)	104	M28748/9(F or P)0(A, B, or C)O1Z
MS17778-2(X, Y, Z)	104	M28748/9(F or P)0(D, E, or F)O1Z
MS18165-2(N, V, W)	158	M28748/9(G or R)0(A, B, or C)O1Z
MS18165-2(X, Y, Z)	158	M28748/9(G or R)0(D, E, or F)O1Z
MS18167-2(N, V, W)	212	M28748/9(H or S)0(A, B, or C)O1Z
MS18167-2(X, Y, Z)	212	M28748/9(H or S)0(D, E, or F)O1Z
MS sheet guide pin		
	Number of contacts	Guide pin
MS18155-3(N, V, W)	10	M28748/9(A or J)0(A, B, or C)G1Z
MS18155-3(X, Y, Z)	10	M28748/9(A or J)0(D, E, or F)G1Z
MS18157-3(N, V, W)	20	M28748/9(B or K)0(A, B, or C)G1Z
MS18157-3(X, Y, Z)	20	M28748/9(B or K)0(D, E, or F)G1Z
MS18159-3(N, V, W)	36	M28748/9(C or L)0(A, B, or C)G1Z
MS18159-3(X, Y, Z)	36	M28748/9(C or L)0(D, E, or F)G1Z
MS18161-3(N, V, W)	52	M28748/9(D or M)0(A, B, or C)G1Z
MS18161-3(X, Y, Z)	52	M28748/9(D or M)0(D, E, or F)G1Z
MS18163-3(N, V, W)	80	M28748/9(E or N)0(A, B, or C)G1Z
MS18163-3(X, Y, Z)	80	M28748/9(E or N)0(D, E, or F)G1Z
MS17778-3(N, V, W)	104	M28748/9(F or P)0(A, B, or C)G1Z
MS17778-3(X, Y, Z)	104	M28748/9(F or P)0(D, E, or F)G1Z
MS18165-3(N, V, W)	158	M28748/9(G or R)0(A, B, or C)G1Z
MS18165-3(X, Y, Z)	158	M28748/9(G or R)0(D, E, or F)G1Z
MS18167-3(N, V, W)	212	M28748/9(H or S)0(A, B, or C)G1Z
MS18167-3(X, Y, Z)	212	M28748/9(H or S)0(D, E, or F)G1Z

See notes at end of table.

TABLE III. Superseded MS sheets to M28748 designator - Continued

MS sheet	Number of contacts	M28748/9 designator <u>1/</u> <u>2/</u>
Guide socket		Guide Socket
MS18155-4(N, V, W)	10	M28748/9(A or J)0(A, B, or C)B1Z
MS18155-4(X, Y, Z)	10	M28748/9(A or J)0(D, E, or F)B1Z
MS18157-4(N, V, W)	20	M28748/9(B or K)0(A, B, or C)B1Z
MS18157-4(X, Y, Z)	20	M28748/9(B or K)0(D, E, or F)B1Z
MS18159-4(N, V, W)	36	M28748/9(C or L)0(A, B, or C)B1Z
MS18159-4(X, Y, Z)	36	M28748/9(C or L)0(D, E, or F)B1Z
MS18161-4(N, V, W)	52	M28748/9(D or M)0(A, B, or C)B1Z
MS18161-4(X, Y, Z)	52	M28748/9(D or M)0(D, E, or F)B1Z
MS18163-4(N, V, W)	80	M28748/9(E or N)0(A, B, or C)B1Z
MS18163-4(X, Y, Z)	80	M28748/9(E or N) 0(D, E, or F)B1Z
MS17778-4(N, V, W)	104	M28748/9(F or P)0(A, B, or C)B1Z
MS17778-4(X, Y, Z)	104	M28748/9(F or P)0(D, E, or F)B1Z
MS18165-4(N, V, W)	158	M28748/9(G or R)0(A, B, or C)B1Z
MS18165-4(X, Y, Z)	158	M28748/9(G or R)0(D, E, or F)B1Z
MS18167-4(N, V, W)	212	M28748/9(H or S)0(A, B, or C)B1Z
MS18167-4(X, Y, Z)	212	M28748/9(H or S)0(D, E, or F)B1Z

1/ Reference PIN code for insert and polarization options.

2/ PIN constructed represent complete connectors without contacts.

CONCLUDING MATERIAL

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

Preparing activity:
 DLA - CC
 (Project 5935-4515-01)

Review activities:
 Army - AR, AT, AV, CR4, MI
 Navy - AS, MC, OS, SH
 Air Force - 99