

INCH-POUND

MIL-DTL-32139/13
w/AMENDMENT 1
19 March 2025
SUPERSEDING
MIL-DTL-32139/13
1 November 2021

DETAIL SPECIFICATION SHEET

CONNECTORS, ELECTRICAL, RECTANGULAR, NANOMINIATURE, DUAL ROW, PLUG, POLARIZED SHELL, PIN CONTACTS, HORIZONTAL PCB THROUGH-HOLE TYPE

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-32139.

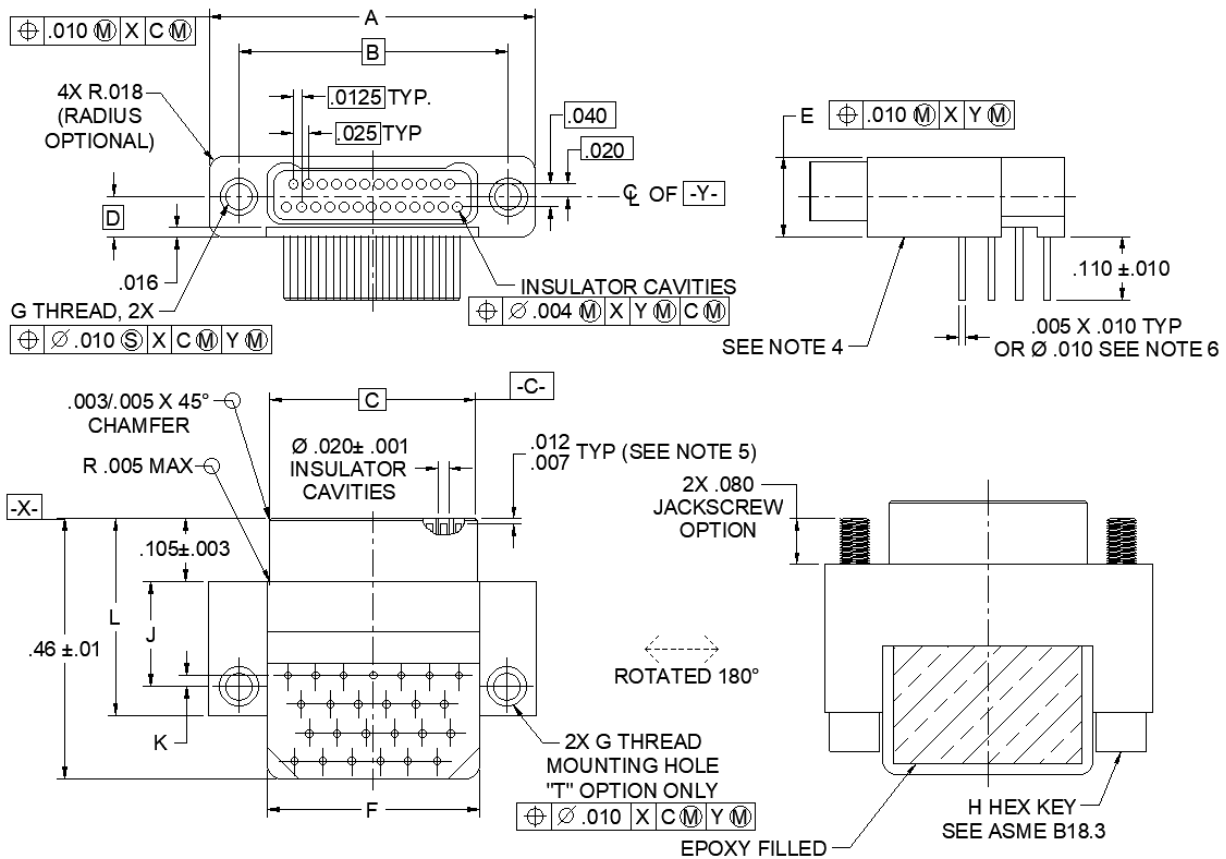


FIGURE 1. Nano Connector Dimensions and Configurations.



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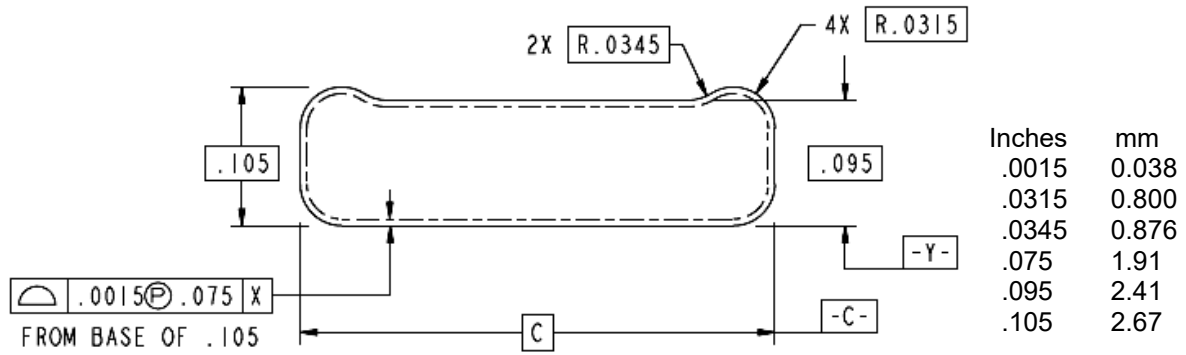
Insert Arrangement	A	B BSC	C BSC	D BSC	E	F	G THD See Note 7	H HEX KEY	J See Note 8	K See Note 8	L
9	.375 (9.53)	.270 (6.86)	.160 (4.06)	.0725 (1.84)	.140 (3.56)	.170 (4.32)	#0-80 UNF	.050	.187 (4.75)	.018 (0.46)	.344 (8.74)
15	.450 (11.43)	.345 (8.76)	.235 (5.97)	.0725 (1.84)	.140 (3.56)	.245 (6.22)	#0-80 UNF	.050	.187 (4.75)	.018 (0.46)	.344 (8.74)
21	.525 (13.34)	.420 (10.67)	.310 (7.87)	.0725 (1.84)	.140 (3.56)	.320 (8.13)	#0-80 UNF	.050	.187 (4.75)	.018 (0.46)	.344 (8.74)
25	.575 (14.61)	.470 (11.94)	.360 (9.14)	.0725 (1.84)	.140 (3.56)	.370 (9.40)	#0-80 UNF	.050	.187 (4.75)	.018 (0.46)	.344 (8.74)
31	.650 (16.51)	.545 (13.84)	.435 (11.05)	.0725 (1.84)	.140 (3.56)	.445 (11.30)	#0-80 UNF	.050	.187 (4.75)	.018 (0.46)	.344 (8.74)
37	.725 (18.42)	.620 (15.75)	.510 (12.95)	.0725 (1.84)	.140 (3.56)	.520 (13.21)	#0-80 UNF	.050	.187 (4.75)	.018 (0.46)	.344 (8.74)
51	.900 (22.86)	.795 (20.19)	.685 (17.40)	.0725 (1.84)	.140 (3.56)	.695 (17.65)	#0-80 UNF	.050	.187 (4.75)	.018 (0.46)	.344 (8.74)
65	1.075 (27.31)	.970 (24.64)	.860 (21.84)	.0725 (1.84)	.140 (3.56)	.870 (22.10)	#0-80 UNF	.050	.187 (4.75)	.018 (0.46)	.344 (8.74)
69	1.125 (28.58)	1.020 (25.91)	.910 (23.11)	.0725 (1.84)	.140 (3.56)	.920 (23.37)	#0-80 UNF	.050	.187 (4.75)	.018 (0.46)	.344 (8.74)
85	1.377 (34.98)	1.246 (31.65)	1.110 (28.19)	.085 (2.16)	.165 (4.19)	1.120 (28.45)	#2-56 UNC	1/16	.244 (6.20)	.075 (1.91)	.410 (10.41)

NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for information only.
3. Unless otherwise specified tolerances are $\pm .005$ inch (0.13 mm) angular tolerance $\pm 2^\circ$.
4. Surface from which the lead length is measured.
5. Shell shall be flush to insulator within $\pm .004$ inch (0.10 mm).
6. Tail finish is tin/lead or gold.
7. Male Threads shall be class 2A, Female threads shall be class 2B.
8. Dimensions J and K do not apply to connectors with jackscrew hardware option "S".

Inches	mm	Inches	mm	Inches	mm
.001	0.03	.012	0.30	.040	1.02
.003	0.08	.0125	0.318	.080	2.03
.004	0.10	.016	0.41	.105	2.67
.005	0.13	.018	0.46	.110	2.79
.007	0.18	.020	0.51	.454	11.53
.010	0.25	.025	0.64		

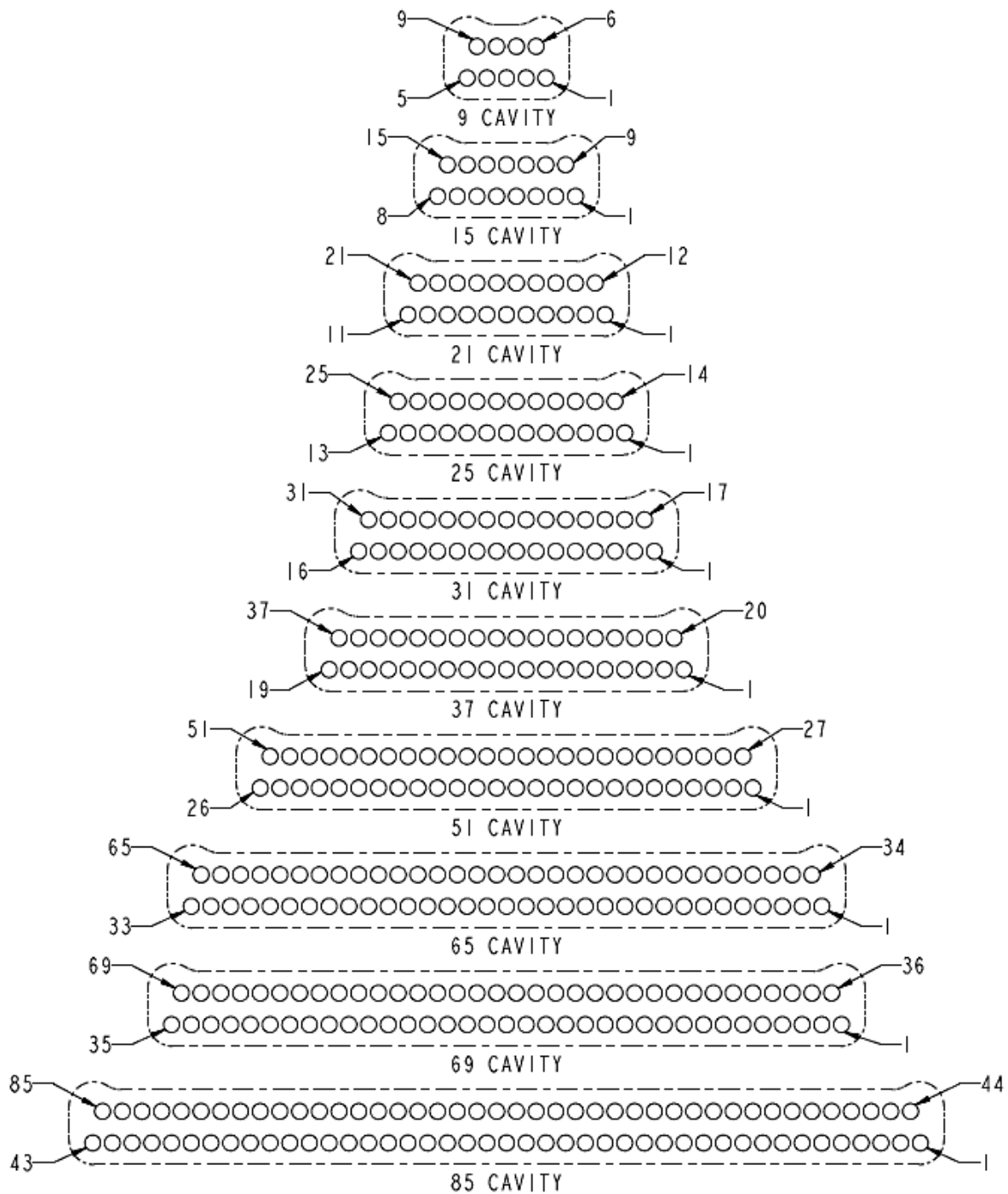
FIGURE 1. Nano Connector Dimensions and Configurations - Continued.



NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for information only.
3. Unless otherwise specified tolerances are $\pm .005$ inch (0.13 mm).

FIGURE 2. Nano Connector Interface.



NOTES:

1. Engaging face of insert shown.
2. Cavity identification numbers are for reference only and do not appear on the part.

FIGURE 3. Nano Connector Insert Arrangement.

VERTICAL PCB PLUG (PIN) CONNECTOR LAYOUT

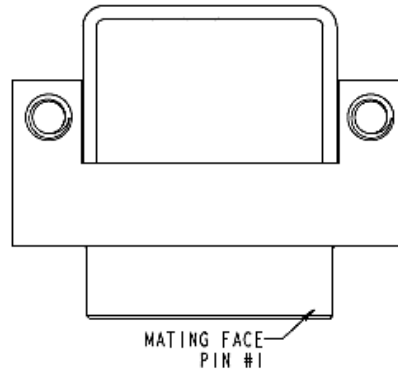


FIGURE 4. Connector Orientation for PCB Hole Patterns.

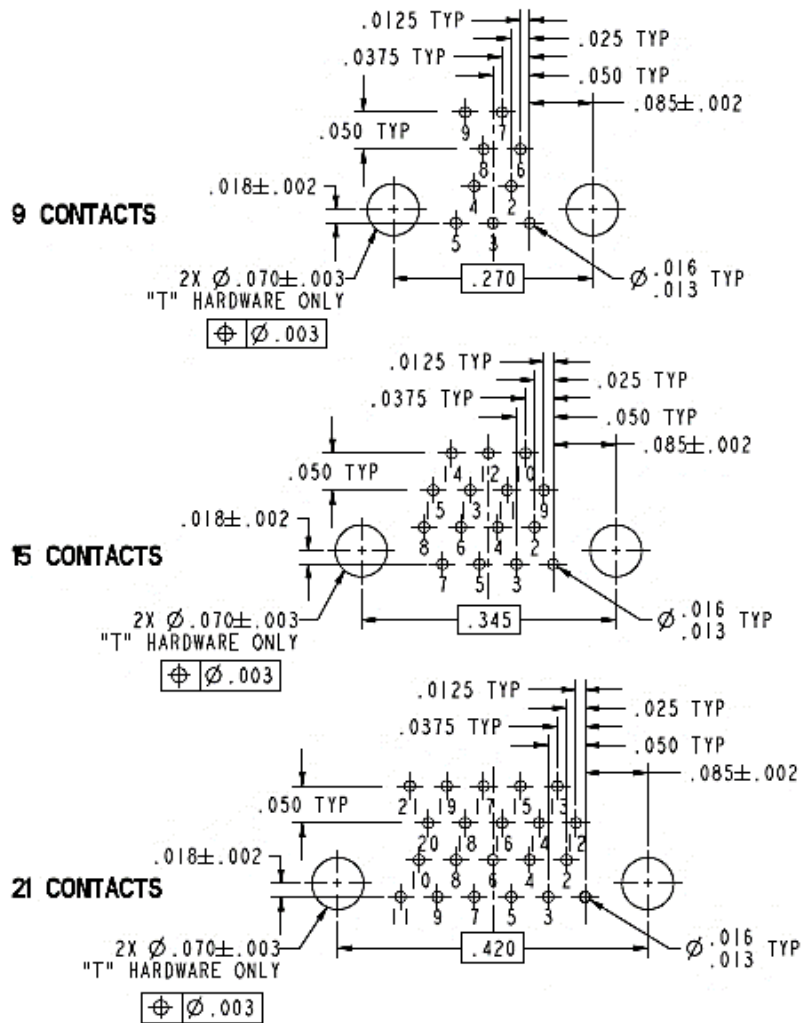


FIGURE 5. PCB Hole Patterns.

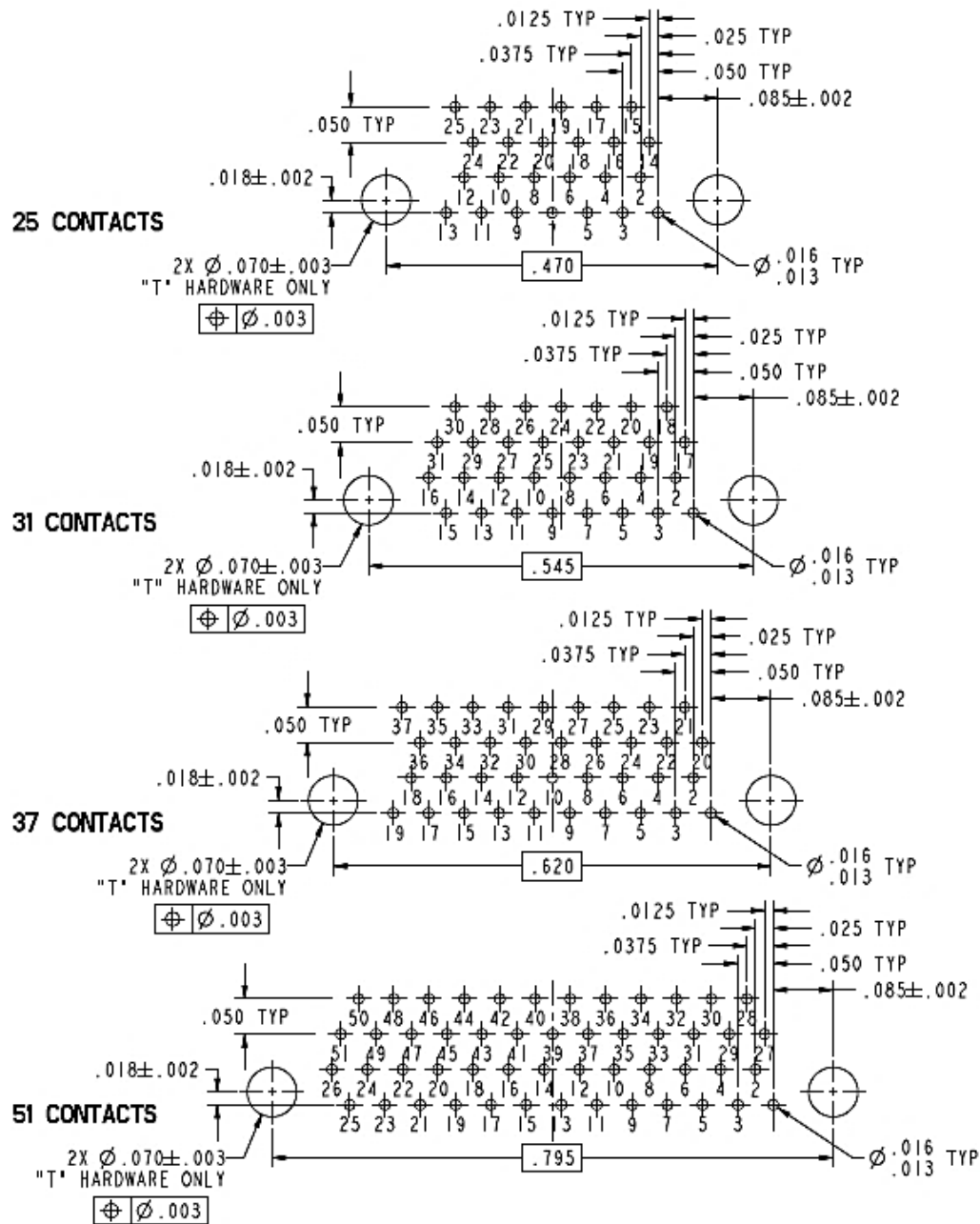
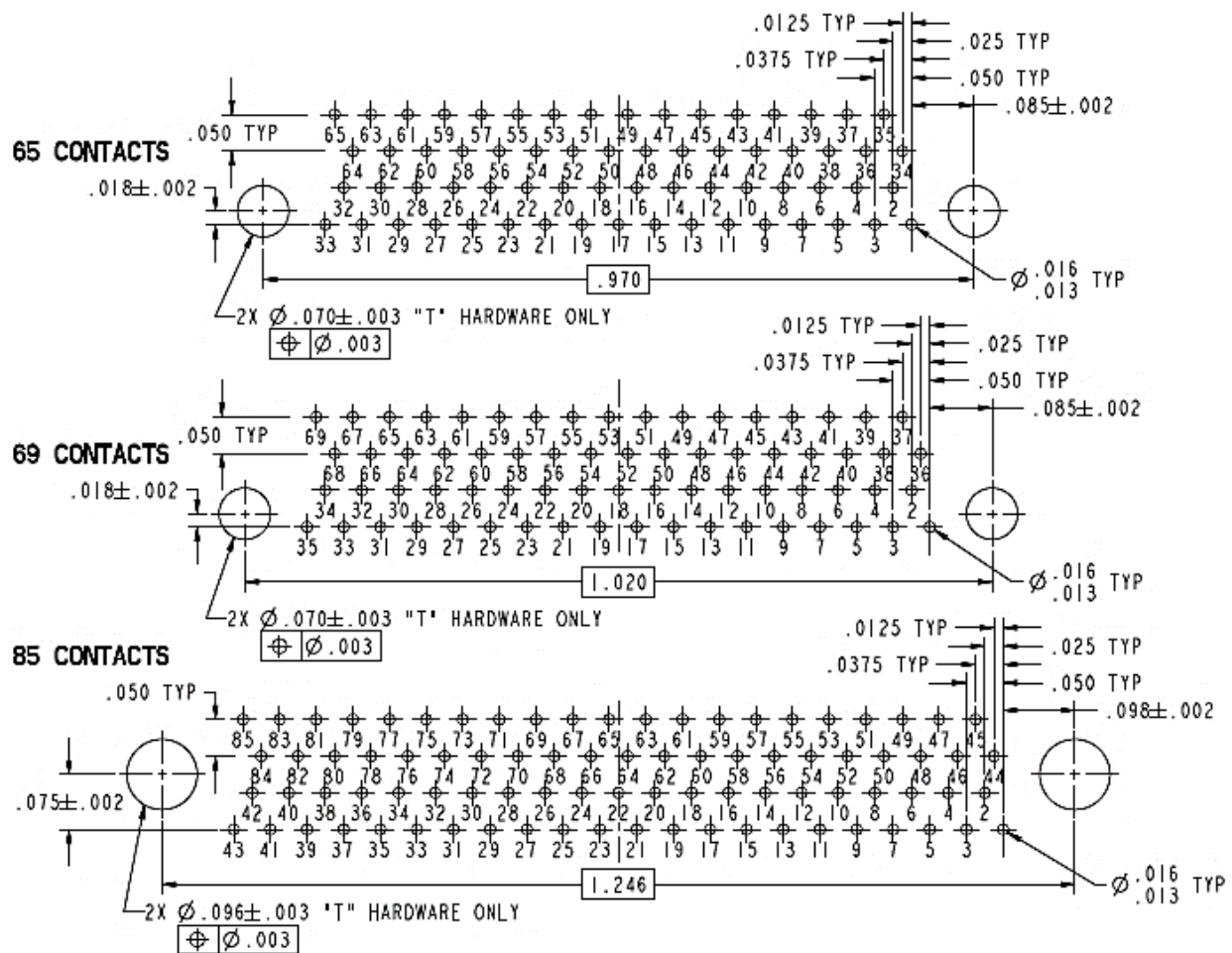


FIGURE 5. PCB Hole Patterns – Continued.



Inches	mm	Inches	mm	Inches	mm	Inches	mm	Inches	mm
.002	0.05	.018	0.46	.075	1.91	.345	8.76	.795	20.19
.003	0.08	.025	0.64	.085	2.16	.420	10.67	.970	24.64
.0125	0.318	.0375	0.953	.096	2.44	.470	11.94	1.020	25.90
.013	0.33	.050	1.27	.098	2.49	.545	13.84	1.246	31.65
.016	0.41	.070	1.29	.270	6.86	.620	15.75		

NOTES

1. Suggested hole pattern shown facing board from connector insertion side, oriented as shown in Figure 4.
2. Dimensions are in inches.
3. Metric equivalents are given for information only.
4. Unless otherwise specified, tolerances are ±.001 inch (0.03 mm).

FIGURE 5. PCB Hole Patterns – Continued.

REQUIREMENTS:

Dimensions and configuration see figures 1, 2, and 3.

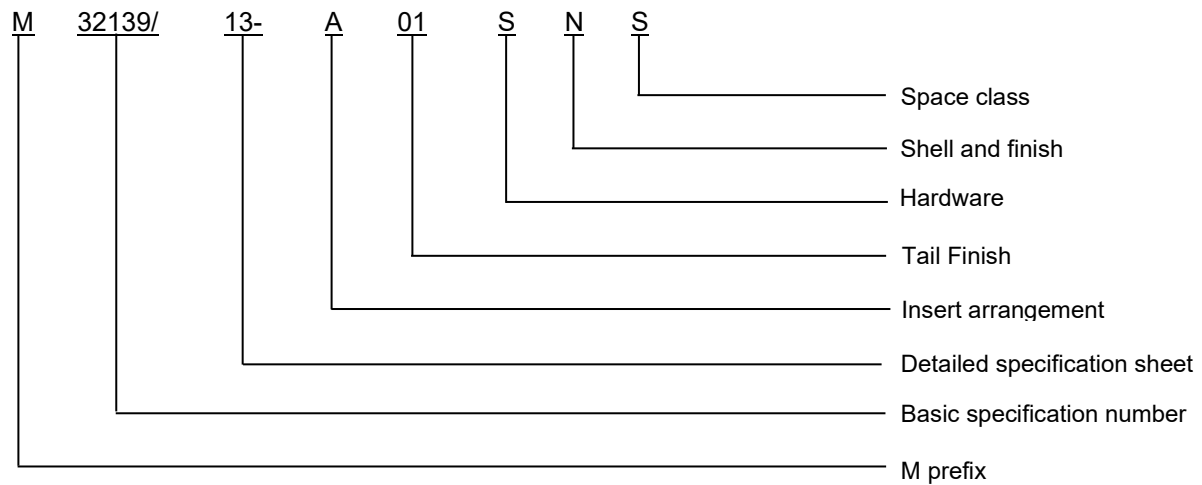
This specification sheet describes the pin side of a rectangular connector. This connector uses reverse gender contacts, i.e., the live pin recessed in the insulator with the static socket protruding from a shrouded interface.

Contact connection: The pin contact, which is recessed in the insulator, is normally connected to the live side of the circuit.

Pins are terminated to a printed circuit board (PCB) as specified on figure 5.

Mating receptacle: Shall be in accordance with MIL-DTL-32139/4, MIL-DTL-32139/10, MIL-DTL 32139/12, and MIL-DTL-32139/14.

Part of Identifying Number (PIN):



Insert arrangement

A = 9
B = 15
C = 21
D = 25
E = 31
F = 37
G = 51
H = 65
J = 69
K = 85

Tail Finish

01 = Tin/Lead
02 = Gold

Hardware ^{1/}

S = Jackscrew Captivated ^{4/}
T = Thread hole ^{3/}

Shell and finish

C = Aluminum shell, cadmium finish
N = Aluminum shell, electroless nickel finish ^{2/}
S = Passivated stainless steel shell
T = Titanium shell
A = Pure Electrodeposited Aluminum
F = Nickel Fluorocarbon Polymer
Z = Zinc Nickel

Space class

Blank for non-space applications.
S = Space class

1/ Supplied installed.

2/ When aluminum shells are required for space applications, electroless nickel finish shall be used. Cadmium finish is not acceptable (see MIL-DTL-32139).

3/ The aluminum shell may require additional thread component in the jacking hole location.

4/ The only mechanical retention for connectors with jackscrew option, is the collective solder joints of the thru hole leads. Consider designing other means of fastening, i.e. epoxy.

Alternate shell finishes:

Pure Electrodeposited Aluminum. Pure dense electrodeposited aluminum shall be in accordance with MIL-DTL-83488, type II shall withstand 48 hour salt spray. Color shall be non-reflective and shall meet the requirements as specified herein.

Nickel Fluorocarbon Polymer. High phosphate nickel with fluorocarbon polymer additive over a suitable underplate shall withstand 48 hour salt spray. Color shall be non-reflective and shall meet the requirements as specified herein.

Zinc Nickel. Zinc Nickel Alloy in accordance with ASTM B841, over a suitable underplate shall withstand 48 hour salt spray. Color shall be non-reflective and shall meet the requirements as specified herein.

Amendment notations. The margins of this specification are marked with vertical lines to indicate modifications generated by this amendment. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations.

Referenced documents. In addition to MIL-DTL-32139, this document references the following:

MIL-DTL-32139/4
MIL-DTL-32139/10
MIL-DTL-32139/12
MIL_DTL-32139/14
MIL-DTL-83488
ASME B18.3
ASTM B841

CONCLUDING MATERIAL

Custodians:

Army - CR
Navy - EC
Air Force - 85
DLA - CC

Preparing activity:
DLA - CC

(Project 5935-2025-029)

Review activities:

Army - AV, MI
Navy - AS

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 <https://assist.dla.mil>.