

# SuperNine® Glass seal hermetic

## MIL-DTL-38999 Series III Type

### 233-261 Bulkhead feed-thru with shielded contacts

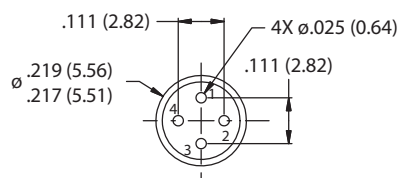


HERMETIC CONNECTORS

| Part Number Development |                                                                                                                                                                    |     |    |    |   |     |   |   |     |
|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|----|----|---|-----|---|---|-----|
| Sample Part Number      | 233-261                                                                                                                                                            | -H2 | Z1 | 17 | Q | -02 | S | N | -01 |
| Series / Basic Part No. | Series 23 SuperNine Bulkhead Feed-thru                                                                                                                             |     |    |    |   |     |   |   |     |
| Connector Style         | H2 = Box Mount H7 = Jam-Nut Mount<br>DH7 = Dual O-ring, Jam-Nut Mount H8 = Weld Mount                                                                              |     |    |    |   |     |   |   |     |
| Finish*                 | Z1 = CRES, Passivated ZL = CRES, Nickel Finish                                                                                                                     |     |    |    |   |     |   |   |     |
| Shell Size              | Per MIL-DTL-38999                                                                                                                                                  |     |    |    |   |     |   |   |     |
| Contact Type            | C = Coax Q = Quadrax (Size 8 contacts only) T = Concentric Twinax P = Power Contacts<br>See Special RF contact arrangements beginning on page D-6 for more details |     |    |    |   |     |   |   |     |
| Arrangement             | Per MIL-STD-1560                                                                                                                                                   |     |    |    |   |     |   |   |     |
| Configuration           | P = Pin on Jam Nut Side S = Socket on Jam Nut Side<br>PP = Pin-Pin (See note 2) SS = Socket-Socket (See note 2)                                                    |     |    |    |   |     |   |   |     |
| Polarization*           | A, B, C, D, E, N = Normal; see section A for key position details                                                                                                  |     |    |    |   |     |   |   |     |
| Panel Thickness         | -01 = .125/.062 -02 = .250/.062 -03 = .500/.062; See Panel Thickness Table                                                                                         |     |    |    |   |     |   |   |     |

\*Refer to Section A for complete details, consult factory for additional options

Modification codes may be added directly to the end of any valid part number



Quadrax Pin Interface  
(Cavity Id Refer. Only)  
For 100 Ohm Nominal Impedance

| Contact Performance |           |
|---------------------|-----------|
| Size and Type       | Frequency |
| #12 Coax            | 2 GHz     |
| #8 Coax             | 1 GHz     |
| #8 Twinax (Conc.)   | 20 MHz    |
| #8 Quadrax          | 1 GHz     |

#### Material/Finish

- Shell and jam-nut (H7 and DH7): 300 series CRES/per part number development
- Contact, pin: nickel-iron and nickel alloy/gold plate
- Contact, socket: copper alloy/gold plate
- Hoods, sockets: CRES/passivate
- Insulator, hermetic: full glass/N.A.
- Insulator, socket: rigid dielectric/N.A.
- Seals: fluorosilicone blend elastomer/N.A.

| Shell Size / Insert Arrangement Availability <sup>3,4</sup> |         |            |         |            |         |            |         |            |        |            |
|-------------------------------------------------------------|---------|------------|---------|------------|---------|------------|---------|------------|--------|------------|
| Arr. No.                                                    | Size 22 | Cntct Type | Size 20 | Cntct Type | Size 16 | Cntct Type | Size 12 | Cntct Type | Size 8 | Cntct Type |
| 15-21                                                       | 17      | S/P        | 3       | S/P        | ---     | N/A        | 1       | N/A        | ---    | N/A        |
| 17-2*                                                       | 38      | S/P        | ---     | N/A        | ---     | N/A        | ---     | N/A        | 1      | TWINAX     |
| 17-3*                                                       | 38      | S/P        | ---     | N/A        | ---     | N/A        | ---     | N/A        | 1      | TWINAX     |
| 17-6                                                        | ---     | N/A        | ---     | S/P        | ---     | N/A        | 6       | COAX       | ---    | N/A        |
| 17-11                                                       | ---     | N/A        | 8       | N/A        | ---     | N/A        | 3       | COAX       | ---    | N/A        |
| 19-19                                                       | 14      | S/P        | ---     | N/A        | ---     | N/A        | ---     | N/A        | ---    | TWINAX     |
| 21-11                                                       | ---     | N/A        | ---     | N/A        | ---     | N/A        | 11      | N/A        | ---    | N/A        |
| 21-29                                                       | ---     | N/A        | 19      | S/P        | 4       | S/P        | 4       | COAX       | 4      | N/A        |
| 21-75†                                                      | ---     | N/A        | ---     | N/A        | ---     | N/A        | ---     | COAX       | 4      | TWINAX     |
| 21-76†                                                      | ---     | N/A        | ---     | N/A        | ---     | N/A        | ---     | N/A        | 2      | TWINAX     |
| 25-7†                                                       | ---     | S/P        | ---     | N/A        | ---     | N/A        | ---     | N/A        | 8      | TWINAX     |
| 25-8†                                                       | 97      | N/A        | ---     | N/A        | ---     | N/A        | ---     | N/A        | 2      | TWINAX     |
| 25-9†                                                       | ---     | S/P        | ---     | N/A        | ---     | N/A        | ---     | N/A        | 8      | TWINAX     |
| 25-10†                                                      | 97      | N/A        | ---     | N/A        | ---     | N/A        | ---     | N/A        | ---    | TWINAX     |
| 25-19                                                       | ---     | N/A        | ---     | N/A        | ---     | N/A        | 19      | COAX       | 3      | N/A        |
| 25-20#                                                      | ---     | N/A        | 10      | S/P        | 13      | S/P        | 4       | COAX       | 3      | TWINAX     |
| 25-21#                                                      | ---     | N/A        | 10      | S/P        | 13      | S/P        | 4       | COAX       | 2      | TWINAX     |
| 25-46@                                                      | ---     | N/A        | 40      | S/P        | 4       | S/P        | ---     | N/A        | 2      | COAX       |
| 25-47@                                                      | ---     | N/A        | 40      | S/P        | 4       | S/P        | ---     | N/A        | 2      | COAX       |
| 25-90+                                                      | ---     | N/A        | 40      | S/P        | 4       | S/P        | ---     | N/A        | 2      | TWINAX     |
| 25-91+                                                      | ---     | N/A        | 40      | S/P        | 4       | S/P        | ---     | N/A        | 2      | TWINAX     |

#### NOTES

1. Hermeticity:  $<1 \times 10^{-7}$  ccHe/sec @ 1 atmosphere delta pressure
2. For PP or SS style, only symmetrical layouts may be selected. Power applied to contact on one side will result in power to the opposite contact, regardless of marking
3. Arrangements marked with like symbols (I.E. 17-2\* and 17-3\*) are identical. Environmental connectors use contact sealing boots.
4. When there are #12 and #8 in arrangement, the option is #8 only. Balance of contacts are power. Consult factory for other contact options.
5. For shell style H2, SS style, dimensions "G" and "H" will increase .100"
6. For shell style H8, SS style, 01 dimensions "E" and "F" increase by .150"

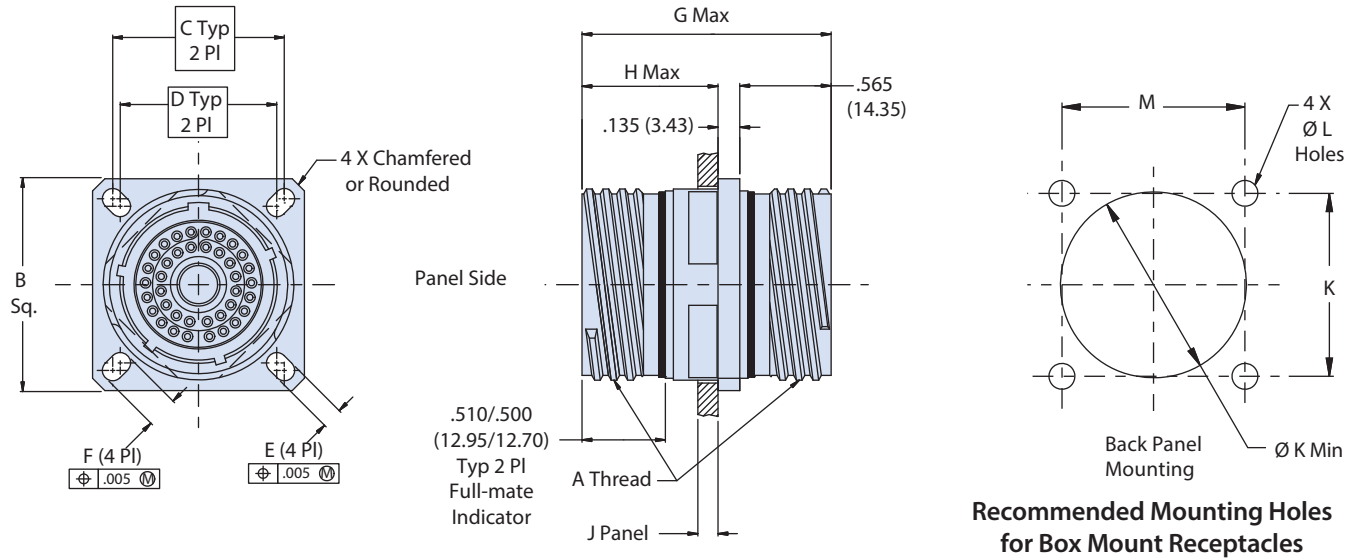
# SuperNine® Glass seal hermetic

## MIL-DTL-38999 Series III Type

### 233-261 Bulkhead feed-thru with shielded contacts



#### 233-261-H2 BOX MOUNT FEED-THRU CONNECTOR



Recommended Mounting Holes  
for Box Mount Receptacles

| Dimensions |                           |                                |               |               |                            |                            |
|------------|---------------------------|--------------------------------|---------------|---------------|----------------------------|----------------------------|
| Shell Size | A Thread                  | B SQ                           | C Bsc         | D BSC         | E                          | F                          |
| 9          | .6250<br>-1 P-0.3L-TS-2A  | .949 (24.10)<br>.925 (23.50)   | .719 (18.26)  | .594 (15.09)  | .136 (3.45)<br>.120 (3.05) | .224 (5.69)<br>.208 (5.28) |
| 11         | .7500<br>-1 P-0.3L-TS-2A  | 1.043 (26.49)<br>1.019 (25.88) | .812 (20.62)  | .719 (18.26)  | .136 (3.45)<br>.120 (3.05) | .202 (5.13)<br>.186 (4.72) |
| 13         | .8750<br>-1 P-0.3L-TS-2A  | 1.138 (28.91)<br>1.114 (28.30) | .706 (17.93)  | .812 (20.62)  | .136 (3.45)<br>.120 (3.05) | .202 (5.13)<br>.186 (4.72) |
| 15         | 1.0000<br>-1 P-0.3L-TS-2A | 1.232 (31.29)<br>1.208 (30.68) | .969 (24.61)  | .906 (23.01)  | .136 (3.45)<br>.120 (3.05) | .181 (4.60)<br>.165 (4.19) |
| 17         | 1.1875<br>-1 P-0.3L-TS-2A | 1.323 (33.60)<br>1.299 (32.99) | 1.062 (26.97) | .969 (24.61)  | .136 (3.45)<br>.120 (3.05) | .202 (5.13)<br>.186 (4.72) |
| 19         | 1.2500<br>-1 P-0.3L-TS-2A | 1.449 (36.80)<br>1.425 (36.20) | 1.156 (29.36) | 1.062 (26.97) | .136 (3.45)<br>.120 (3.05) | .202 (5.13)<br>.186 (4.72) |
| 21         | 1.3750<br>-1 P-0.3L-TS-2A | 1.575 (40.00)<br>1.551 (39.40) | 1.250 (31.75) | 1.156 (29.36) | .136 (3.45)<br>.120 (3.05) | .202 (5.13)<br>.186 (4.72) |
| 23         | 1.5000<br>-1 P-0.3L-TS-2A | 1.701 (43.21)<br>1.677 (42.60) | 1.375 (34.92) | 1.250 (31.75) | .162 (4.11)<br>.146 (3.71) | .250 (6.35)<br>.234 (5.94) |
| 25         | 1.6250<br>-1 P-0.3L-TS-2A | 1.823 (46.30)<br>1.799 (45.69) | 1.500 (38.10) | 1.375 (34.92) | .162 (4.11)<br>.146 (3.71) | .250 (6.35)<br>.234 (5.94) |

| Box Mount Dimensions |               |                            |                                |
|----------------------|---------------|----------------------------|--------------------------------|
| Shell Size           | Ø K Min       | Ø L Holes                  | M                              |
| 9                    | .656 (16.66)  | .133 (3.38)<br>.123 (3.12) | .724 (18.39)<br>.714 (18.14)   |
| 11                   | .781 (19.84)  | .133 (3.38)<br>.123 (3.12) | .817 (20.75)<br>.807 (20.50)   |
| 13                   | .921 (23.39)  | .133 (3.38)<br>.123 (3.12) | .911 (23.14)<br>.901 (22.89)   |
| 15                   | 1.047 (26.59) | .133 (3.38)<br>.123 (3.12) | .973 (24.71)<br>.963 (24.46)   |
| 17                   | 1.218 (30.94) | .133 (3.38)<br>.123 (3.12) | 1.067 (27.10)<br>1.57 (39.88)  |
| 19                   | 1.296 (32.92) | .133 (3.38)<br>.123 (3.12) | 1.161 (29.49)<br>1.151 (29.24) |
| 21                   | 1.421 (36.09) | .133 (3.38)<br>.123 (3.12) | 1.255 (31.88)<br>1.245 (31.62) |
| 23                   | 1.546 (39.27) | .159 (4.04)<br>.149 (3.78) | 1.380 (35.05)<br>1.370 (34.80) |
| 25                   | 1.672 (42.47) | .159 (4.04)<br>.149 (3.78) | 1.505 (38.23)<br>1.495 (37.97) |

| Panel Thickness |                |               |                          |
|-----------------|----------------|---------------|--------------------------|
| Shell Size      | G Dim, OAL Max | H Dim, Max    | J Dim, Panel             |
| -01*            | 1.600 (40.64)  | .843 (21.41)  | .125 (3.17)/.062 (1.57)  |
| -02             | 1.730 (43.94)  | 1.040 (26.42) | .250 (6.35)/.062 (1.57)  |
| -03             | 2.000 (50.80)  | 1.290 (32.77) | .500 (12.70)/.062 (1.57) |

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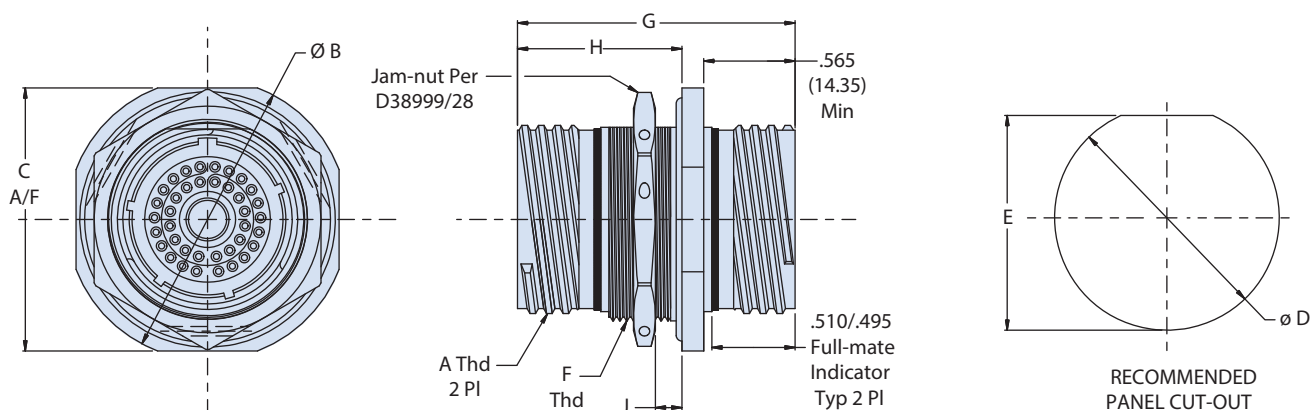
## MIL-DTL-38999 Series III Type

### 233-261 Bulkhead feed-thru with shielded contacts



HERMETIC CONNECTORS

#### 233-261-H7 JAM-NUT MOUNT FEED-THRU CONNECTOR AND 233-261-DH7 DUAL O-RING JAM-NUT MOUNT FEED-THRU CONNECTOR



| Dimensions |                         |                                |                                |              |
|------------|-------------------------|--------------------------------|--------------------------------|--------------|
| Shell Size | A Thread                | D BSC                          | E                              | F Thread     |
| 9          | .6250 -.1 P-0.3L-TS-2A  | .703 (17.86)<br>.693 (17.60)   | .661 (16.79)<br>.665 (16.89)   | M17 x 1.0-6g |
| 11         | .7500 -.1 P-0.3L-TS-2A  | .835 (21.21)<br>.825 (20.95)   | .771 (19.58)<br>.761 (19.33)   | M20 x 1.0-6g |
| 13         | .8750 -.1 P-0.3L-TS-2A  | 1.020 (25.91)<br>1.010 (25.65) | .955 (24.26)<br>.945 (24.00)   | M25 x 1.0-6g |
| 15         | 1.0000 -.1 P-0.3L-TS-2A | 1.145 (29.08)<br>1.135 (28.83) | 1.085 (27.56)<br>1.075 (27.30) | M28 x 1.0-6g |
| 17         | 1.1875 -.1 P-0.3L-TS-2A | 1.270 (32.26)<br>1.260 (32.00) | 1.210 (30.73)<br>1.200 (30.48) | M32 x 1.0-6g |
| 19         | 1.2500 -.1 P-0.3L-TS-2A | 1.395 (35.43)<br>1.385 (35.18) | 1.335 (33.91)<br>1.325 (33.65) | M35 x 1.0-6g |
| 21         | 1.3750 -.1 P-0.3L-TS-2A | 1.520 (38.61)<br>1.510 (38.35) | 1.460 (37.08)<br>1.450 (36.83) | M38 x 1.0-6g |
| 23         | 1.5000 -.1 P-0.3L-TS-2A | 1.645 (41.78)<br>1.635 (41.53) | 1.585 (40.26)<br>1.575 (40.00) | M41 x 1.0-6g |
| 25         | 1.6250 -.1 P-0.3L-TS-2A | 1.770 (44.96)<br>1.760 (44.70) | 1.710 (43.43)<br>1.700 (43.18) | M44 x 1.0-6g |

| Jam-Nut Mount (H7) Dimension |               |               |
|------------------------------|---------------|---------------|
| Shell Size                   | B DIA         | C MAX         |
| 9                            | 1.189 (30.20) | 1.063 (27.00) |
| 11                           | 1.375 (34.92) | 1.252 (31.80) |
| 13                           | 1.500 (38.10) | 1.375 (34.92) |
| 15                           | 1.626 (41.30) | 1.500 (38.10) |
| 17                           | 1.752 (44.50) | 1.626 (41.30) |
| 19                           | 1.937 (49.20) | 1.811 (46.00) |
| 21                           | 2.063 (52.40) | 1.937 (49.20) |
| 23                           | 2.189 (55.60) | 2.063 (52.40) |
| 25                           | 2.311 (58.70) | 2.189 (55.60) |

| Dual O-ring, Jam-Nut (DH7) Mount Dimension |               |               |
|--------------------------------------------|---------------|---------------|
| Shell Size                                 | B DIA         | C MAX         |
| 9                                          | 1.500 (38.10) | 1.375 (34.92) |
| 11                                         | 1.625 (41.28) | 1.500 (38.10) |
| 13                                         | 1.752 (44.50) | 1.626 (41.30) |
| 15                                         | 1.937 (49.20) | 1.811 (46.00) |
| 17                                         | 2.063 (52.40) | 1.937 (49.20) |
| 19                                         | 2.189 (55.60) | 2.063 (52.40) |
| 21                                         | 2.311 (58.70) | 2.189 (55.60) |
| 23                                         | 2.500 (63.50) | 2.300 (58.42) |
| 25                                         | 2.625 (66.68) | 2.400 (60.96) |

| Panel Thickness |                |               |                             |
|-----------------|----------------|---------------|-----------------------------|
| Shell Size      | G Dim, OAL Max | H Dim, Max    | J Dim, Panel                |
| -01             | 1.670 (42.42)  | .889 (22.58)  | .125 (3.17)<br>.062 (1.57)  |
| -02             | 1.800 (45.72)  | 1.090 (27.69) | .250 (6.35)<br>.062 (1.57)  |
| -03             | 2.050 (52.07)  | 1.340 (34.04) | .500 (12.70)<br>.062 (1.57) |

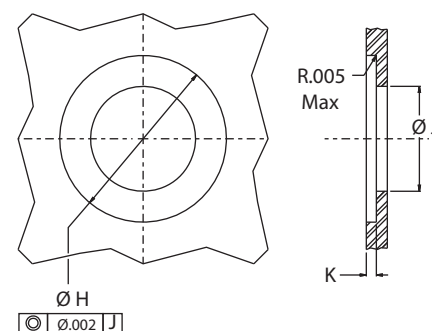
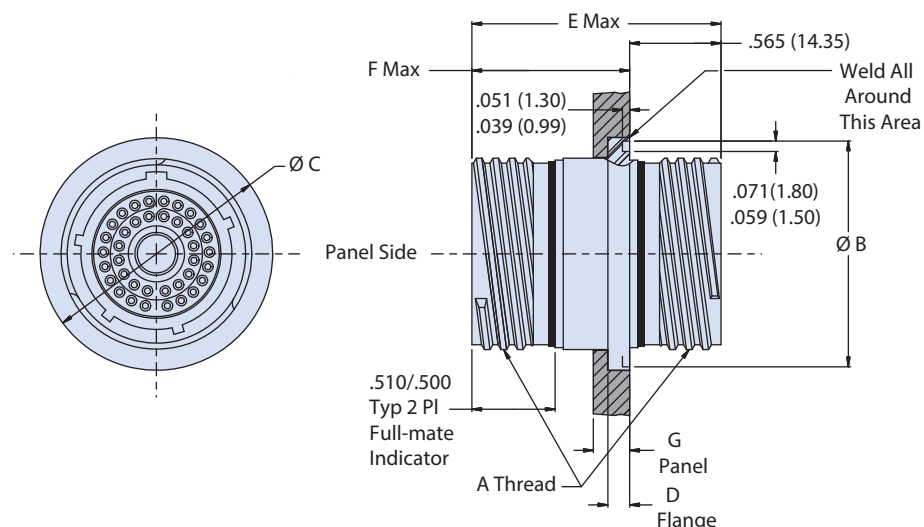
# SuperNine® Glass seal hermetic

## MIL-DTL-38999 Series III Type

### 233-261 Bulkhead feed-thru with shielded contacts



#### 233-261-H8 WELD MOUNT FEED-THRU CONNECTOR



| Panel Thickness  |                |               |                          |
|------------------|----------------|---------------|--------------------------|
| SHELL SIZE       | E DIM, OAL MAX | F DIM, MAX    | G DIM, PANEL             |
| -01 <sup>5</sup> | 1.520 (38.61)  | .960 (24.38)  | .125 (3.17)/.062 (1.57)  |
| -02              | 1.670 (42.42)  | 1.110 (28.19) | .250 (6.35)/.062 (1.57)  |
| -03              | 1.920 (48.77)  | 1.350 (34.29) | .500 (12.70)/.062 (1.57) |

| Dimensions |                  |               |               |             |
|------------|------------------|---------------|---------------|-------------|
| Shell Size | A Thread         | Ø B           | Ø C           | Ø D         |
| 9          | .6250            | .941 (23.90)  | .984 (24.99)  | .134 (3.40) |
|            | -.1 P-0.3L-TS-2A | .929 (23.60)  | .972 (24.69)  | .118 (3.00) |
| 11         | .7500            | 1.063 (27.00) | 1.106 (28.09) | .134 (3.40) |
|            | -.1 P-0.3L-TS-2A | 1.051 (26.70) | 1.094 (27.79) | .118 (3.00) |
| 13         | .8750            | 1.189 (30.20) | 1.232 (31.29) | .134 (3.40) |
|            | -.1 P-0.3L-TS-2A | 1.177 (29.90) | 1.220 (30.99) | .118 (3.00) |
| 15         | 1.0000           | 1.315 (33.40) | 1.358 (34.49) | .134 (3.40) |
|            | -.1 P-0.3L-TS-2A | 1.303 (33.10) | 1.346 (34.19) | .118 (3.00) |
| 17         | 1.1875           | 1.402 (35.61) | 1.445 (36.70) | .134 (3.40) |
|            | -.1 P-0.3L-TS-2A | 1.390 (35.31) | 1.433 (36.40) | .118 (3.00) |
| 19         | 1.2500           | 1.547 (39.29) | 1.591 (40.41) | .134 (3.40) |
|            | -.1 P-0.3L-TS-2A | 1.535 (38.99) | 1.579 (40.11) | .118 (3.00) |
| 21         | 1.3750           | 1.689 (42.90) | 1.732 (43.99) | .134 (3.40) |
|            | -.1 P-0.3L-TS-2A | 1.677 (42.60) | 1.720 (43.69) | .118 (3.00) |
| 23         | 1.5000           | 1.854 (47.09) | 1.898 (48.21) | .165 (4.19) |
|            | -.1 P-0.3L-TS-2A | 1.842 (46.79) | 1.886 (47.90) | .149 (3.78) |
| 25         | 1.6250           | 1.941 (49.30) | 1.984 (50.39) | .165 (4.19) |
|            | -.1 P-0.3L-TS-2A | 1.929 (49.00) | 1.972 (50.09) | .149 (3.78) |

| Recommended Panel Cutout |                               |                  |                 |
|--------------------------|-------------------------------|------------------|-----------------|
| Shell Size               | Ø H                           | Ø J ±.005        | DEPTH K ±.005   |
| 9                        | .990/.985<br>(25.15/ 25.02)   | 0.635<br>(16.13) | 0.126<br>(3.20) |
| 11                       | 1.112/1.107<br>(28.24/28.12)  | 0.760<br>(19.30) | 0.126<br>(3.20) |
| 13                       | 1.238/1.233<br>(28.12/ 31.32) | 0.885<br>(22.48) | 0.126<br>(3.20) |
| 15                       | 1.364/1.359<br>(34.65/34.52)  | 1.010<br>(25.65) | 0.126<br>(3.20) |
| 17                       | 1.451/1.446<br>(36.86/ 36.73) | 1.195<br>(30.35) | 0.126<br>(3.20) |
| 19                       | 1.597/1.592<br>(40.56/ 40.44) | 1.260<br>(32.00) | 0.126<br>(3.20) |
| 21                       | 1.738/1.733<br>(44.15/ 44.02) | 1.385<br>(35.18) | 0.126<br>(3.20) |
| 23                       | 1.894/1.899<br>(48.11/48.23)  | 1.510<br>(38.35) | 0.157<br>(3.99) |
| 25                       | 1.990/1.985<br>(50.55/ 50.42) | 1.635<br>(41.53) | 0.157<br>(3.99) |

1. Crimp removable socket contacts to conform to M39029/57-359 (size 12) M39029/57-358 (size 16), M39029/57-357 (size 20) and M39029/57-354 (size 22D) contacts required to fully populate rear, plus spares as required by mil-spec, are shipped loose with the connector.