

# HIGH DENSITY INTERCONNECTS

## HD38999

PDS-208-27



### A CONNECTOR WITH AS FEW AS 9 CONTACTS AND AS MANY AS 187.

The HD38999 family of connectors has 30% more contact density than the highest density Mil Spec 38999 connectors of its size. This series of connectors was designed to utilize mil-specified 38999 components with the exception of the contacts and inserts arrangement. Utilizing existing mil-qualified 39029 size 23 contacts and 38999 insert materials, these connectors are essentially a drop-in replacement for the standard 38999 connector.

This connector design benefits users in a couple of different ways. For those users who need to increase the amount of contacts in their application, the HD38999 series allows them to do so without increasing the size of their connector. For users who are looking to decrease the overall size of their system, they can do so by using smaller shell sizes without decreasing the number of contacts.

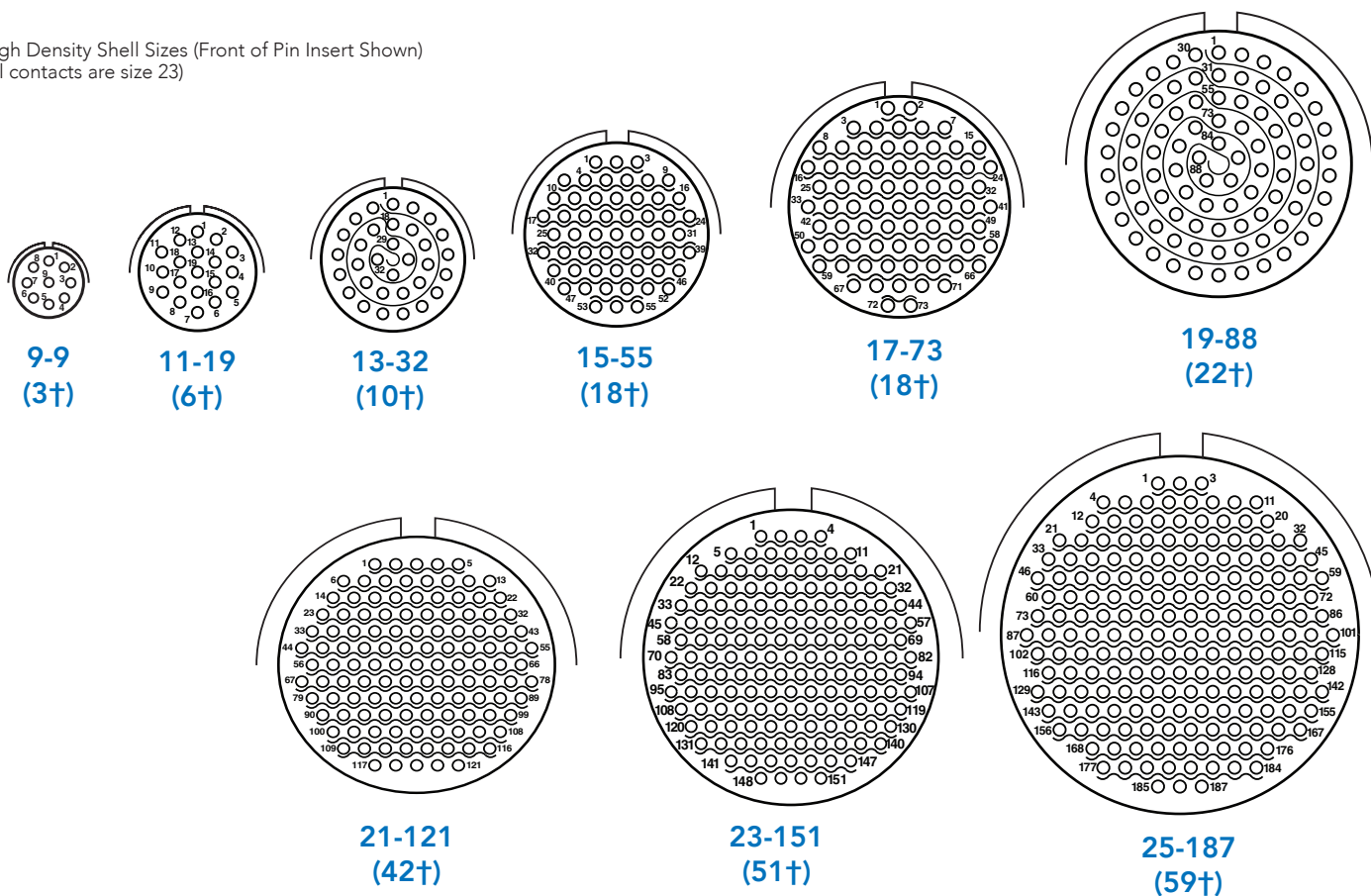
Amphenol has qualified this series of connectors to the requirements of MIL-DTL-38999. Amphenol also manufactures this high density series in Filter, Hermetic and customized versions to fit our customer's needs. Please contact us if additional information is required.

**HD38999**  
High Density

# HIGH DENSITY INTERCONNECTS

## INSERT

High Density Shell Sizes (Front of Pin Insert Shown)  
(all contacts are size 23)



(†Increased number of contacts in HD38999 insert pattern compared to Standard 38999\*contact density of same shell size.)

# HIGH DENSITY INTERCONNECTS

| 1.                                   | 2.          | 3.            | 4.                              | 5.           | 6.                  | 7.           |
|--------------------------------------|-------------|---------------|---------------------------------|--------------|---------------------|--------------|
| Connector Type                       | Shell Style | Service Class | Shell Size - Insert Arrangement | Contact Type | Alternate Positions | PCB Optional |
| <b>TV or PTV</b><br>(Potted version) | <b>07</b>   | <b>RW</b>     | <b>23-151</b>                   | <b>P</b>     | <b>B</b>            | <b>(P25)</b> |

P (prefix for Potted)

| 1. Connector Type |                            |
|-------------------|----------------------------|
| <b>TV</b>         | Tri-Start Series Connector |
| <b>TVP</b>        | Panel Mounted Receptacle   |
| <b>CTV</b>        | Composite Tri-Start Series |
| <b>CTVP</b>       | Panel Mounted Composite    |

\*Add P prefix for potted ex: PTV

| 4. Shell Size – Insert Arrangement |                           |
|------------------------------------|---------------------------|
| Shell Size                         | Insert Arrangement Number |
| <b>9-</b>                          | <b>9</b>                  |
| <b>11-</b>                         | <b>19</b>                 |
| <b>13-</b>                         | <b>32</b>                 |
| <b>15-</b>                         | <b>55</b>                 |
| <b>17-</b>                         | <b>73</b>                 |
| <b>19-</b>                         | <b>88</b>                 |
| <b>21-</b>                         | <b>121</b>                |
| <b>23-</b>                         | <b>151</b>                |
| <b>25-</b>                         | <b>187</b>                |

Shell Sizes are MIL-DTL-38999, Series III.

| 5. Contact Type |                            |
|-----------------|----------------------------|
| <b>P</b>        | 500 Cycle Pin Contacts     |
| <b>S</b>        | 500 Cycle Socket Contacts  |
| <b>H</b>        | 1500 Cycle Pin Contacts    |
| <b>J</b>        | 1500 Cycle Socket Contacts |

| 2. Shell Style |                                                                    |
|----------------|--------------------------------------------------------------------|
| <b>00</b>      | Wall Mount Receptacle                                              |
| <b>40</b>      | Wall Mount Double Flange Receptacle                                |
| <b>10</b>      | Wall Mount (Clinch Nuts)                                           |
| <b>80</b>      | Wall Mount with Integral Backshell                                 |
| <b>02</b>      | Box Mount Receptacle                                               |
| <b>12</b>      | Box Mount (Clinch Nuts)                                            |
| <b>01</b>      | Line Receptacle                                                    |
| <b>07</b>      | Jam Nut Receptacle                                                 |
| <b>47</b>      | Jam Nut Double Flange Receptacle                                   |
| <b>87</b>      | Jam Nut with Integral Backshell                                    |
| <b>97</b>      | Reduced Flange Jam Nut Receptacle                                  |
| <b>98</b>      | Reduced Flange Jam Nut with Standoffs                              |
| <b>06</b>      | Straight Plug                                                      |
| <b>96</b>      | Straight Plug with Integral Backshell (not available in composite) |
| <b>76</b>      | Plug with Integral Strain Relief                                   |

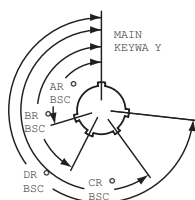
| 3. Service Class (ALL 175°C) |                                                                                                               |                                                                                       |
|------------------------------|---------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| <b>RW</b>                    | Corrosion resistant olive drab cadmium plated aluminum, 500 hour extended salt spray                          |                                                                                       |
| <b>DT</b>                    | Durmalon plated, alternative to cadmium. Corrosion resistant, 500 hour extended salt spray                    |    |
| <b>DZ</b>                    | Black Zinc-Nickel alternative to cadmium. 500 hour salt spray, conductive                                     |    |
| <b>DW</b>                    | Corrosion resistant olive drab cadmium plated aluminum, 1,000 hour extended salt spray                        |                                                                                       |
| <b>RB</b>                    | Marine Bronze - 500 hour salt spray                                                                           |    |
| <b>RF</b>                    | Electroless nickel plated aluminum, 48 hour salt spray                                                        |    |
| <b>RK</b>                    | Corrosion resistant stainless steel, firewall capability, plus 500 hour salt spray resistance                 |  |
| <b>RKN</b>                   | Corrosion resistant stainless steel, Nonfirewall capability, plus 500 hour salt spray resistance              |  |
| <b>RL</b>                    | Corrosion resistant steel, electro deposited nickel, 500 hour salt spray, non firewall                        |  |
| <b>RS</b>                    | (Non-hermetic connectors), Nickel plated, corrosion resistant steel, firewall capability, 500 hour salt spray |  |
| <b>DB</b>                    | Black Electroless Nickel, 100 hour salt spray                                                                 |  |

| 1.                         | 2.          | 3.            | 4.                              | 5.           | 6.                  | 7.          |
|----------------------------|-------------|---------------|---------------------------------|--------------|---------------------|-------------|
| Connector Type             | Shell Style | Service Class | Shell Size - Insert Arrangement | Contact Type | Alternate Positions | PCB Options |
| TV or PTV (Potted version) | 06          | RW            | 23-151                          | P            | B                   | (P25)       |

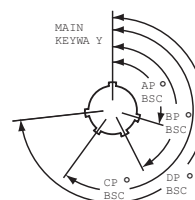
| 6. ALTERNATE POSITION |                                                |                |                |                |                |
|-----------------------|------------------------------------------------|----------------|----------------|----------------|----------------|
| Shell size            | Key & keyway arrangement identification letter | AR° or AP° BSC | BR° or BP° BSC | CR° or CP° BSC | DR° or DP° BSC |
| 9                     | N                                              | 105            | 140            | 215            | 265            |
|                       | A                                              | 102            | 132            | 248            | 320            |
|                       | B                                              | 80             | 118            | 230            | 312            |
|                       | C                                              | 35             | 140            | 205            | 275            |
|                       | D                                              | 64             | 155            | 234            | 304            |
|                       | E                                              | 91             | 131            | 197            | 240            |
| 11, 13, and 15        | N                                              | 95             | 141            | 208            | 236            |
|                       | A                                              | 113            | 156            | 182            | 292            |
|                       | B                                              | 90             | 145            | 195            | 252            |
|                       | C                                              | 53             | 156            | 220            | 255            |
|                       | D                                              | 119            | 146            | 176            | 298            |
|                       | E                                              | 51             | 141            | 184            | 242            |
| 17 and 19             | N                                              | 80             | 142            | 196            | 293            |
|                       | A                                              | 135            | 170            | 200            | 310            |
|                       | B                                              | 49             | 169            | 200            | 244            |
|                       | C                                              | 66             | 140            | 200            | 257            |
|                       | D                                              | 62             | 145            | 180            | 280            |
|                       | E                                              | 79             | 153            | 197            | 272            |
| 21, 23 and 25         | N                                              | 80             | 142            | 196            | 293            |
|                       | A                                              | 135            | 170            | 200            | 310            |
|                       | B                                              | 49             | 169            | 200            | 244            |
|                       | C                                              | 66             | 140            | 200            | 257            |
|                       | D                                              | 62             | 145            | 180            | 280            |
|                       | E                                              | 79             | 153            | 197            | 272            |

A, B, C, D, E or blank for normal.

RECEPTACLE  
(front face shown)



PLUG  
(front face shown)



A plug with a given rotation letter will mate with a receptacle with the same rotation letter. The angles for a given connector are the same whether it contains pins or sockets. Inserts are not rotated in conjunction with the master key/keyway.

| 7. PCB Contact Options |                                   |                 |                                     |                                 |
|------------------------|-----------------------------------|-----------------|-------------------------------------|---------------------------------|
| Pin Contacts           | Pin Contacts with Alignment Disc* | Socket Contacts | Socket Contacts with Alignment Disc | PCB tail stickout +/- .040 inch |
| P1                     | P1AD                              | S1              | S1AD                                | .100" nominal                   |
| P15                    | P15AD                             | S15             | S15AD                               | .150" nominal                   |
| P2                     | P2AD                              | S2              | S2AD                                | .200" nominal                   |
| P25                    | P25AD                             | S25             | S25AD                               | .250" nominal                   |
| P3                     | P3AD                              | S3              | S3AD                                | .300" nominal                   |
| P35                    | P35AD                             | S35             | S35AD                               | .350" nominal                   |

## Pre-Tin Options

Add "T" to end of suffix for Pre-tinned PC tails  
Ex: (P15T), (S25ADT)

# CONTACTS & TOOLS

## CONTACT PART NUMBERS\*:

Size 23 Sockets 10-597330-735 (M39029/17-172)  
Size 23 Pins 10-597331-735 (M39029/18-177)  
Sealing Plugs 10-405996-222 (MS27488-22-2)

\*Amphenol may use other contacts not listed above

**CRIMP BARREL DIA.:** **CRIMP BARREL**  
(Inches) .034-.036 **DEPTH:**  
(Inches) .151-.155

## TOOLS:

Crimp Tool: Daniels M22520/2-01  
Positioner: Daniels M22520/2-16 Socket  
Daniels M22520/2-13 Pin  
Insertion Tool: Daniels DAK225-22  
Removal Tool: Daniels DRK225-22  
Insertion/Removal Tool: M81969/16-04 (Plastic)

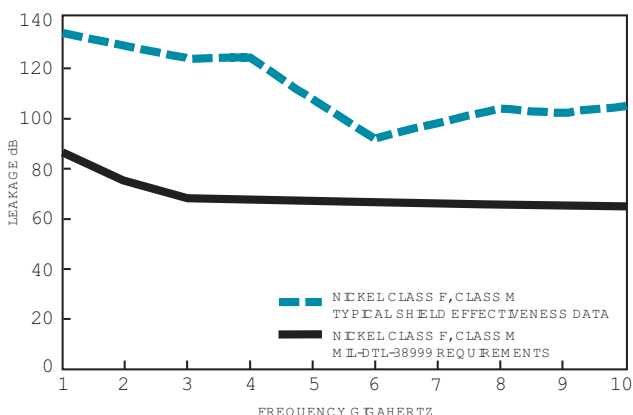
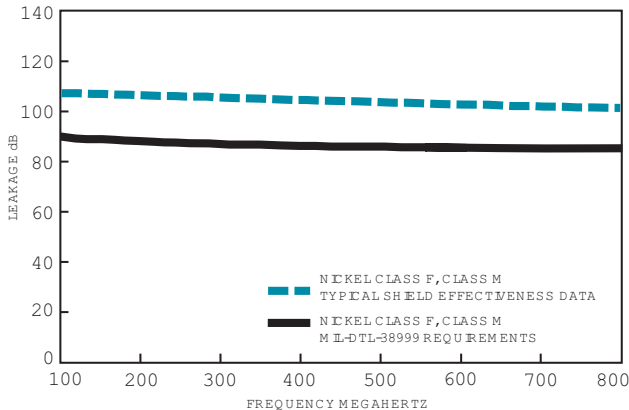
Note: Wire insulation diameter greater than 0.045 is too large for the extraction tool to work properly. Connector damage is possible.

## TECHNICAL DATA

HD38999 series was designed to meet and/or exceed the specifications of MIL-DTL-38999. The connector series has been tested to all the requirements of 38999 with the use of AS39029 size 23 contacts. Test reports are available upon request. The following is a summary of some of the performance requirements.

### EMI SHIELDING EFFECTIVENESS:

Solid metal to metal coupling, EMI grounding fingers and conductive finishes have proven to be the ultimate in EMI/EMP shielding effectiveness. The following chart illustrated shielding effectiveness data which is typical in HD38999 connectors.



### ELECTRICAL:

22 AWG: 5.0 AMPS  
24 AWG: 3.0 AMPS  
26 AWG: 2.0 AMPS  
28 AWG: 1.5 AMPS

Insulation Resistance: 5000 megohms min.@500 VDC 25C

Dielectric Withstanding Voltage: 1000 VRMS@sea level

### MECHANICAL:

Metallic Shells:

Material: Aluminum alloy, Stainless Steel  
Protection: Electroless Nickel, O.D. Cadmium, Durmalon (Nickel PTFE), Zinc Nickel

Composite Shells:

Material: Thermoplastic Protection:  
Electroless Nickel, O.D. Cadmium, Durmalon (Nickel PTFE), Zinc Nickel

Contacts: Material: Copper Alloy  
Protection: Gold over Nickel

Insert Retention to Shell: 100 psi in axial load

Durability: 500 full mating and unmating cycles

Vibration: 60G sine per MIL-DTL-38999L Para 4.5.23.2.1  
5G2 Random per EIA-364-28E, Test condition A  
1G2 Random per EIA-364-28E, Test condition I

Shock: Per EIA-364-27B, 300g

# TECHNICAL DATA

## Environmental:

Operating Temperature: -65°C to +175°C

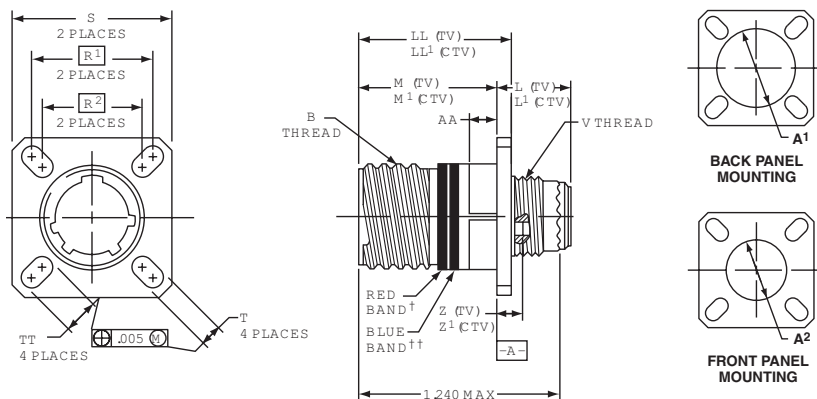
## Salt Spray:

Metallized: Electroless Nickel: 48 hours  
Anodic Coating, O. D. Cadmium, Durmalon,  
Zinc Nickel: 500 hours

Salt Spray Composite: Electroless Nickel: 1000 hours  
O. D. Cadmium, Durmalon, Zinc Nickel: 500 hours

## WALL MOUNTING RECEPTACLE

TVP00( ) - CRIMP, METAL  
CTVP00( ) - CRIMP, COMPOSITE



See how to build a part number on pages 2

† Red band indicates fully mated

†† Blue band indicates rear release contact retention system.

Inches

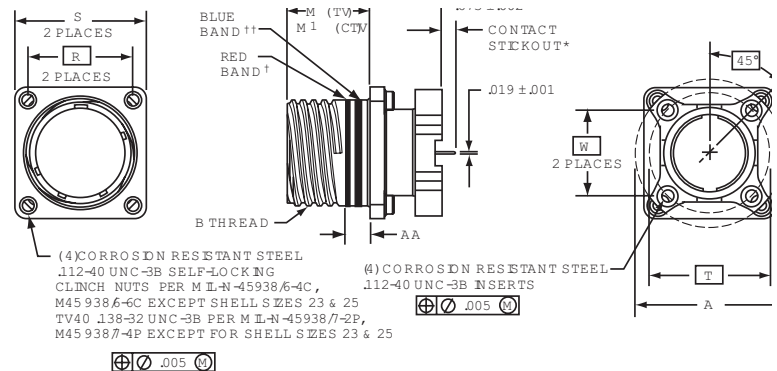
| Shell Size | MS Shell Size Code | B Thread Class 2A 0.1P-0.3L-TS (Plated) | L Max. (TV) | L1 Max. (CTV) | M +.000 -.005 (TV) | M1 +.000 -.005 (CTV) | R1    | R2    | S Max. | T ±.008 | Z Max. (TV) | Z1 Max. (CTV) | A1 Back Panel Mount | A2 Front Panel Mount | AA Max. Panel Thickness | LL +.006 -.000 (TV) | LL1 ±.005 (CTV) | TT ±.008 |
|------------|--------------------|-----------------------------------------|-------------|---------------|--------------------|----------------------|-------|-------|--------|---------|-------------|---------------|---------------------|----------------------|-------------------------|---------------------|-----------------|----------|
| 9          | A                  | .6250                                   | .469        | .520          | .820               | .773                 | .719  | .594  | .948   | .128    | .153        | .198          | .650                | .510                 | .234                    | .905                | .908            | .216     |
| 11         | B                  | .7500                                   | .469        | .520          | .820               | .773                 | .812  | .719  | 1.043  | .128    | .153        | .198          | .800                | .620                 | .234                    | .905                | .908            | .194     |
| 13         | C                  | .8750                                   | .469        | .520          | .820               | .773                 | .906  | .812  | 1.137  | .128    | .153        | .198          | .910                | .740                 | .234                    | .905                | .908            | .194     |
| 15         | D                  | 1.0000                                  | .469        | .520          | .820               | .773                 | .969  | .906  | 1.232  | .128    | .153        | .198          | 1.040               | .900                 | .234                    | .905                | .908            | .173     |
| 17         | E                  | 1.1875                                  | .469        | .520          | .820               | .773                 | 1.062 | .969  | 1.323  | .128    | .153        | .198          | 1.210               | 1.010                | .234                    | .905                | .908            | .194     |
| 19         | F                  | 1.2500                                  | .469        | .520          | .820               | .773                 | 1.156 | 1.062 | 1.449  | .128    | .153        | .198          | 1.280               | 1.130                | .234                    | .905                | .908            | .194     |
| 21         | G                  | 1.3750                                  | .500        | .552          | .790               | .741                 | 1.250 | 1.156 | 1.575  | .128    | .183        | .228          | 1.410               | 1.250                | .204                    | .905                | .904            | .194     |
| 23         | H                  | 1.5000                                  | .500        | .552          | .790               | .741                 | 1.375 | 1.250 | 1.701  | .154    | .183        | .228          | 1.530               | 1.360                | .204                    | .905                | .904            | .242     |
| 25         | J                  | 1.6250                                  | .500        | .552          | .790               | .741                 | 1.500 | 1.375 | 1.823  | .154    | .183        | .228          | 1.660               | 1.470                | .204                    | .905                | .904            | .242     |

# WALL MOUNTING DOUBLE FLANGE

(PRINTED CIRCUIT BOARD MOUNT)

TVP40( ) - CRIMP, METAL

CTVP40( ) - CRIMP, COMPOSITE



See how to build a part number on pages 2

\* Contact stickout dimension: see Step 7 of how to order on page 2.

† Red band indicates fully mated

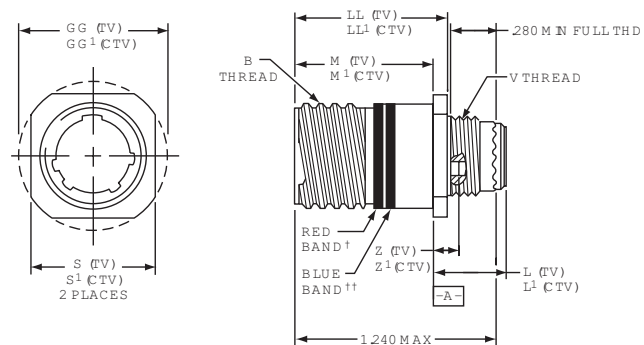
†† Blue band indicates rear release contact retention system.

| Shell Size | MS Shell Size Code | A Dia. ±.005 (TV) | A Dia. ±.005 (CTV) | B Thread Class 2A 0.1P-0.3L-TS (Plated) | M +.000 - .005 (TV) | M' ±.003 (CTV) | R (Panel Mount) (CTV) | R (Panel Mount) (TV) | S Max. (TV) | S Max. (CTV) | AA Max. Panel Thickness | PCB Mounting Dimensions |            |
|------------|--------------------|-------------------|--------------------|-----------------------------------------|---------------------|----------------|-----------------------|----------------------|-------------|--------------|-------------------------|-------------------------|------------|
|            |                    |                   |                    |                                         |                     |                |                       |                      |             |              |                         | T Dia. (TV) TP          | W (CTV) TP |
| 9          | A                  | 1.016             | 1.016              | .6250                                   | .820                | .770           | .719                  | NA                   | 1.094       | .949         | .234                    | .752                    | .532       |
| 11         | B                  | 1.062             | 1.148              | .7500                                   | .820                | .770           | .812                  | .766                 | 1.187       | 1.042        | .234                    | .850                    | .601       |
| 13         | C                  | 1.250             | 1.250              | .8750                                   | .820                | .770           | .906                  | .859                 | 1.281       | 1.136        | .234                    | .994                    | .703       |
| 15         | D                  | 1.375             | 1.375              | 1.0000                                  | .820                | .770           | .969                  | .938                 | 1.344       | 1.230        | .234                    | 1.119                   | .791       |
| 17         | E                  | 1.500             | 1.500              | 1.1875                                  | .820                | .770           | 1.062                 | 1.016                | 1.437       | 1.323        | .234                    | 1.237                   | .875       |
| 19         | F                  | 1.625             | 1.625              | 1.2500                                  | .820                | .770           | 1.156                 | 1.110                | 1.531       | 1.449        | .234                    | 1.379                   | .975       |
| 21         | G                  | 1.750             | 1.750              | 1.3750                                  | .820                | .738           | 1.250                 | 1.206                | 1.625       | 1.573        | .204                    | 1.489                   | 1.053      |
| 23         | H                  | 1.875             | 1.875              | 1.5000                                  | .820                | .738           | 1.375                 | 1.312                | 1.750       | 1.699        | .204                    | 1.619                   | 1.195      |
| 25         | J                  | 2.000             | 2.000              | 1.6250                                  | .820                | .738           | 1.500                 | 1.438                | 1.875       | 1.823        | .204                    | 1.744                   | 1.233      |

## LINE RECEPTACLE

TV01( ) - CRIMP, METAL

CTV01( ) - CRIMP, COMPOSITE



See how to build a part number on pages 2 & 3

† Red band indicates fully mated

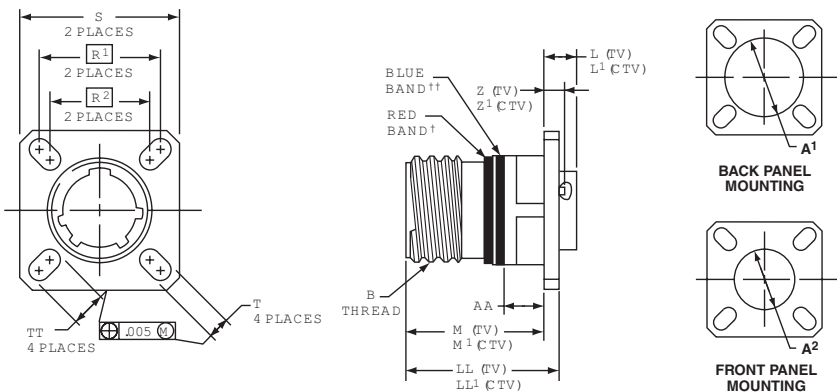
†† Blue band indicates rear release contact retention system.

| Shell Size | MS Shell Size Code | B Thread 0.1P-0.3L-TS-2A (Plated) | M +.000 - .005 (TV) | M' +.000 - .005 (CTV) | L Max. (TV) | L' Max. (CTV) | S ±.010 (TV) | S' ±.010 (CTV) | Z Max (TV) | Z' Max (CTV) | GG ±.010 (TV) | GG' ±.010 (CTV) | LL +.006 - .000 (TV) | LL' ±.005 (CTV) |
|------------|--------------------|-----------------------------------|---------------------|-----------------------|-------------|---------------|--------------|----------------|------------|--------------|---------------|-----------------|----------------------|-----------------|
| 9          | A                  | .6250                             | .820                | .773                  | .469        | .520          | .675         | .635           | .153       | .198         | .812          | .699            | .905                 | .908            |
| 11         | B                  | .7500                             | .820                | .773                  | .469        | .520          | .800         | .765           | .153       | .198         | .905          | .875            | .905                 | .908            |
| 13         | C                  | .8750                             | .820                | .773                  | .469        | .520          | .925         | .885           | .153       | .198         | 1.093         | 1.007           | .905                 | .908            |
| 15         | D                  | 1.0000                            | .820                | .773                  | .469        | .520          | 1.050        | 1.100          | .153       | .198         | 1.219         | 1.140           | .905                 | .908            |
| 17         | E                  | 1.1875                            | .820                | .773                  | .469        | .520          | 1.238        | 1.197          | .153       | .198         | 1.375         | 1.229           | .905                 | .908            |
| 19         | F                  | 1.2500                            | .820                | .773                  | .469        | .520          | 1.300        | 1.260          | .153       | .198         | 1.469         | 1.380           | .905                 | .908            |
| 21         | G                  | 1.3750                            | .790                | .741                  | .500        | .552          | 1.425        | 1.385          | .183       | .228         | 1.625         | 1.493           | .905                 | .904            |
| 23         | H                  | 1.5000                            | .790                | .741                  | .500        | .552          | 1.550        | 1.510          | .183       | .228         | 1.750         | 1.626           | .905                 | .904            |
| 25         | J                  | 1.6250                            | .790                | .741                  | .500        | .552          | 1.675        | 1.635          | .183       | .228         | 1.875         | 1.777           | .905                 | .904            |

BOX MOUNT RECEPTACLE



TVP02( ) - CRIMP, METAL  
CTVP02( ) - CRIMP, COMPOSITE

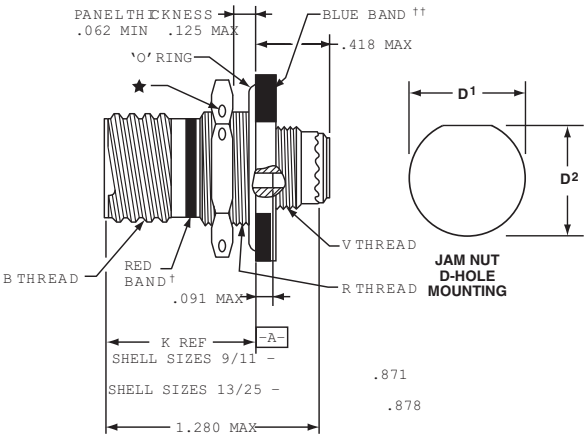
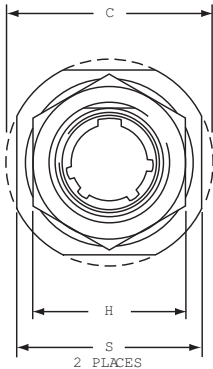


See how to build a part number on pages 2 & 3  
† Red band indicates fully mated  
†† Blue band indicates rear release contact retention system.  
\*\*Consult Amphenol Aerospace for availability for box mount receptacles.

| Shell Size | MS Shell Size Code | B Thread Class 2A 0.1P-0.3L-TS (Plated) | L Max. (TV) | L1 Max. (CTV) | M +.000 - .005 (TV) | M1 +.000 - .005 (CTV) | R1    | R2    | S Max. | T ±.008 | Z Max. (TV) | Z1 Max. (CTV) | A1 Back Panel Mount | A2 Front Panel Mount | AA Max. Panel Thickness | LL +.006 - .000 (TV) | LL1 ±.005 (CTV) | TT ±.008 |
|------------|--------------------|-----------------------------------------|-------------|---------------|---------------------|-----------------------|-------|-------|--------|---------|-------------|---------------|---------------------|----------------------|-------------------------|----------------------|-----------------|----------|
| 9          | A                  | .6250                                   | .205        | .250          | .820                | .773                  | .719  | .594  | .948   | .128    | .153        | .198          | .650                | .510                 | .234                    | .905                 | .908            | .216     |
| 11         | B                  | .7500                                   | .205        | .250          | .820                | .773                  | .812  | .719  | 1.043  | .128    | .153        | .198          | .800                | .620                 | .234                    | .905                 | .908            | .194     |
| 13         | C                  | .8750                                   | .205        | .250          | .820                | .773                  | .906  | .812  | 1.137  | .128    | .153        | .198          | .910                | .740                 | .234                    | .905                 | .908            | .194     |
| 15         | D                  | 1.0000                                  | .205        | .250          | .820                | .773                  | .969  | .906  | 1.232  | .128    | .153        | .198          | 1.040               | .900                 | .234                    | .905                 | .908            | .173     |
| 17         | E                  | 1.1875                                  | .205        | .250          | .820                | .773                  | 1.062 | .969  | 1.323  | .128    | .153        | .198          | 1.210               | 1.010                | .234                    | .905                 | .908            | .194     |
| 19         | F                  | 1.2500                                  | .205        | .250          | .820                | .773                  | 1.156 | 1.062 | 1.449  | .128    | .153        | .198          | 1.280               | 1.130                | .234                    | .905                 | .908            | .194     |
| 21         | G                  | 1.3750                                  | .235        | .280          | .790                | .741                  | 1.250 | 1.156 | 1.575  | .128    | .183        | .228          | 1.410               | 1.250                | .204                    | .905                 | .904            | .194     |
| 23         | H                  | 1.5000                                  | .235        | .280          | .790                | .741                  | 1.375 | 1.250 | 1.701  | .154    | .183        | .228          | 1.530               | 1.360                | .204                    | .905                 | .904            | .242     |
| 25         | J                  | 1.6250                                  | .235        | .280          | .790                | .741                  | 1.500 | 1.375 | 1.823  | .154    | .183        | .228          | 1.660               | 1.470                | .204                    | .905                 | .904            | .242     |

# JAM NUT RECEPTACLE

TV07( ) - CRIMP, METAL  
CTV07( ) - CRIMP, COMPOSITE

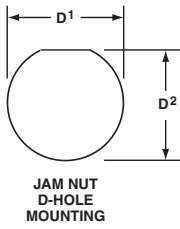
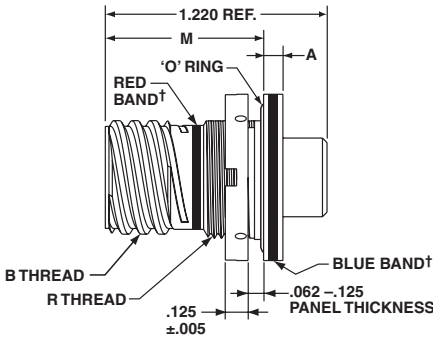
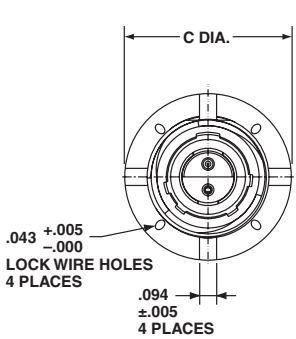


See how to build a part number on pages 2  
† Red band indicates fully mated  
†† Blue band indicates rear release contact retention system.  
H .059 dia. min., 3 lockwire holes. Formed lockwire hole design (6 holes) is optional

| Shell Size | MS Shell Size Code | B Thread Class<br>2A 0.1P-0.3L-TS<br>(Plated) | C Max. | D <sup>1</sup><br>+.010<br>-.000 | D <sup>2</sup><br>+.000<br>-.010 | H Hex<br>+.017<br>-.016 | S<br>±.010 | V Thread<br>Metric | R Thread<br>(Plated)<br>9-7543 |
|------------|--------------------|-----------------------------------------------|--------|----------------------------------|----------------------------------|-------------------------|------------|--------------------|--------------------------------|
| 9          | A                  | .6250                                         | 1.199  | .693                             | .657                             | .875                    | 1.062      | M12X1-6g           | M17X1-6g                       |
| 11         | B                  | .7500                                         | 1.386  | .825                             | .770                             | 1.000                   | 1.250      | M15X1-6g           | M20X1-6g                       |
| 13         | C                  | .8750                                         | 1.511  | 1.010                            | .955                             | 1.188                   | 1.375      | M18X1-6g           | M25X1-6g                       |
| 15         | D                  | 1.0000                                        | 1.636  | 1.135                            | 1.085                            | 1.312                   | 1.500      | M22X1-6g           | M28X1-6g                       |
| 17         | E                  | 1.1875                                        | 1.761  | 1.260                            | 1.210                            | 1.438                   | 1.625      | M25X1-6g           | M32X1-6g                       |
| 19         | F                  | 1.2500                                        | 1.949  | 1.385                            | 1.335                            | 1.562                   | 1.812      | M28X1-6g           | M35X1-6g                       |
| 21         | G                  | 1.3750                                        | 2.073  | 1.510                            | 1.460                            | 1.688                   | 1.938      | M31X1-6g           | M38X1-6g                       |
| 23         | H                  | 1.5000                                        | 2.199  | 1.635                            | 1.585                            | 1.812                   | 2.062      | M34X1-6g           | M41X1-6g                       |
| 25         | J                  | 1.6250                                        | 2.323  | 1.760                            | 1.710                            | 2.000                   | 2.188      | M37X1-6g           | M44X1-6g                       |

# REDUCED FLANGE JAM NUT RECEPTACLE

TV97( ) - CRIMP, METAL



| Shell Size | MS Shell Size Code | B Thread Class<br>2A 0.1P-0.3L-TS<br>(Plated) | A<br>+.010<br>-.005 | C Dia.<br>Max. | D <sup>1</sup><br>+.010<br>-.000 | D <sup>2</sup><br>+.000<br>-.010 | M    | R Thread<br>(Plated)<br>9-7543 |
|------------|--------------------|-----------------------------------------------|---------------------|----------------|----------------------------------|----------------------------------|------|--------------------------------|
| 9          | A                  | .6250                                         | .104                | .915           | .693                             | .657                             | .871 | M17X1-6g                       |
| 11         | B                  | .7500                                         | .104                | 1.042          | .825                             | .770                             | .871 | M20X1-6g                       |
| 13         | C                  | .8750                                         | .104                | 1.240          | 1.010                            | .955                             | .878 | M25X1-6g                       |
| 15         | D                  | 1.0000                                        | .104                | 1.357          | 1.135                            | 1.085                            | .878 | M28X1-6g                       |
| 17         | E                  | 1.1875                                        | .104                | 1.630          | 1.260                            | 1.210                            | .878 | M32X1-6g                       |
| 19         | F                  | 1.2500                                        | .135                | 1.816          | 1.385                            | 1.335                            | .878 | M35X1-6g                       |
| 21         | G                  | 1.3750                                        | .135                | 1.942          | 1.510                            | 1.460                            | .878 | M38X1-6g                       |
| 23         | H                  | 1.5000                                        | .135                | 2.067          | 1.635                            | 1.585                            | .878 | M41X1-6g                       |
| 25         | J                  | 1.6250                                        | .135                | 2.190          | 1.760                            | 1.710                            | .878 | M44X1-6g                       |

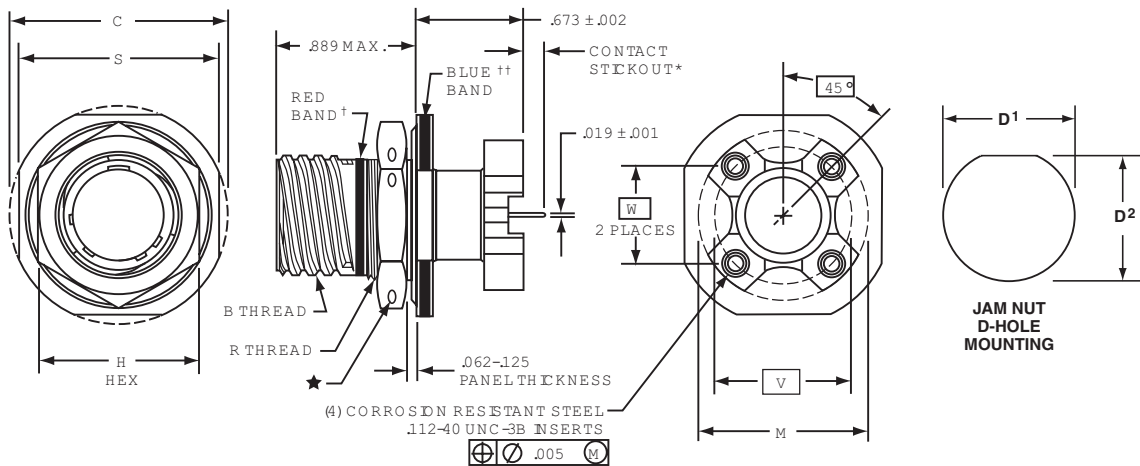
# JAM NUT DOUBLE FLANGE RECEPTACLE



(PRINTED CIRCUIT BOARD MOUNT)

TV47(     ) - CRIMP, METAL

CTV47(     ) - CRIMP, COMPOSITE



See how to build a part number on pages 2  
\* Contact stickout dimension: see Step 7 of how to order on page 2.  
† Red band indicates fully mated  
†† Blue band indicates rear release contact retention system.  
H .059 dia. min., 3 lockwire holes. Formed lockwire hole design (6 holes) is optional

| Shell Size | MS Shell Size Code | B Thread Class<br>2A 0.1P-0.3L-TS<br>(Plated) | C<br>±.005<br>(Jam Nut Flange Dia.) | D <sup>1</sup><br>+.010<br>-.000 | D <sup>2</sup><br>+.000<br>-.010 | H Hex<br>+.017<br>-.016 | M Dia.<br>±.005 | R Thread Metric<br>(Plated) | S<br>+.011<br>-.010 | PCB Mounting Dimensions |               |
|------------|--------------------|-----------------------------------------------|-------------------------------------|----------------------------------|----------------------------------|-------------------------|-----------------|-----------------------------|---------------------|-------------------------|---------------|
|            |                    |                                               |                                     |                                  |                                  |                         |                 |                             |                     | V Dia. (TV)<br>TP       | W (CTV)<br>TP |
| 9          | A                  | .6250                                         | 1.188                               | .700                             | .670                             | .875                    | 1.016           | M17X1-6g0.100R              | 1.062               | .753                    | .532          |
| 11         | B                  | .7500                                         | 1.375                               | .825                             | .770                             | 1.000                   | 1.148           | M20X1-6g0.100R              | 1.250               | .850                    | .601          |
| 13         | C                  | .8750                                         | 1.500                               | 1.010                            | .955                             | 1.188                   | 1.250           | M25X1-6g0.100R              | 1.375               | .994                    | .703          |
| 15         | D                  | 1.0000                                        | 1.625                               | 1.135                            | 1.085                            | 1.312                   | 1.375           | M28X1-6g0.100R              | 1.500               | 1.119                   | .791          |
| 17         | E                  | 1.1875                                        | 1.750                               | 1.260                            | 1.210                            | 1.438                   | 1.500           | M32X1-6g0.100R              | 1.625               | 1.237                   | .875          |
| 19         | F                  | 1.2500                                        | 1.937                               | 1.385                            | 1.335                            | 1.562                   | 1.625           | M35X1-6g0.100R              | 1.812               | 1.379                   | .975          |
| 21         | G                  | 1.3750                                        | 2.062                               | 1.510                            | 1.460                            | 1.688                   | 1.750           | M38X1-6g0.100R              | 1.937               | 1.489                   | 1.053         |
| 23         | H                  | 1.5000                                        | 2.188                               | 1.635                            | 1.585                            | 1.812                   | 1.875           | M41X1-6g0.100R              | 2.062               | 1.644                   | 1.145         |
| 25         | J                  | 1.6250                                        | 2.312                               | 1.760                            | 1.710                            | 2.000                   | 2.000           | M44X1-6g0.100R              | 2.188               | 1.744                   | 1.233         |

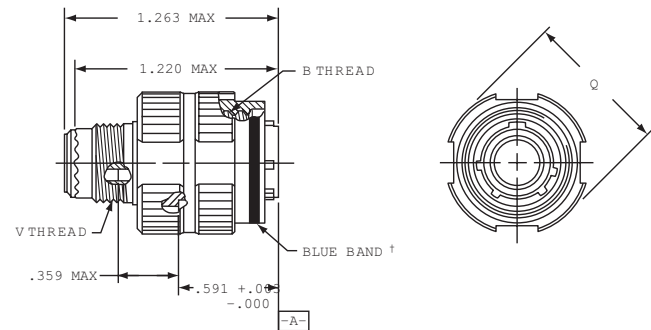
# STRAIGHT PLUG

TV06( ) - CRIMP, METAL  
CTV06( ) - CRIMP, COMPOSITE

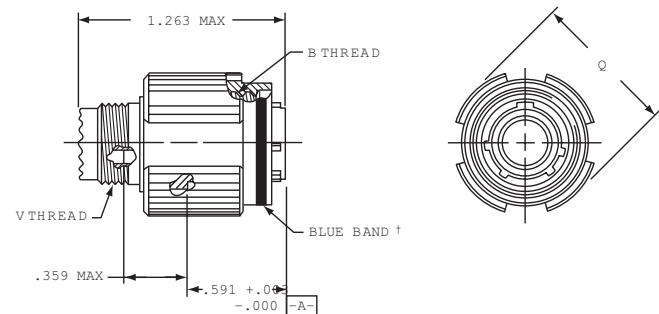
† Blue band indicates rear release contact retention system

| Shell Size | MS Shell Size Code | B Thread<br>0.1P-0.3L-TS-2B<br>(Plated) | Q Dia. Max. |
|------------|--------------------|-----------------------------------------|-------------|
| 9          | A                  | .6250                                   | .858        |
| 11         | B                  | .7500                                   | .984        |
| 13         | C                  | .8750                                   | 1.157       |
| 15         | D                  | 1.0000                                  | 1.280       |
| 17         | E                  | 1.1875                                  | 1.406       |
| 19         | F                  | 1.2500                                  | 1.516       |
| 21         | G                  | 1.3750                                  | 1.642       |
| 23         | H                  | 1.5000                                  | 1.768       |
| 25         | J                  | 1.6250                                  | 1.890       |

## METAL



## COMPOSITE



# STRAIGHT PLUG WITH INTEGRAL BACKSHELL

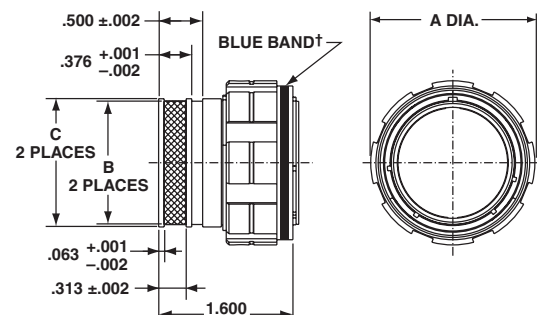
TV96( ) (TV TYPE) - CRIMP, METAL

This MIL-DTL-38999 Series III style connector features an integral backshell design that eliminates the need for costly backshell accessories. The backshell feature is incorporated into the rear of the connector shell, allowing the user to attach the shield of their cable directly to the connector. This provides superior EMI shielding and ease for overmold applications. The straight plug with integral backshell is available in aluminum shells with OD Cad or Electroless Nickel plating.

See how to build a part number on pages 2

† Blue band indicates rear release contact retention system.

| Shell Size | MS Shell Size Code | A Max. | B<br>+.005<br>-.000 | C<br>+.003<br>-.002 |
|------------|--------------------|--------|---------------------|---------------------|
| 9          | A                  | .859   | .416                | .472                |
| 11         | B                  | .969   | .524                | .580                |
| 13         | C                  | 1.141  | .652                | .708                |
| 15         | D                  | 1.266  | .810                | .866                |
| 17         | E                  | 1.391  | .928                | .984                |
| 19         | F                  | 1.500  | 1.046               | 1.102               |
| 21         | G                  | 1.625  | 1.164               | 1.220               |
| 23         | H                  | 1.750  | 1.282               | 1.338               |
| 25         | J                  | 1.875  | 1.400               | 1.456               |



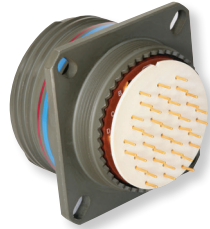
Nick Lidell • Phone: (607) 563-5655 • Email: [nlidell@amphenol-aao.com](mailto:nlidell@amphenol-aao.com)

[www.amphenol-aerospace.com](http://www.amphenol-aerospace.com)

# NEW CUSTOM DESIGNED HD38999 CONNECTORS - PROVIDE MORE INTERCONNECT SOLUTIONS

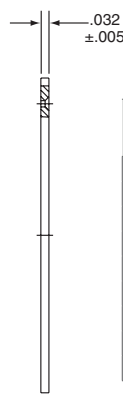
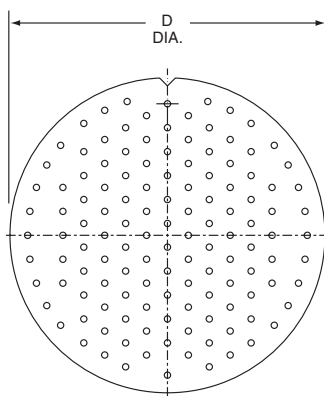
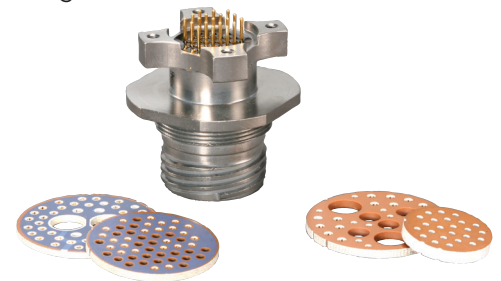
## ALIGNMENT DISKS

Alignment disks keep contacts aligned for easier insertion into circuit boards. These are typically ordered with the connector - see step 7 of How to Order on page 2.



## FILTERED HD38999 CONNECTORS - FOR EMI/EMP PROTECTION

High density patterns are available in filter 38999 connectors - consult Amphenol Aerospace for ordering.

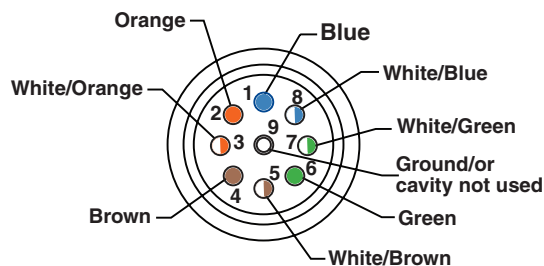


| Shell Size | D Dia. ±.010 |
|------------|--------------|
| 9          | .234         |
| 11         | .350         |
| 13         | .500         |
| 15         | .725         |
| 17         | .750         |
| 19         | .850         |
| 21         | .953         |
| 23         | 1.147        |
| 25         | 1.250        |

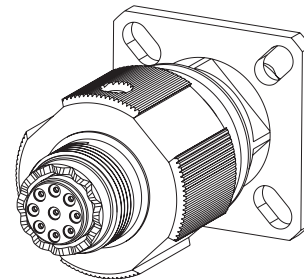
## HD38999 FOR GIGABIT ETHERNET APPLICATIONS

The HD38999 is available for high speed (Gigabit Ethernet) data transmission in the size 9-9 insert pattern. Data transmission performance of this connector insert: 10 Base T, 100 Base TX, and 1000 Base T networks using Cat 5e per TIA/EIA568B and Class D per ISO/IEC 11801. (Test report available - consult Amphenol Aerospace for more information)

### SIGNAL-GROUND PIN CONFIGURATION WIRING RECOMMENDATIONS



VIEW REAR OF CONNECTOR



HD38999 CONNECTOR WITH 9-9 INSERT  
PATTERN (REAR VIEW)

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