

# DUALOK INTERCONNECT SYSTEM



**Dualok is an enhanced anti-decoupling mechanism designed to perform under severe vibration environments – far exceeding the performance of MIL-DTL-38999 Series III plugs.**

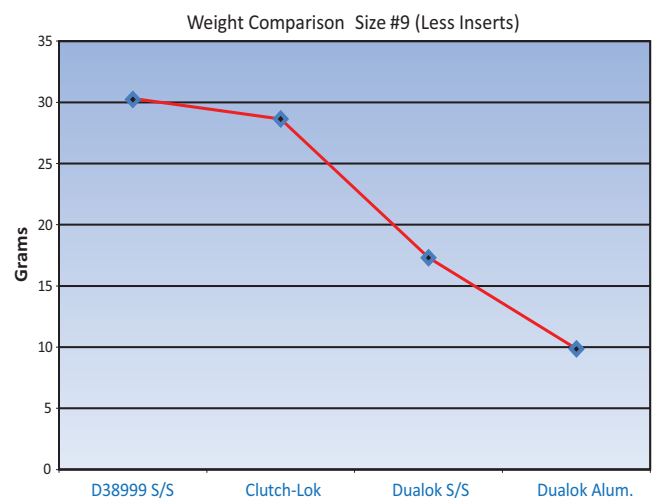
The Dualok system is proven to mitigate the negative effects of high vibration operation by eliminating connector back-off and reducing conditions that can cause fretting corrosion. Dualok is compatible with all D38999 Series III receptacle interfaces and has been qualified to Boeing Specification BACC63EK.

## SUPERIOR ELECTRICAL PERFORMANCE

Shell-to-shell Conductivity: The Dualok system eliminates back-off under shock and vibration which significantly improves electrical performance under lightning strike, Electro-magnetic pulse events, and overall EMI performance by minimizing the apertures between the plug and receptacle shell interfaces. Testing on D38999 Series III aluminum plugs with Dualok showed 75% less millivolt drop than mil-spec requirements.

## MINIMIZED CONTACT FRETTING:

The pin-socket interface remains tight under mated conditions. Dualok yields more consistent integrity across the contacts and reduces friction-induced oxides formation.



## SIZE AND WEIGHT SAVINGS:

Lightweight, Hybrid Composite/Metal Design: Connector weight savings by utilizing Dualok composite coupling nut with a Stainless Steel or Aluminum connector (D38999 Series).

# HIGH VIBRATION DUALOK, 38999 SERIES III TYPE COMMERCIAL PLUG (TV56, TVS56)

| 1.   | 2.                              | 3.           | 4.                  |
|--|---------------------------------|--------------|---------------------|
| Connector Type - Shell Style - Service Class | Shell Size - Insert Arrangement | Contact Type | Alternate Positions |
| TVS56RF-                                     |                                 |              |                     |



## 1. Type, Shell Style, & Class

See chart below, type, shell style and service class combined for easy choice.

### ALUMINUM

TVS56RF-  
TV56RW-  
TV56DT-  
TV56DZ-  
TV56RGF-  
TV56RGW-  
TVS56RB-

### STAINLESS STEEL

TVS56RK-  
TVS56RKN-  
TVS56RS-  
TVS56RL-

|               | ALUMINUM           |                    |               |               |  |  |               |
|---------------|--------------------|--------------------|---------------|---------------|--|--|---------------|
|               | Electroless Nickel | Olive Drab Cadmium | Durmalon      | Black Zinc    | Electroless Nickel (With Ground Plane) | Olive Drab Cadmium (With Ground Plane) | Marine Bronze |
| Temperature   | 200°C              | 175°C              | 175°C         | 175°C         | 200°C                                  | 175°C                                  | 200°C         |
| Salt Spray    | 48 Hrs             | 500 Hrs            | 500 Hrs       | 500 Hrs       | 48 Hrs                                 | 500 Hrs                                | 2,000 Hrs     |
| EMI Shielding | -65dB @ 10GHz      | -65dB @ 10GHz      | -50dB @ 10GHz | -50dB @ 10GHz | -65dB @ 10GHz                          | -65dB @ 10GHz                          | -65dB @ 10GHz |
| RoHS          | Ⓢ                  |                    | Ⓢ             | Ⓢ             | Ⓢ                                      |  |               |

| DUALOK | TVS56RF- | TV56RW- | TV56DT- | TV56DZ- | TV56RGF- | TV56RGW- | TVS56RB- |
|--------|----------|---------|---------|---------|----------|----------|----------|
|--------|----------|---------|---------|---------|----------|----------|----------|

|               | STAINLESS STEEL       |                           |                          |                              |
|---------------|-----------------------|---------------------------|--------------------------|------------------------------|
|               | Passivated (Firewall) | Passivated (Non-Firewall) | Nickel Plated (Firewall) | Nickel Plated (Non-Firewall) |
| Temperature   | 200°C                 | 200°C                     | 200°C                    | 200°C                        |
| Salt Spray    | 500 Hrs               | 500 Hrs                   | 500 Hrs                  | 500 Hrs                      |
| EMI Shielding | -65dB @ 10GHz         | -65dB @ 10GHz             | -65dB @ 10GHz            | -50dB @ 10GHz                |
| RoHS          | Ⓢ                     | Ⓢ                         | Ⓢ                        | Ⓢ                            |

| DUALOK | TVS56RK- | TVS56RKN- | TVS56RS- | TVS56RL- |
|--------|----------|-----------|----------|----------|
|--------|----------|-----------|----------|----------|

\*Firewall connectors have stainless steel shell and coupling nut.

\*Non-Firewall connectors have stainless steel shell and composite coupling nut.

# DUALOK

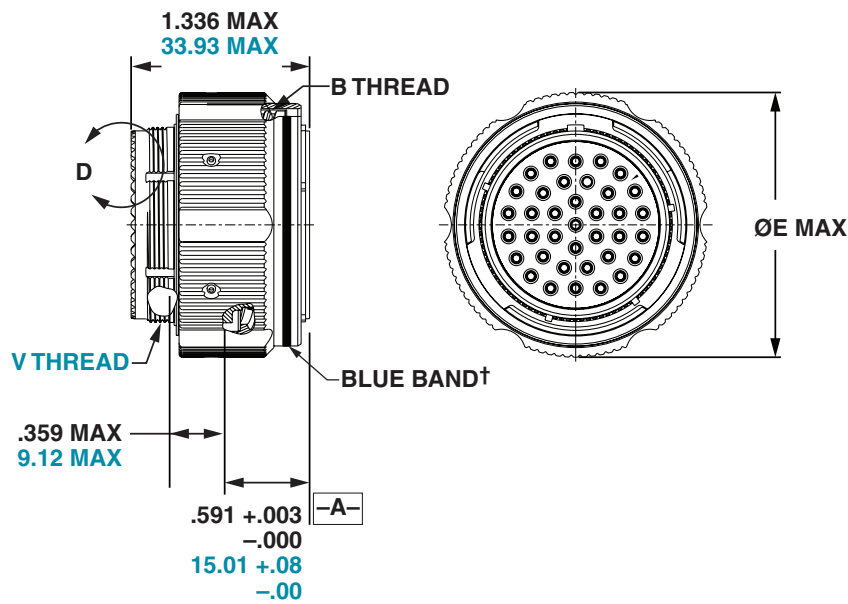
## INTERCONNECT SYSTEM



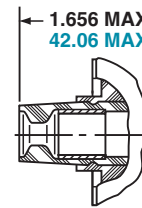
| 1.           | 2.                          | 3.           | 4.                    |
|--------------|-----------------------------|--------------|-----------------------|
| Type & Class | Shell Size-<br>Insert Arrg. | Contact Type | Alternate<br>Position |
|              | 9-35                        |              |                       |

### 2. Shell Size & Insert Arrangement

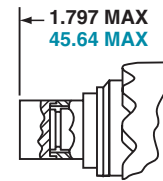
See chart below for Shell Size, Insert Arrangements are available on-line at [www.amphenol-aerospace.com/pdf/catalogs/38999-insert-arrangements.pdf](http://www.amphenol-aerospace.com/pdf/catalogs/38999-insert-arrangements.pdf) or in the MIL-DTL-38999 Catalog



VIEW D  
FOR SIZE 8 COAXIAL ONLY,  
RELATIVE TO **-A-**



VIEW D  
FOR SIZE 8 TWINAX ONLY,  
RELATIVE TO **-A-**



Tooled for all sizes

| Shell Size | B Thread 0.1-0.3L-TS-2B (Plated) | E<br>Dia.<br>Max. | E<br>Dia. Max. Metric | V Thread<br>Metric. |
|------------|----------------------------------|-------------------|-----------------------|---------------------|
| 9          | .6250                            | .953              | 24.2                  | M12X1-6g            |
| 11         | .7500                            | 1.053             | 26.7                  | M15X1-6g            |
| 13         | .8750                            | 1.252             | 31.8                  | M18X1-6g            |
| 15         | 1.0000                           | 1.365             | 34.6                  | M22X1-6g            |
| 17         | 1.1875                           | 1.493             | 37.9                  | M25X1-6g            |
| 19         | 1.2500                           | 1.605             | 40.7                  | M28X1-6g            |
| 21         | 1.3750                           | 1.735             | 44.0                  | M31X1-6g            |
| 23         | 1.500                            | 1.855             | 47.1                  | M34X1-6g            |
| 25         | 1.6250                           | 1.975             | 50.1                  | M37X1-6g            |

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| 1.           | 2.                      | 3.           | 4.                 |
|--------------|-------------------------|--------------|--------------------|
| Type & Class | Shell Size-Insert Arrg. | Contact Type | Alternate Position |
|              |                         | P            | A                  |

### 3. Contact Type

|          |  |
|----------|--|
| <b>P</b> | 500 Cycle Pin Contacts, if require Less Contacts place (LC) at the end of part number    |
| <b>S</b> | 500 Cycle Socket Contacts, if require Less Contacts place (LC) at the end of part number |
| <b>H</b> | Composite if you require 1500 Cycle Pin Contacts   |
| <b>J</b> | Composite if you require 1500 Cycle Socket Contacts                                      |
| <b>X</b> | Eyelet contacts, hermetic only   |

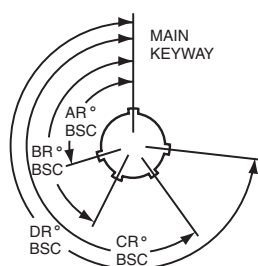
### 4. Alternate Position

| Shell Size      | Key & Keyway Arrangement Identification Letter | AR° or AP° BSC | BR° or BP° BSC | CR° or CP° BSC | DR° or DP° BSC |
|-----------------|--|----------------|----------------|----------------|----------------|
| 9               | <b>N*</b>                                      | 105            | 140            | 215            | 265            |
|                 | <b>A</b>                                       | 102            | 132            | 248            | 320            |
|                 | <b>B</b>                                       | 80             | 118            | 230            | 312            |
|                 | <b>C</b>                                       | 35             | 140            | 205            | 275            |
|                 | <b>D</b>                                       | 64             | 155            | 234            | 304            |
| 11, 13, and 15  | <b>E</b>                                       | 91             | 131            | 197            | 240            |
|                 | <b>N*</b>                                      | 95             | 141            | 208            | 236            |
|                 | <b>A</b>                                       | 113            | 156            | 182            | 292            |
|                 | <b>B</b>                                       | 90             | 145            | 195            | 252            |
|                 | <b>C</b>                                       | 53             | 156            | 220            | 255            |
| 17 and 19       | <b>D</b>                                       | 119            | 146            | 176            | 298            |
|                 | <b>E</b>                                       | 51             | 141            | 184            | 242            |
|                 | <b>N*</b>                                      | 80             | 142            | 196            | 293            |
|                 | <b>A</b>                                       | 135            | 170            | 200            | 310            |
|                 | <b>B</b>                                       | 49             | 169            | 200            | 244            |
| 21, 23, and 25  | <b>C</b>                                       | 66             | 140            | 200            | 257            |
|                 | <b>D</b>                                       | 62             | 145            | 180            | 280            |
|                 | <b>E</b>                                       | 79             | 153            | 197            | 272            |
|                 | <b>N*</b>                                      | 80             | 142            | 196            | 293            |
|                 | <b>A</b>                                       | 135            | 170            | 200            | 310            |
| 25L, 33, and 37 | <b>B</b>                                       | 49             | 169            | 200            | 244            |
|                 | <b>C</b>                                       | 66             | 140            | 188            | 257            |
|                 | <b>D</b>                                       | 62             | 145            | 188            | 280            |
|                 | <b>E</b>                                       | 79             | 153            | 188            | 272            |
|                 | <b>N*</b>                                      | 80             | 142            | 188            | 293            |

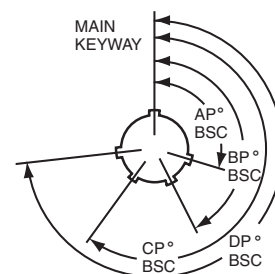
\* An "N" designation is used on D38999 military part number but not on the commercial versions

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. Master key stays fixed, minor keys rotate. Inserts are not rotated in conjunction with the master key/keyway.

### PLUG (FRONT FACE SHOWN)



### RECEPTACLE (FRONT FACE SHOWN)



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Brandon Brown • Office: +1 (607) 563-5685 • Email: bbrown@amphenol-aao.com

amphenol-aerospace.com • amphenolmao.com