

# Amphenol®

## MIL-DTL-38999

### Series III Core Range



## BLACK ZINC NICKEL

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Amphenol Ltd has responded to the requirements of the commercial, industrial and military markets to move away from the use of hazardous materials such as cadmium, by developing the RoHS compliant Black Zinc Nickel plating. This is available on a wide variety of connectors including proprietary MIL-DTL-38999. This conductive and non-reflective black finish is approved for 500hrs salt spray endurance and is fast becoming the new Defence Industry standard.



### Key Features

- **Environmental** RoHS compliant, Cadmium free
- **Salt Spray** 500hrs endurance with shell-to-shell continuity  $<5\text{m}\Omega$
- **Shell-to-Shell Continuity** Less than  $<2.5\text{m}\Omega$  initially
- **Mechanical** 500 mating cycles, non magnetic
- **Temperature Range**  $-65^{\circ}$  to  $+175^{\circ}\text{C}$  in accordance with MIL-DTL-38999
- **Compatibility** No significant galvanic reaction with cadmium, zinc cobalt or electroless nickel plated parts
- **Availability** Deployed on standard connector ranges such as MIL-DTL-38999, MIL-C-26482, Rhino Power

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**RoHSCompliant** ✓

## Amphenol: MIL-DTL-38999 Capability

The Amphenol Corporation offers the largest selection of MIL-DTL-38999 connectors in the world with fully QPL approved manufacturing sites in the UK, USA, France and India.

Amphenol Ltd, based in Whitstable, UK, designs, manufactures and markets circular, rectangular, electronic, fibre-optic and EMI/EMP filtered connectors as well as a variety of special application interconnect systems.

This product catalogue defines Amphenol Ltd's core range of MIL-DTL-38999 Series III connectors that are aligned technically, commercially and logistically to the demands of an ever changing and highly competitive marketplace.

By focusing on a preferred range of insert arrangements and shell styles, Amphenol Ltd is able to drive efficiencies through manufacturing processes which enable reduced lead-times and MOQs thus making Amphenol Ltd a highly effective, cost efficient supply chain partner.

The core MIL-DTL-38999 Series III product range highlighted within this catalogue is available as either proprietary or fully QPL qualified and in plating finishes including Cadmium or Black Zinc-Nickel. Other plating finishes and shell materials such as Stainless Steel, Nickel Aluminium Bronze and Titanium are also available.

To meet the demands of the markets and applications MIL-DTL-38999 connectors can also be supplied with integrated EMI and EMP filters, hermetic sealing and as cable harnesses or equipment panels.

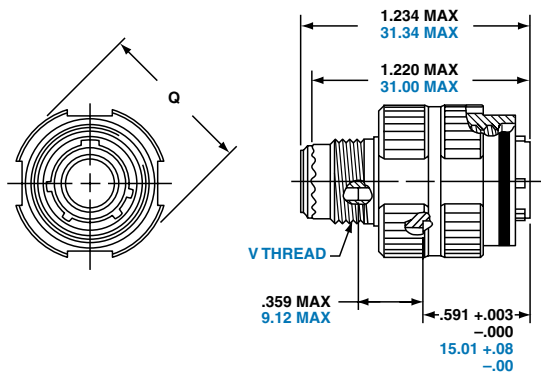
Amphenol Ltd has aligned this selected product offering with Value Added Distribution partners who can deliver small and medium volume connector orders in as little as 48hrs. Distribution partners provide customers with a one-stop source for all needs from concept and prototype phases, through production, to lifetime programme support.

For details of Amphenol Ltd's complete range of MIL-DTL-38999 connectors please see the full catalogue at [www.amphenol.co.uk/38999](http://www.amphenol.co.uk/38999)



## Styles

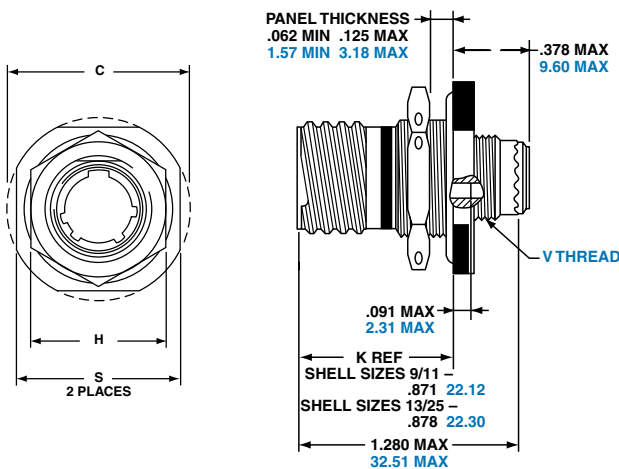
### TV06 (D38999/26) - Straight Plug



| Shell Size | MS Shell Size Code | Q Max. | V Thread Metric |
|------------|--------------------|--------|-----------------|
| 9          | A                  | 21.8   | M12X1-6g        |
| 11         | B                  | 25.0   | M15X1-6g        |
| 13         | C                  | 29.4   | M18X1-6g        |
| 15         | D                  | 32.5   | M22X1-6g        |
| 17         | E                  | 35.7   | M25X1-6g        |
| 19         | F                  | 38.5   | M28X1-6g        |
| 21         | G                  | 41.7   | M31X1-6g        |
| 23         | H                  | 44.9   | M34X1-6g        |
| 25         | J                  | 48.0   | M37X1-6g        |

All dimensions, in mm, for reference only.

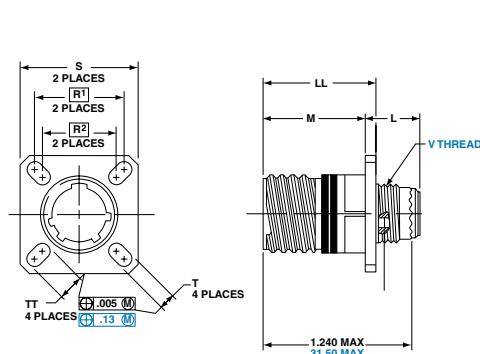
### TV07 (D38999/24) - Jam Nut Receptacle



| Shell Size | MS Shell Size Code | C Max. | H Hex +.43 / -.41 | S ±.25 | V Thread Metric |
|------------|--------------------|--------|-------------------|--------|-----------------|
| 9          | A                  | 30.45  | 22.23             | 26.97  | M12X1-6g        |
| 11         | B                  | 35.20  | 25.40             | 31.75  | M15X1-6g        |
| 13         | C                  | 38.38  | 30.18             | 34.93  | M18X1-6g        |
| 15         | D                  | 41.55  | 33.32             | 38.10  | M22X1-6g        |
| 17         | E                  | 44.73  | 36.53             | 41.28  | M25X1-6g        |
| 19         | F                  | 49.50  | 39.67             | 46.02  | M28X1-6g        |
| 21         | G                  | 52.65  | 42.80             | 49.23  | M31X1-6g        |
| 23         | H                  | 55.85  | 46.02             | 52.37  | M34X1-6g        |
| 25         | J                  | 59.00  | 50.80             | 55.58  | M37X1-6g        |

**Note:** Deep reach receptacles are available for panel thicknesses up to .750 max. All dimensions, in mm, for reference only.

### TVP00 (D38999/20) - Wall Mounting Receptacle



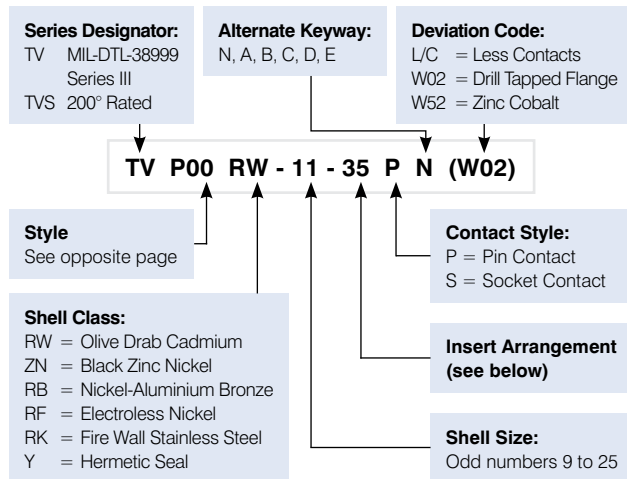
| Shell Size | MS Shell Size Code | L Max. | M +.00 / -.13 | R <sup>1</sup> | R <sup>2</sup> | S Max. | T ±.20 | V Thread Metric | LL +.15 / -.00 | TT ±.20 |
|------------|--------------------|--------|---------------|----------------|----------------|--------|--------|-----------------|----------------|---------|
| 9          | A                  | 11.91  | 20.83         | 18.26          | 15.09          | 24.1   | 3.25   | M12X1-6g        | 22.99          | 5.49    |
| 11         | B                  | 11.91  | 20.83         | 20.62          | 18.26          | 26.5   | 3.25   | M15X1-6g        | 22.99          | 4.93    |
| 13         | C                  | 11.91  | 20.83         | 23.01          | 20.62          | 28.9   | 3.25   | M18X1-6g        | 22.99          | 4.93    |
| 15         | D                  | 11.91  | 20.83         | 24.61          | 23.01          | 31.3   | 3.25   | M22X1-6g        | 22.99          | 4.39    |
| 17         | E                  | 11.91  | 20.83         | 26.97          | 24.61          | 33.7   | 3.25   | M25X1-6g        | 22.99          | 4.93    |
| 19         | F                  | 11.91  | 20.83         | 29.36          | 26.97          | 36.9   | 3.25   | M28X1-6g        | 22.99          | 4.93    |
| 21         | G                  | 12.70  | 20.07         | 31.75          | 29.36          | 40.1   | 3.25   | M31X1-6g        | 22.99          | 4.93    |
| 23         | H                  | 12.70  | 20.07         | 34.93          | 31.75          | 43.3   | 3.91   | M34X1-6g        | 22.99          | 6.15    |
| 25         | J                  | 12.70  | 20.07         | 38.10          | 34.93          | 46.4   | 3.91   | M37X1-6g        | 22.99          | 6.15    |

Designates true position dimensioning

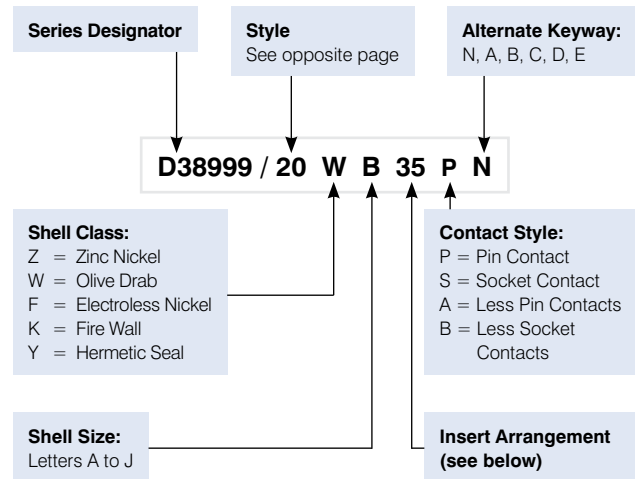
All dimensions, in mm, for reference only.

## D38999 Part Numbering

### Proprietary



### MIL-DTL-38999

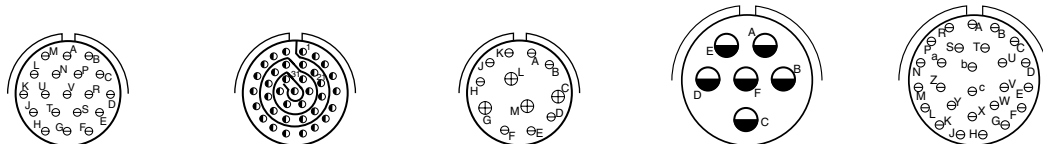


## Insert Arrangements

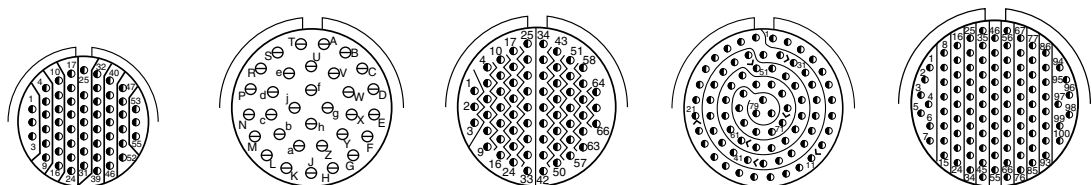
Front face of pin inserts illustrated



|                        | 9-35/A35 | 9-98/A98 | 11-35/B35 | 11-98/B98 | 13-35/C35 | 13-98/C98 |
|------------------------|----------|----------|-----------|-----------|-----------|-----------|
| <b>Service Rating</b>  | M        | I        | M         | I         | M         | I         |
| <b>No. of Contacts</b> | 6        | 3        | 13        | 6         | 22        | 10        |
| <b>Contact Size</b>    | 22D      | 20       | 22D       | 20        | 22D       | 20        |



|                        | 15-19/D19 | 15-35/D35 | 15-97/D97 | 17-6/E6 | 17-26/E26 |
|------------------------|-----------|-----------|-----------|---------|-----------|
| <b>Service Rating</b>  | I         | M         | I         | I       | I         |
| <b>No. of Contacts</b> | 19        | 37        | 8         | 6       | 26        |
| <b>Contact Size</b>    | 20        | 22D       | 20        | 12      | 20        |

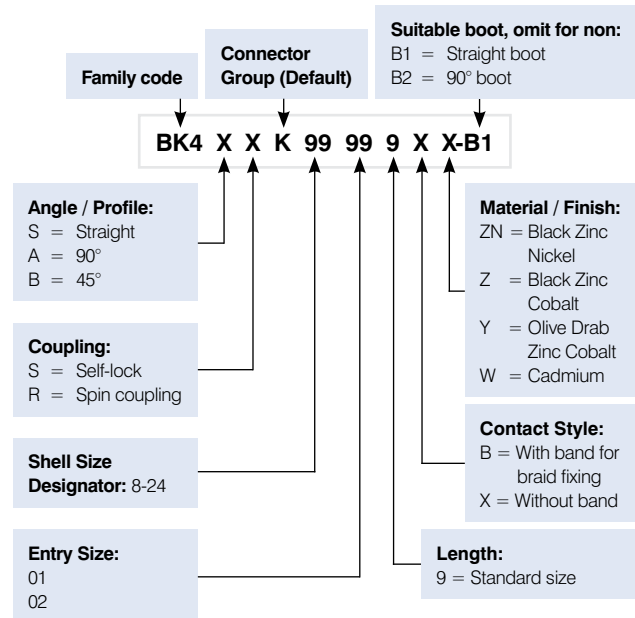


|                        | 17-35/E35 | 19-32/F32 | 19-35/F35 | 21-35/G35 | 23-35/H35 |
|------------------------|-----------|-----------|-----------|-----------|-----------|
| <b>Service Rating</b>  | M         | I         | M         | M         | M         |
| <b>No. of Contacts</b> | 55        | 32        | 66        | 79        | 100       |
| <b>Contact Size</b>    | 22D       | 20        | 22D       | 22D       | 22D       |

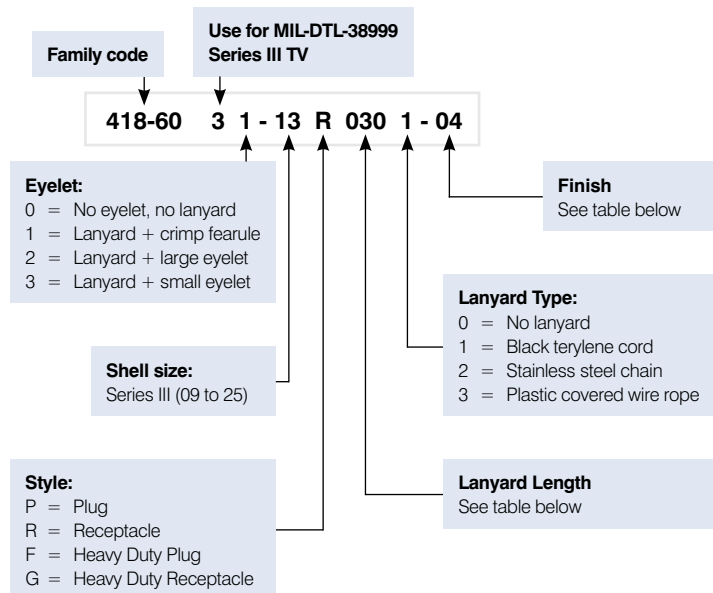
|                       |   |    |    |    |    |        |
|-----------------------|---|----|----|----|----|--------|
| <b>Contact Legend</b> |   |    |    |    |    |        |
|                       | 8 | 10 | 12 | 16 | 20 | 22D 23 |

## Accessories and tooling

### Backshells



### Cap



| Lanyard Length (all +/- 0.25 inches) |                   | Finish |                          |
|--------------------------------------|-------------------|--------|--------------------------|
| 030                                  | 3 inches (75mm)   | -01    | Unplated                 |
| 035                                  | 3.5 inches (90mm) | -02    | Electroless Nickel plate |
| 040                                  | 4 inches (100mm)  | -03    | Olive Drab Cadmium       |
| 050                                  | 5 inches (125mm)  | -04    | Olive Drab Zinc Cobalt   |
| 060                                  | 6 inches (150mm)  | -08    | Stainless Steel          |
| 090                                  | 9 inches (230mm)  | -09    | Nickel Aluminium Bronze  |
| 120                                  | 12 inches (300mm) | -10    | Black Zinc Nickel        |

## Crimping Tools

| Contact Size/Type                           | Crimping Tool                             | Turret Die or Positioner                  |
|---------------------------------------------|-------------------------------------------|-------------------------------------------|
| 12 Pin and Socket                           | M22520/1-01                               | M22520/1-04                               |
| 16 Pin and Socket                           | M22520/1-01<br>M22520/7-01                | M22520/1-04<br>M22520/7-04                |
| 20 Pin and Socket                           | M22520/1-01<br>M22520/2-01<br>M22520/7-01 | M22520/1-04<br>M22520/2-10<br>M22520/7-08 |
| 22D Pin                                     | M22520/2-01<br>M22520/7-01                | M22520/2-09<br>M22520/7-07                |
| 22D Socket<br>Series I, III                 | M22520/2-01<br>M22520/7-01                | M22520/2-07<br>M22520/7-05                |
| 22D Socket Series II                        | M22520/2-01<br>M22520/7-01                | M22520/2-06<br>M22520/7-06                |
| 8 Twinax Center Pin<br>and Socket           | M22520/2-01                               | M22520/2-37                               |
| 8 Twinax Intermediate<br>Outer Pin & Socket | M22520/5-01                               | M22520/5-200                              |

| Contact Size/Type                  | Crimping Tool | Turret Die or Positioner      |
|------------------------------------|---------------|-------------------------------|
| 8 Coaxial Inner<br>Pin and Socket  | M22520/2-01   | M22520/2-31                   |
| 8 Coaxial Outer Pin<br>and Socket  | M22520/5-01   | M22520/5-05<br>Die Closure B  |
|                                    | M22520/5-01   | M22520/5-41<br>Die Closure B  |
|                                    | M22520/10-01  | M22520/10-07<br>Die Closure B |
| 16 Coaxial Inner<br>Pin and Socket | M22520/2-01   | M22520/2-35                   |
| 16 Coaxial Outer<br>Pin and Socket | M22520/4-01   | M22520/4-02                   |
| 12 Coaxial Inner<br>Pin and Socket | M22520/2-01   | M22520/2-34                   |
| 12 Coaxial Outer<br>Pin and Socket | M22520/31-01  | M22520/31-02                  |
| 10 (Power)                         | TP-201423     |                               |

Where 2 or 3 tools are listed for a contact size, only one tool and its die or positioner, adjacent within the table, are required to crimp the contact. The above crimping tools and positioners are available from a QPL approved tool manufacturer.

## Standard Contacts

| Contact Size | Pins             | Socket           | Seal Plug    |
|--------------|------------------|------------------|--------------|
| 4            | Contact Factory  | Contact Factory  | N/A          |
| 8 (Coax)     | M39029/60-367    | M39029/59-366    | MS27488-8-3  |
| 8 (Power)    | Contact Factory  | Contact Factory  | MS27488-8-3  |
| 8 (Twinax)   | M39029/90-529    | M39029/91-350    | MS27488-8-3  |
| 12           | M39029/58-365    | M39029/56-353    | MS27488-12-2 |
| 12 (Coax)    | 418-840-12001-02 | 418-841-12001-02 | MS27488-12-2 |
| 16           | M39029/58-364    | M39029/56-352    | MS27488-16-2 |
| 16 (Coax)    | 418-840-16001-02 | 418-841-16001-02 | MS27488-16-2 |
| 20           | M39029/58-363    | M39029/56-351    | MS27488-20-2 |
| 22D          | M39029/58-360    | M39029/56-348    | MS27488-22-2 |

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