

## 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  $<5m\Omega$
- **Shell-to-Shell Continuity** Less than  $<2.5m\Omega$  initially
- **Mechanical** 500 mating cycles, non magnetic
- **Temperature Range**  $-65^{\circ}$  to  $+175^{\circ}C$  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

## 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.

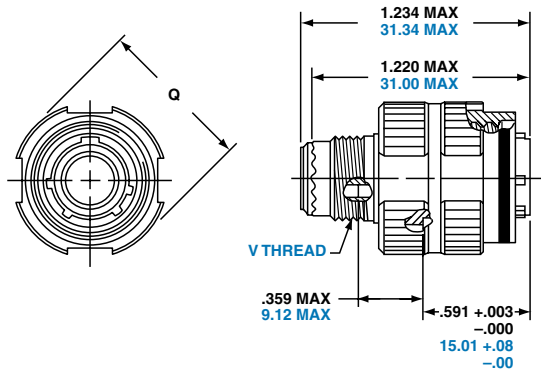
Amphenol Ltd has aligned this selected product offering with Value Added Distribution partners who can deliver small and medium volume connector orders in as little as 48hrs. Distribution partners provide customers with a one-stop source for all needs from concept and prototype phases, through production,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

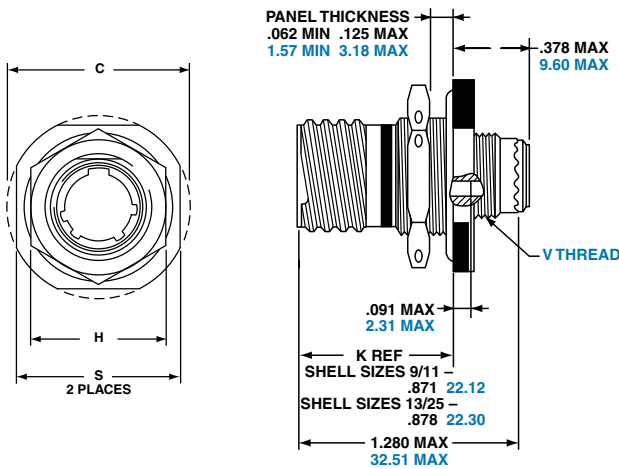
### TV06 (D38999/26) - Straight Plug



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.

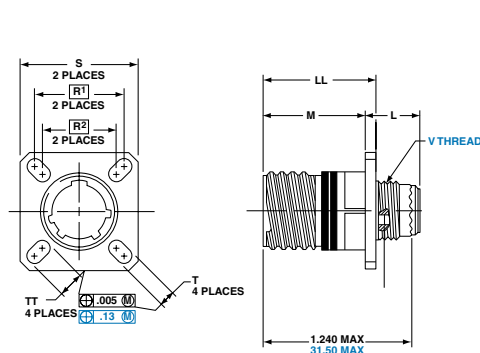
### TV07 (D38999/24) - Jam Nut Receptacle



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



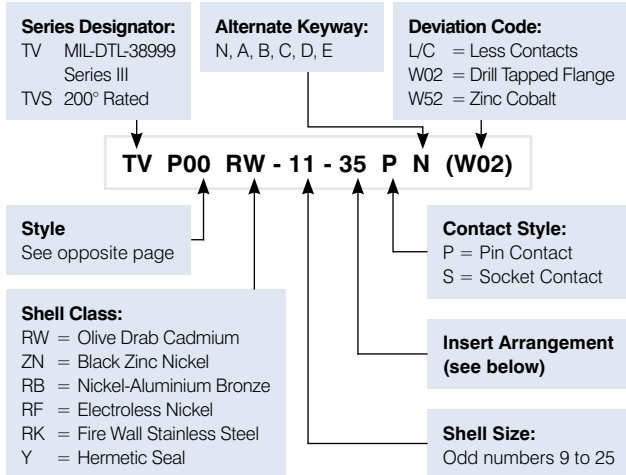
Shell Size	MS Shell Size Code	L Max.	M +.00 / -.13	R <sup>1</sup>	R <sup>2</sup>	S Max.	T ±.20	V Thread Metric	LL +.15 / -.00	TT ±.20
9	A	11.91	20.83	18.26	15.09	24.1	3.25	M12X1-6g	22.99	5.49
11	B	11.91	20.83	20.62	18.26	26.5	3.25	M15X1-6g	22.99	4.93
13	C	11.91	20.83	23.01	20.62	28.9	3.25	M18X1-6g	22.99	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

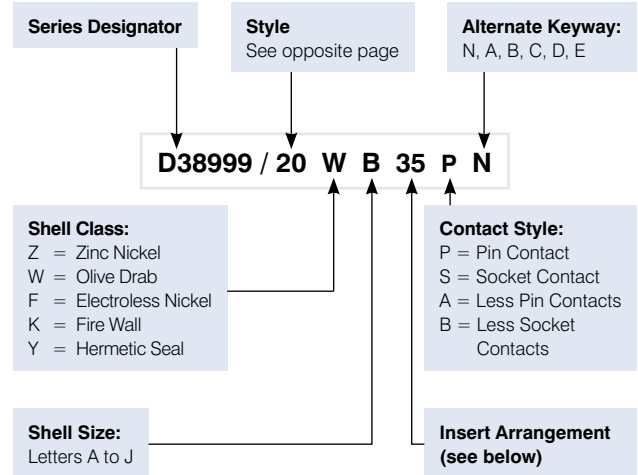
All dimensions, in mm, for reference only.

## D38999 Part Numbering

Proprietary



MIL-DTL-38999

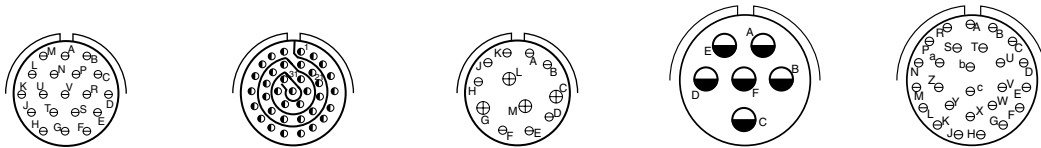


## Insert Arrangements

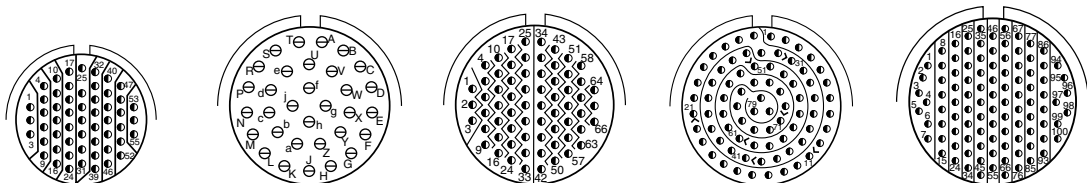
Front face of pin inserts illustrated



	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   4	6	26
<b>Contact Size</b>	20	22D	20   16	12	20

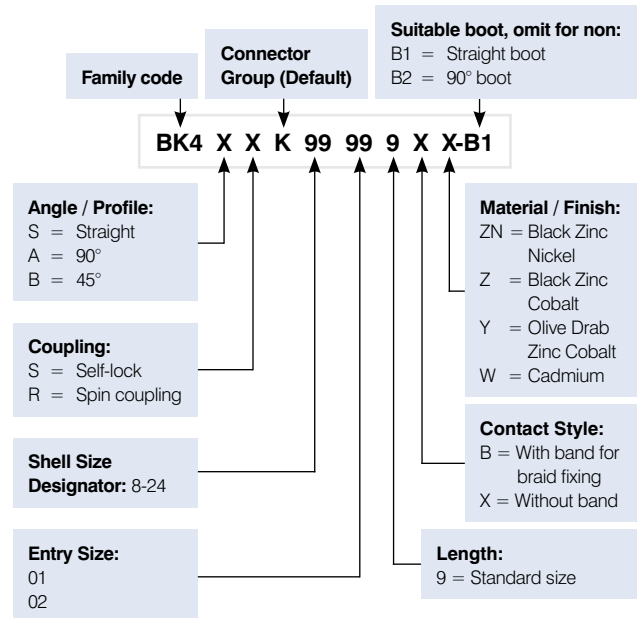


	17-35/E35	19-32/F32	19-35/F35	21-35/G35	23-35/H35
<b>Service Rating</b>	M	I	M	M	M
<b>No. of Contacts</b>	55	32	66	79	100
<b>Contact Size</b>	22D	20	22D	22D	22D

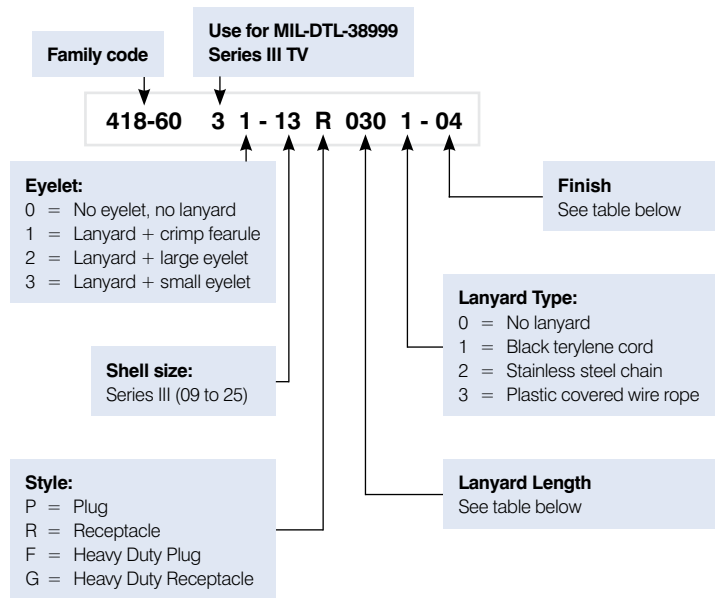
Contact Legend						
	8	10	12	16	20	22D 23

## 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 M22520/7-01	M22520/1-04 M22520/7-04
20 Pin and Socket	M22520/1-01 M22520/2-01 M22520/7-01	M22520/1-04 M22520/2-10 M22520/7-08
22D Pin	M22520/2-01 M22520/7-01	M22520/2-09 M22520/7-07
22D Socket Series I, III	M22520/2-01 M22520/7-01	M22520/2-07 M22520/7-05
22D Socket Series II	M22520/2-01 M22520/7-01	M22520/2-06 M22520/7-06
8 Twinax Center Pin and Socket	M22520/2-01	M22520/2-37
8 Twinax Intermediate Outer Pin & Socket	M22520/5-01	M22520/5-200

Contact Size/Type	Crimping Tool	Turret Die or Positioner
8 Coaxial Inner Pin and Socket	M22520/2-01	M22520/2-31
8 Coaxial Outer Pin and Socket	M22520/5-01	M22520/5-05 Die Closure B
	M22520/5-01	M22520/5-41 Die Closure B
	M22520/10-01	M22520/10-07 Die Closure B
16 Coaxial Inner Pin and Socket	M22520/2-01	M22520/2-35
16 Coaxial Outer Pin and Socket	M22520/4-01	M22520/4-02
12 Coaxial Inner Pin and Socket	M22520/2-01	M22520/2-34
12 Coaxial Outer 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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