

# MIL-DTL-38999 Circular Connector

## Overview

Amphenol® Connectors are ideally suited for the incorporation of shielded contacts for high performance interconnection applications. The circular family is built around MIL-DTL-38999 specifications, with Mil-approved and commercial styles offered. Normal operating voltage for circulars with power contacts only is up to 900 VAC (RMS) at sea level.

### The MIL-DTL-38999 family offers these features for contact termination flexibility:

- Widest selection of insert arrangements that can incorporate:
  - Size 8 high speed Quadrax and Differential Twinax contacts for MIL-DTL-38999 Series III (specially modified to accommodate keyed contacts)
  - Transition adapters for use in attaching D38999 Series III connectors with high speed quadrax or differential contacts to PCB boards
  - Size 8, 12 and 16 Coax contacts
  - Size 8 and 12 Twinax contacts
  - Size 8, 10 & 12 Triax contacts
- Wide selection of connector shell styles and sizes
- Scoop-proof recessed design in LJT-R, TV-R and SJT-R connectors provide protection for contacts
- Standard power contacts are crimp rear release, qualified to SAE AS39029
- Coax, Twinax, and Triax contacts employ the same retention system as power contacts, simplifying user substitution

### GENERAL ORDERING INFORMATION

Amphenol MIL-DTL-38999, which feature rear removable contacts, are normally supplied with a full complement of power contacts, separately packaged. Coax, twinax and triax contacts are ordered by part number as referenced in the part number charts on the following pages of this catalog, and are substituted for the power contacts at the time of the cable or equipment assembly. If the application is for coax, twinax or triax contacts only, the connector may be ordered *less contacts* and no power contacts will be supplied.

### HOW TO ORDER CONNECTORS AND HIGH FREQUENCY CONTACTS

- Select the Circular Series desired.  
(See features of each series given briefly on this page and in-depth in the other sections of this catalog, which are on-line at [www.amphenol-aerospace.com](http://www.amphenol-aerospace.com))  
Series I - LJT-R Connectors  
Series II - JT-R Connectors  
Series III - TV-R Connectors  
SJT\* - SJT-R Connectors  
See Amphe-Lite (Industrial 38999 type) Catalog 12-094
- Select the quadrax, differential twinax, coax, twinax and/or triax contacts or the transition adapters that are needed from the tables on the following pages that correspond to the cable being used.
- Select the insert arrangement to accommodate required number of contacts. Insert patterns for quadrax and differential twinax contacts are on pages 241,242. Insert patterns for coax, twinax and triax contacts are on pages 258-260.
- Complete the connector part number from the connector series catalog, incorporating the chosen insert pattern number. See detailed how to order page 243 for ordering 38999, Series III with quadrax and differential twinax contacts. Consult Amphenol for assistance in ordering 38999 circulars with coax, twinax and triax contacts.
- Consult Amphenol Aerospace for ordering information for connectors with PC tail contacts and for transition adapters.
- If connector is ordered less contacts, power contacts and/or sealing plugs may be ordered separately to fill out the insert arrangement.



TV-R, Tri-Start, D38999 Series III

- High performance capability series for both general duty and severe environment applications
  - Offers the widest range of Subminiature Family Mil-Spec qualified options in contact and connector styles
  - Threaded coupling; completely mates in one turn; crimp termination
  - Superior EMI/EMP shielding effectiveness
  - Scoop-proof design (recessed pins)
  - Available in aluminum, stainless steel and firewall, or lightweight composite styles
- See 38999 section Series III for complete information on this section.



JT-R, D38999 Series II

See 38999 section Series II, JT for complete information on this series.

- Shorter profile connector series for applications requiring maximum space savings
- Bayonet coupling, crimp termination
- Also available in solder termination types under MIL-DTL-27599 Series II



LJT-R, D38999 Series I

See 38999 section Series I, LJT for complete information on this series.

- Scoop-proof (recessed pins)
- Bayonet coupling, crimp termination
- Also available in solder termination types under MIL-DTL-27599 Series II



Amphe-Lite, 38999 Type

See Catalog 12-094 for complete information on this series.

- Commercial/Industrial 38999 Series III type
- Cost effective high performance connector for severe environments or general duty industrial applications
- Consult Amphenol Industrial Operations for further information 12-094 catalog is on-line at [www.amphenol-industrial.com](http://www.amphenol-industrial.com).



SJT-R, 38999 Type

See the SJT section of this catalog.

- Amphenol proprietary series (non-MS) which is a further expansion of the basic JT family, but incorporates the LJT scoop-proof design
- Compliant with several European specifications

NOTE: SAE AS39029 supersedes MIL-C-39029.  
NOTE: MIL-DTL-38999 supersedes MIL-C-38999.  
MIL-DTL-27599 supersedes MIL-C-27599

38999

III
HD
Dualok
II
I
SJT
Accessories
Aquacon
Herm/Seal
PCB

HIGH SPEED
Fiber Optics
Contacts Connectors Cables

EMI Filter
Transient

26482
Matrix 2

83723 III
Matrix   Pyle

26500
Pyle

5015
Crimp Rear Release Matrix

22992
Class I

Back-Shells
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Options
Others

38999

III

HD

Dualok

II

I

SJT

Accessories

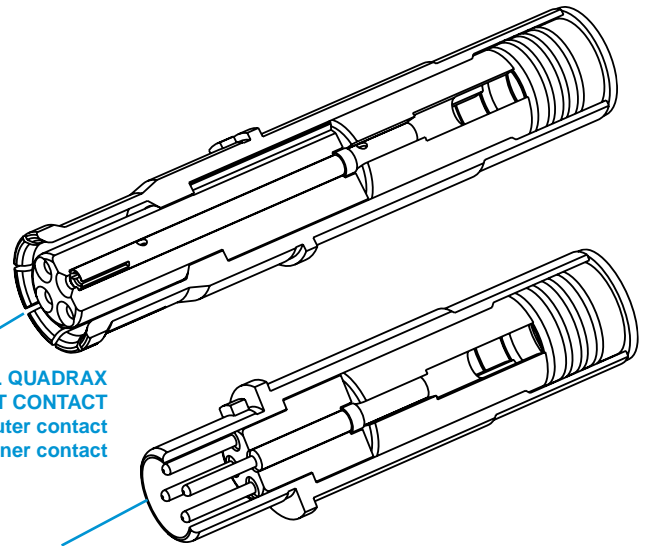
Aquacon

Herm/Seal

PCB

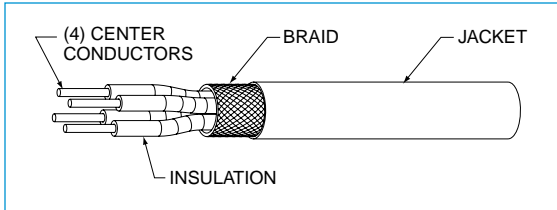
**Amphenol® Quadrax Contacts** - Offer several advantages for high data transfer rates, low power consumption and excellent EMI compatibility:

- Four strategically spaced inner contacts form two 100 or 150 Ohm matched impedance differential pairs
- Outer contact has rugged wall section for durability
- Available in size 8 crimp termination style
- Also available in size 8 with PC tails (see page 233)
- Requires modification of MIL-DTL-38999 connector to accommodate keyed contacts



TYPICAL QUADRAX SOCKET CONTACT has socket outer contact with a socket inner contact

TYPICAL QUADRAX PIN CONTACT has pin outer contact with a pin inner contact



Cable Illustration - Quadrax Contact



Quadrax Pin with 8P8C "RJ45" Jack



Quadrax Pin Size 8 and MIL-DTL-38999 Series III Connector

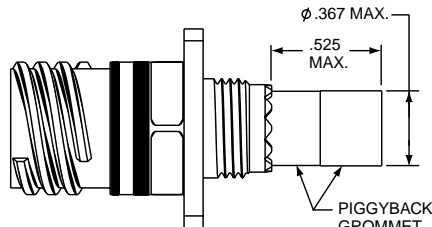


Quadrax in an Eight Wire Gigabit Ethernet Assembly

### Suggested Strain Relief - Insert Arrangements 9-5 or 19-18 with Quadrax Contacts

Due to the piggyback grommet interference with normal strain reliefs on the shell size 9 only, the recommended strain relief for the connector is: Amphenol part number TGW-R-5309-10 (OD Cad) or TGF-R-5309-10 (Electroless nickel)

- shell size 9 only. For 19-18 insert pattern, recommended backshell: Glenair 367-221-NF. This is recommended due to the proximity of the size 8 contacts in relation to the shell.



Also see Quadrax contacts for ARINC 600 and R27 Rack and Panel Connectors on pages 265 and 266.

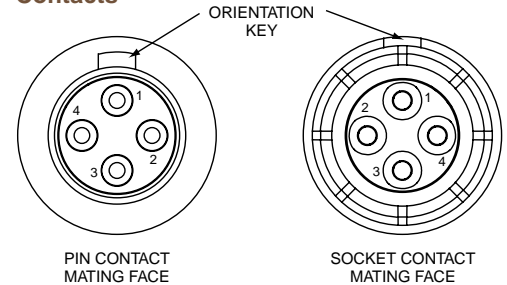
### Quadrax Contacts are gold plated, crimp termination

Finish of mating contact parts: supplied with 0.000050 min. gold over nickel on mating parts. Consult Amphenol for availability of other finishes.

#### Quadrax Size 8 Contact Performance:

- Bandwidth: Up to 1.25 GHz
- Data Rate: Exceeding 2.5 Gbps.
- Voltage Rating: 500 Vrms max. @ sea level
- Dielectric Withstanding Voltage: 1000 VAC rms between all inner contacts @ sea level, 500 VAC rms between inner and outer contacts @ sea level

### Suggested Numbering for Quadrax Contacts



Differential Pairs, contacts 1-3, 2-4.

See page 243 for part number ordering of popularly used 38999 Series III connectors with 100 ohm quadrax contacts.

Quadrax differential pairs are 1 and 3, 2 and 4.

# How to Order 38999, Series III Circular With Quadrax 100 Ohm Contacts

Amphenol Tri-Start, 38999 Series III\* Connectors can be ordered with the following popularly used Quadrax contacts:  
 100 ohm quadrax 21-033385-051 socket contacts  
 100 ohm quadrax 21-033384-051 pin contacts  
 Use the following coded number ordering procedure :

1.	2.	3.	4.	5.	6.
Connector Type	Shell Type	Service Class	Shell Size – Insert Arrangement	Contact Type	Alternate Keying Position
<b>TVP</b>	<b>00</b>	<b>RQW</b>	<b>21-75</b>	<b>P</b>	<b>B</b>

For ordering of connectors with any other quadrax contacts or differential twinax contacts, please consult Amphenol Aerospace for part numbers.

## Step 1. Select a Connector Type

<b>TV</b>	Tri-Start Series Connector with metal shells
<b>TVP</b>	Back panel mounted receptacle with metal shells
<b>CTV</b>	Tri-Start Series Connector with composite shells
<b>CTVP</b>	Back panel mounted receptacle with composite shells

## Step 2. Select a Shell Style

<b>00</b>	Wall mount receptacle
<b>02</b>	Box mount receptacle available only with the PCB tails and epoxy backfilled (non-removable)
<b>06</b>	Straight plug
<b>07</b>	Jam nut receptacle

## Step 3. Select a Service Class with Quadrax

<b>RQF</b>	Electroless nickel plated
<b>RGQF</b>	Electroless nickel plated ground plane
<b>RQW</b>	Olive drab cadmium plate
<b>RGQW</b>	Olive drab cadmium plated ground plane
<b>RQB</b>	NiAlBronze
<b>RGQB</b>	NiAlBronze ground plane
<b>RQK</b>	Corrosion resistance stainless steel
<b>RGQK</b>	Stainless steel ground plane
<b>QDT</b>	Durmalon plated, Nickel-PTFE alternative to cadmium
<b>GQDT</b>	Groundplane Durmalon

## Step 4. Select a Shell Size and Insert Arrangement

See insert arrangements available with quadrax contacts on preceding pages. Shell Size and Insert Arrangements are together in one chart. First number represents Shell Size, second number is the Insert Arrangement

## Step 5. Select Contact Type

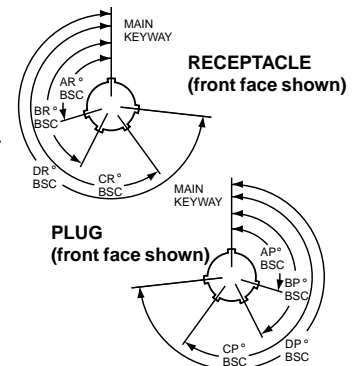
<b>P</b>	Pin contacts
<b>S</b>	Socket contacts

## Step 6. Select an Alternate Keying Position

Locksmith keying—rotation of minor keys. See Series III Alternate Positions below "N" not required for normal position

### Tri-Start Alternate Positions

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.



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
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
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
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
25L, 33, and 37	N	80	142	188	293
	A	135	170	188	310
	B	49	169	188	244
	C	66	140	188	257
	D	62	145	188	280
25L, 33, and 37	N	80	142	188	293
	A	135	170	188	310
	B	49	169	188	244
	C	66	140	188	257
	D	62	145	188	280

\* The incorporation of quadrax or differential twinax contacts requires a modified connector to accommodate keyed contacts.

For more information on Tri-Start, MIL-DTL-38999 Series III connectors see the section in this catalog.

38999

III

HD

Dualok

II

I

SJT

Accessories

Aquacon

Herm/Seal

PCB

HIGH SPEED

Fiber Optics

Contacts Connectors Cables

EMI Filter Transient

26482 Matrix 2

83723 III Matrix | Pyle

26500 Pyle

5015 Crimp Rear Release Matrix

22992 Class 1

Back-Shells

Options Others

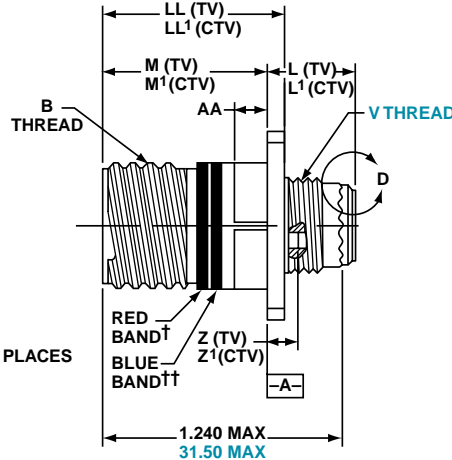
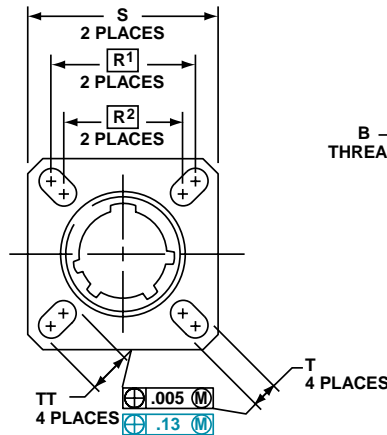
# TVP00R (D38999/20) - Crimp, Metal CTVP00R (D38999/20) - Crimp, Composite

## Wall Mounting Receptacle

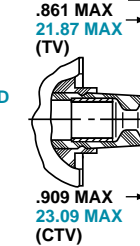
### PART #

To complete, see how to order pages 25-27.

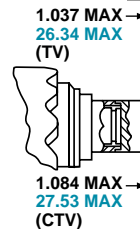
Connector Type	Shell Style	Service Class	Shell Size & Insert Arr	Contact Type	Alternate Position	Special Variations
TVP	00	RW	9-35	P	B	(453)
TVPS	00	RK	X-X	X	X	(XXX)
TVPS	00	RF	X-X	X	X	(XXX)
TVPS	00	RS	X-X	X	X	(XXX)
CTVP	00	RW	X-X	X	X	(XXX)
CTVPS	00	RF	X-X	X	X	(XXX)
D38999/	20	X	X-X	X	X	NA



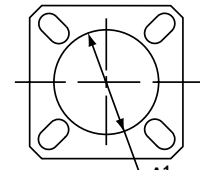
VIEW D FOR SIZE 8 COAXIAL ONLY, RELATIVE TO -A-



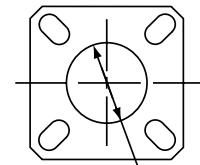
VIEW D FOR SIZE 8 TWINAX ONLY, RELATIVE TO -A-



### PANEL HOLE DIMENSIONS



### BACK PANEL MOUNTING



### FRONT PANEL MOUNTING

† Red band indicates fully mated  
†† Blue band indicates rear release contact retention system

Shell Size	MS Shell Size Code	B Thread Class 2A 0.1P=0.3L-TS (Plated)	L Max. (TV)	L' Max. (CTV)	M +.000 - .005 (TV)	M' +.000 - .005 (CTV)	R <sup>1</sup>	R <sup>2</sup>	S Max.	T ±.008	Z Max. (TV)	Z' Max. (CTV)	A <sup>1</sup> Back Panel Mount	A <sup>2</sup> Front Panel Mount	AA Max. Panel Thickness	LL +.006 - .000 (TV)	LL1 ±.005 (CTV)	TT ±.008
9	A	.6250	.469	.514	.820	.773	.719	.594	.948	.128	.153	.198	.650	.510	.234	.905	.908	.216
11	B	.7500	.469	.514	.820	.773	.812	.719	1.043	.128	.153	.198	.800	.620	.234	.905	.908	.194
13	C	.8750	.469	.514	.820	.773	.906	.812	1.137	.128	.153	.198	.910	.740	.234	.905	.908	.194
15	D	1.0000	.469	.514	.820	.773	.969	.906	1.232	.128	.153	.198	1.040	.900	.234	.905	.908	.173
17	E	1.1875	.469	.514	.820	.773	1.062	.969	1.323	.128	.153	.198	1.210	1.010	.234	.905	.908	.194
19	F	1.2500	.469	.514	.820	.773	1.156	1.062	1.449	.128	.153	.198	1.280	1.130	.234	.905	.908	.194
21	G	1.3750	.500	.545	.790	.741	1.250	1.156	1.575	.128	.183	.228	1.410	1.250	.204	.905	.904	.194
23	H	1.5000	.500	.545	.790	.741	1.375	1.250	1.701	.154	.183	.228	1.530	1.360	.204	.905	.904	.242
25	J	1.6250	.500	.545	.790	.741	1.500	1.375	1.823	.154	.183	.228	1.660	1.470	.204	.905	.904	.242

Shell Size	MS Shell Size Code	L Max. (TV)	L' Max. (CTV)	M +.00 - .13 (TV)	M' +.00 - .13 (CTV)	R <sup>1</sup>	R <sup>2</sup>	S Max.	T ±.20	V Thread Metric	Z Max. (TV)	Z' Max. (CTV)	A <sup>1</sup> Back Panel Mount	A <sup>2</sup> Front Panel Mount	AA Max.	LL +.15 - .00 (TV)	LL1 ±.13 (CTV)	TT ±.20
9	A	11.91	13.06	20.83	19.63	18.26	15.09	24.1	3.25	M12X1-6g	3.89	5.03	16.66	13.11	5.94	22.99	23.06	5.49
11	B	11.91	13.06	20.83	19.63	20.62	18.26	26.5	3.25	M15X1-6g	3.89	5.03	20.22	15.88	5.94	22.99	23.06	4.93
13	C	11.91	13.06	20.83	19.63	23.01	20.62	28.9	3.25	M18X1-6g	3.89	5.03	23.42	19.05	5.94	22.99	23.06	4.93
15	D	11.91	13.06	20.83	19.63	24.61	23.01	31.3	3.25	M22X1-6g	3.89	5.03	26.59	23.01	5.94	22.99	23.06	4.39
17	E	11.91	13.06	20.83	19.63	26.97	24.61	33.7	3.25	M25X1-6g	3.89	5.03	30.96	25.81	5.94	22.99	23.06	4.93
19	F	11.91	13.06	20.83	19.63	29.36	26.97	36.9	3.25	M28X1-6g	3.89	5.03	32.94	28.98	5.94	22.99	23.06	4.93
21	G	12.70	13.84	20.07	18.82	31.75	29.36	40.1	3.25	M31X1-6g	4.65	5.79	36.12	32.16	5.18	22.99	22.96	4.93
23	H	12.70	13.84	20.07	18.82	34.93	31.75	43.3	3.91	M34X1-6g	4.65	5.79	39.29	34.93	5.18	22.99	22.96	6.15
25	J	12.70	13.84	20.07	18.82	38.10	34.93	46.4	3.91	M37X1-6g	4.65	5.79	42.47	37.69	5.18	22.99	22.96	6.15

All dimensions for reference only

Designates true position dimensioning

### 38999

- III
- HD
- Dualok
- II
- I
- SJT
- Accessories
- Aquacon
- Herm/Seal
- PCB

- HIGH SPEED
- Fiber Optics
- Contacts Connectors Cables

- EMI Filter Transient
- Matrix 2
- 26482
- 83723 III

- Matrix 1 Pyle
- 26500
- Pyle

- 5015
- Crimp Rear Release Matrix
- 22992
- Class 1

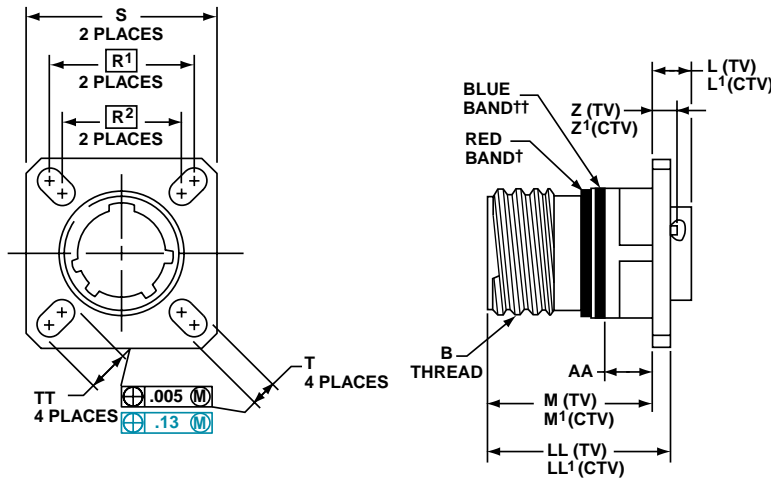
- Back-Shell's
- Options Others

### Box Mounting Receptacle

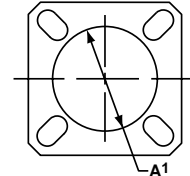
**PART #**

To complete, see how to order pages 25-27.

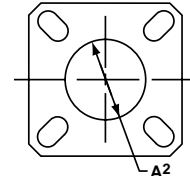
Connector Type	Shell Style	Service Class	Shell Size & Insert Arrg	Contact Type	Alternate Position	Special Variations
TVP	02	RW	9-35	P	B	(453)
TVPS	02	RK	X-X	X	X	(XXX)
TVPS	02	RF	X-X	X	X	(XXX)
TVPS	02	RS	X-X	X	X	(XXX)
CTVP	02	RW	X-X	X	X	(XXX)
CTVPS	02	RF	X-X	X	X	(XXX)



PANEL HOLE DIMENSIONS



BACK PANEL MOUNTING



FRONT PANEL MOUNTING

† Red band indicates fully mated

†† Blue band indicates rear release contact retention system

Consult Amphenol Aerospace for availability of composite box mount receptacles.

Inches

Shell Size	MS Shell Size Code	B Thread Class 2A 0.1P=0.3L-TS (Plated)	L Max. (TV)	L' Max. (CTV)	M +.000 - .005 (TV)	M' +.000 - .005 (CTV)	R <sup>1</sup>	R <sup>2</sup>	S Max.	T ±.008	Z Max. (TV)	Z' Max. (CTV)	A <sup>1</sup> Back Panel Mount	A <sup>2</sup> 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

Millimeters

Shell Size	MS Shell Size Code	L Max. (TV)	L' Max. (CTV)	M +.00 - .13 (TV)	M' +.00 - .13 (CTV)	R <sup>1</sup>	R <sup>2</sup>	S Max.	T ±.20	Z Max. (TV)	Z' Max. (CTV)	A <sup>1</sup> Back Panel Mount	A <sup>2</sup> Front Panel Mount	AA Max.	LL +.15 - .00 (TV)	LL1 ±.13 (CTV)	TT ±.20
9	A	5.21	6.35	20.83	19.63	18.26	15.09	24.1	3.25	3.89	5.03	16.66	13.11	5.94	22.99	23.06	5.49
11	B	5.21	6.35	20.83	19.63	20.62	18.26	26.5	3.25	3.89	5.03	20.22	15.88	5.94	22.99	23.06	4.93
13	C	5.21	6.35	20.83	19.63	23.01	20.62	28.9	3.25	3.89	5.03	23.42	19.05	5.94	22.99	23.06	4.93
15	D	5.21	6.35	20.83	19.63	24.61	23.01	31.3	3.25	3.89	5.03	26.59	23.01	5.94	22.99	23.06	4.39
17	E	5.21	6.35	20.83	19.63	26.97	24.61	33.7	3.25	3.89	5.03	30.96	25.81	5.94	22.99	23.06	4.93
19	F	5.21	6.35	20.83	19.63	29.36	26.97	36.9	3.25	3.89	5.03	32.94	28.98	5.94	22.99	23.06	4.93
21	G	5.97	7.11	20.07	18.82	31.75	29.36	40.1	3.25	4.65	5.79	36.12	32.16	5.18	22.99	22.96	4.93
23	H	5.97	7.11	20.07	18.82	34.92	31.75	43.3	3.91	4.65	5.79	39.29	34.93	5.18	22.99	22.96	6.15
25	J	5.97	7.11	20.07	18.82	38.10	34.92	46.4	3.91	4.65	5.79	42.47	37.69	5.18	22.99	22.96	6.15

All dimensions for reference only

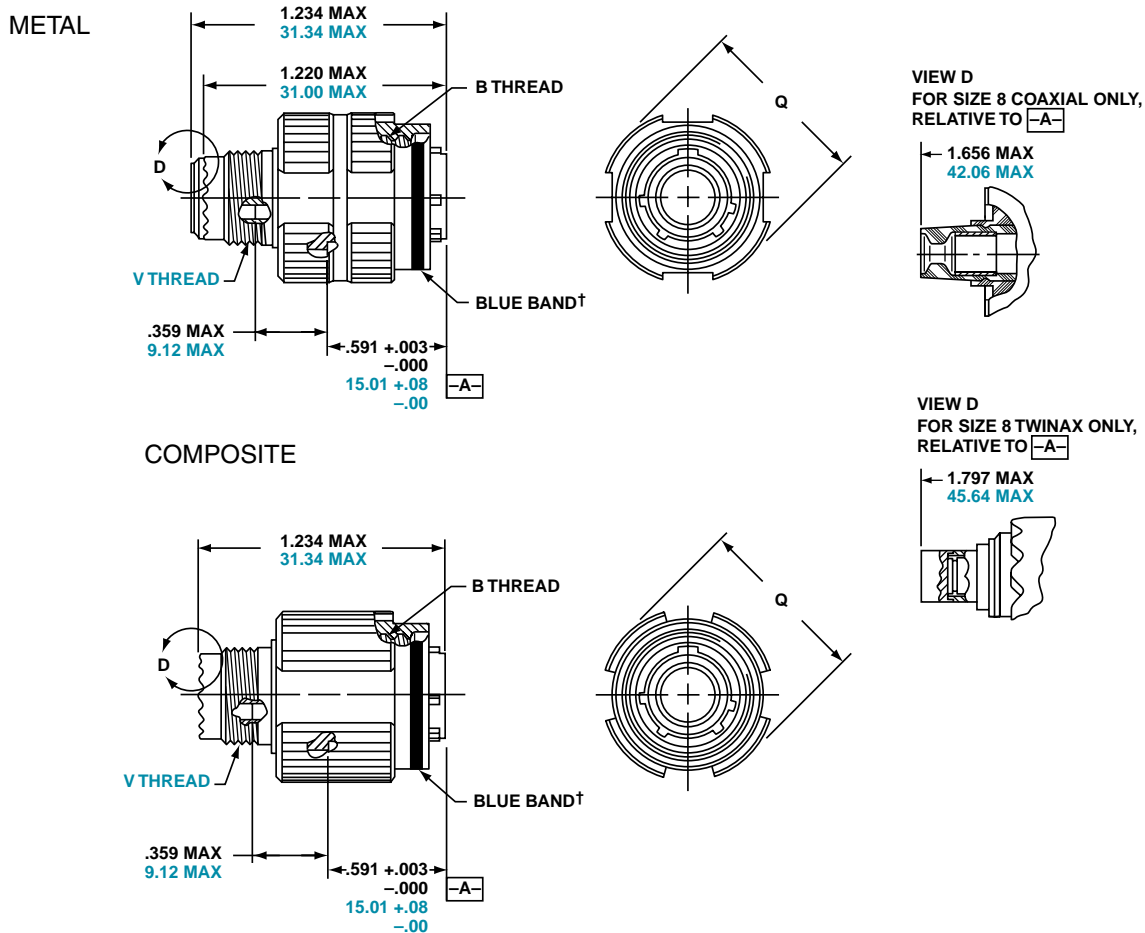
□ Designates true position dimensioning

## Straight Plug

### PART #

To complete, see how to order pages 25-27.

Connector Type	Shell Style	Service Class	Shell Size & Insert Arrg	Contact Type	Alternate Position	Special Variations
TV	06	RW	9-35	P	B	(453)
TVS	06	RK	X-X	X	X	(XXX)
TVS	06	RF	X-X	X	X	(XXX)
TVS	06	RS	X-X	X	X	(XXX)
CTV	06	RW	X-X	X	X	(XXX)
CTVS	06	RF	X-X	X	X	(XXX)
D38999/	26	X	X-X	X	X	NA



† Blue band indicates rear release contact retention system

Inches

Shell Size	MS Shell Size Code	B Thread 0.1P-0.3L-TS-2B (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

All dimensions for reference only.

Millimeters

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

38999

- III
- HD
- Dualok
- II
- I
- SJT
- Accessories
- Aquacon
- Herm/Seal
- PCB

- HIGH SPEED
- Fiber Optics
- Contacts
- Connectors
- Cables

EMI Filter  
Transient

26482  
Matrix 2

83723 III  
Matrix | Pyle

26500  
Pyle

5015  
Crimp Rear  
Release  
Matrix

22992  
Class 1

Back-Shell's

Options  
Others

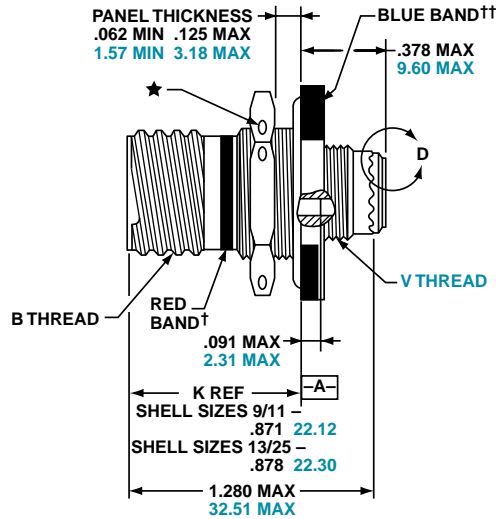
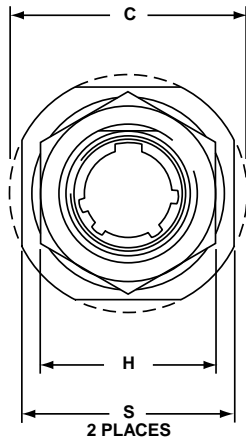
# TV07R (D38999/24) – Crimp, Metal CTV07R (D38999/24) – Crimp, Composite

## Jam Nut Receptacle

### PART #

To complete, see how to order pages 25-27.

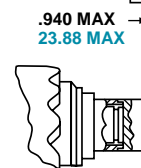
Connector Type	Shell Style	Service Class	Shell Size & Insert Arr	Contact Type	Alternate Position	Special Variations
TV	07	RW	9-35	P	B	(453)
TVS	07	RK	X-X	X	X	(XXX)
TVS	07	RF	X-X	X	X	(XXX)
TVS	07	RS	X-X	X	X	(XXX)
CTV	07	RW	X-X	X	X	(XXX)
CTVS	07	RF	X-X	X	X	(XXX)
D38999/	24	X	X-X	X	X	NA



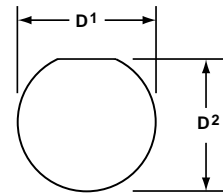
VIEW D FOR SIZE 8 COAXIAL ONLY, RELATIVE TO -A-



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



PANEL HOLE DIMENSIONS



JAM NUT D-HOLE MOUNTING

† Red band indicates fully mated

†† Blue band indicates rear release contact retention system

★ .059 dia min.

1.5 dia min., 3 lockwire holes Formed lockwire hole design (6 holes) is optional Inches

Shell Size	MS Shell Size Code	B Thread Class 2A 0.1P-0.3L-TS (Plated)	C Max.	D <sup>1</sup> +.010 -0.000	D <sup>2</sup> +.000 -0.010	H Hex +.017 -0.016	S ±.010
9	A	.6250	1.199	.693	.657	.875	1.062
11	B	.7500	1.386	.825	.770	1.000	1.250
13	C	.8750	1.511	1.010	.955	1.188	1.375
15	D	1.0000	1.636	1.135	1.085	1.312	1.500
17	E	1.1875	1.761	1.260	1.210	1.438	1.625
19	F	1.2500	1.949	1.385	1.335	1.562	1.812
21	G	1.3750	2.073	1.510	1.460	1.688	1.938
23	H	1.5000	2.199	1.635	1.585	1.812	2.062
25	J	1.6250	2.323	1.760	1.710	2.000	2.188

Millimeters

Shell Size	MS Shell Size Code	C Max.	D <sup>1</sup> +.25 -0.00	D <sup>2</sup> +.00 -0.25	H Hex +.43 -0.41	S ±.25	V Thread Metric
9	A	30.45	17.60	16.70	22.23	26.97	M12X1-6g
11	B	35.20	20.96	19.59	25.40	31.75	M15X1-6g
13	C	38.38	25.65	24.26	30.18	34.93	M18X1-6g
15	D	41.55	28.83	27.56	33.32	38.10	M22X1-6g
17	E	44.73	32.01	30.73	36.53	41.28	M25X1-6g
19	F	49.50	35.18	33.91	39.67	46.02	M28X1-6g
21	G	52.65	38.35	37.08	42.80	49.23	M31X1-6g
23	H	55.85	41.53	40.26	46.02	52.37	M34X1-6g
25	J	59.00	44.70	43.43	50.80	55.58	M37X1-6g

All dimensions for reference only NOTE: Deep reach receptacles are available for panel thicknesses up to .750 max.

### 38999

- III
- HD
- Dualok
- II
- I
- SJT
- Accessories
- Aquacon
- Herm/Seal
- PCB

- HIGH SPEED
- Fiber Optics
- Contacts Connectors Cables

- EMI Filter
- Transient

- 26482
- Matrix 2

- 83723 III
- Matrix | Pyle

- 26500
- Pyle

- 5015
- Crimp Rear Release Matrix

- 22992
- Class 1

- Back-Shell's

- Options
- Others

# Quadrax Contacts for MIL-DTL-38999 Series III, Application Data



## TV-R Series, MIL-DTL-38999 Series III\* Connectors

38999

QUADRAX CONTACTS FOR USE IN TV-R CONNECTORS								
Cable	Contact Part Number (Termination Instruction Sheet)**		Impedance (Ohms)	Inner Conductor (AWG)	Contact Size	Electrical Protocol††	Crimping Tools	
	Pin	Socket					Inner Contact	Outer Contact
Draka Fileca F-4703-3, F4704-4, Filotex ET 2PC236, Filotex ET2PF870, PIC Wire E50424 ABS0972, Tensolite 23450/04090X-4(LD) Draka Fileca F-4704-5, ABS1503 KD 24	21-033384-021 (L-2119-A)	21-033385-021 (L-2119-A)	100	24	8	Ethernet, 1000 Base-T Gigabit Ethernet	M22520/2-01 with Positioner M22520/2-37 or with Daniels Positioner K709	M22520/5-01 with Die Set M22520/5-45 (Location A)
Tensolite NF24Q100, NF24Q100-01, 24443/9P025X-4(LD), S280W502-4, 24443/03130X-4(LD), 24443/C20714X-4(LD), 24450/0120X-4(LD), NF24-2Q100, TYCO CEC-RWC-18664, GORE GSC-01-81869-01, 24443/03166X-4(LD), Thermax T956-4T200, Pic Wire E51424, Thermax MX100Q-24, NF24Q100-01-200C (Space), BMS13-72T03C04G024	21-033384-051 (L-2119-D)	21-033385-051 (L-2119-D)		24		Ethernet, 1000 Base-T Gigabit Ethernet		
Tensolite NF22Q100, NF22Q100-01, Thermax 956-5, GORE RCN 7688	21-033384-061 (L-2119-H)	21-033385-061 (L-2119-H)		22		Ethernet (100 Mbps), 1000 Base-T Gigabit Ethernet (1 Gbps)		
Tensolite NF26Q100, NF26Q100-01, NF26-2Q100, PIC E51426, Wirenetics W-3714-379	21-033384-071 (L-2119-AB)	21-033385-071 (L-2119-AB)		26		Ethernet (100 Mbps), 1000 Base-T Gigabit Ethernet (1 Gbps)		
S280W502-4/BMS13-72T03C04G024	21-033384-141 (BACC47GM1)	21-033385-141 (BACC45GN1)		24				
Draka Fileca F-4704-6, Gore RCN 8672	21-033384-151 (L-2119-AW)	21-033385-151 (L-2119-AW)		26		Ethernet (100 Mbps), 1000 Base-T Gigabit Ethernet (1 Gbps)		
Tensolite NF24Q100-01 (same as 21-03338( ) -51, uses EMI Piggyback)	21-033384-161 (L-2119-BE)	21-033385-161 (L-2119-BE)		24		Ethernet (100 Mbps), 1000 Base-T Gigabit Ethernet (1 Gbps)		
Gore RCN8513, JSFY18-3	21-033384-171 (L-2119-BN)	21-033385-171 (L-2119-BN)		22		Ethernet (100 Mbps), 1000 Base-T Gigabit Ethernet (1 Gbps)		
Tensolite NF22Q100 Special Box pattern, only mates with 21-0333( ) -181	21-033384-181 (L-2119-BP)	21-033385-181 (L-2119-BP)		22		Ethernet (100 Mbps), 1000 Base-T Gigabit Ethernet (1 Gbps)		
Tensolite NF24Q100, NF24Q100-01 for 2.5 Gbps applications	21-033384-191 (L-2119-BS)	21-033385-191 (L-2119-BS)		24		*Serial FPDP Applications (2.5 Gbps) (Typical app run at 150 Ohms) •HDMI 1.3		
Gore RCN 8647	21-033384-301	21-033385-301	24					
USB2 (28433/02171LX-4)	21-033384-101†	21-033385-101†	90	USB2.0 (480 Mbps)				
Tensolite 24450/03089X-4(LD) Gore RCN8647	21-033384-211	21-033385-211	24	IEEE 1394B Firewire				
JSFY02-1, JSFY18	21-033384-221	21-033385-221	24	IEEE 1394B Firewire				
Gore RCN8487, JSFY18	21-033384-231	21-033385-231	110	IEEE 1394B Firewire				
Tensolite 24450/03089X-4(LD) Same as 21-03338( ) -211 but Box pattern, mates with 21-03338( ) -241 only	21-033384-241†	21-033385-241†	24	IEEE 1394B Firewire				
F-4703, ABS1503KD24	21-033384-281	21-033385-281	100	Meets EN3155-074				
Tensolite 26473/02006X-4(LD)/Gore RCN8328 (not for new designs, use 21-033450/1 series)	21-033384-31 (L-2119-B)	21-033385-031 (L-2119-B)	150	26				

CHART CONTINUES ON NEXT PAGE  
QUADRAX CONTACT DATA

Contacts are inserted by hand. Refer to termination instructions listed. Contacts are removed with a removal tool. Recommended tool is MIL-I-81969/14-06, Daniels DRK-264-8. Refer to termination instructions listed. Finish of mating contact parts: Contact part numbers shown in the chart above are supplied gold plated per ASTM B488 Type II, Code C, .000050 min. thick over nickel plate per AMS-QQ-N-290, Class 2, .000030/.000150 thick.

Daniels crimping tools available from Daniels Mfg. Corp. 6103 Anno Ave., Orlando, FL 32809

\* Requires modified connector to accommodate keyed contacts.

\*\*Termination instructions are packaged with each contact and can be found on-line at: [www.amphenol-aerospace.com/serviceinstructions.asp](http://www.amphenol-aerospace.com/serviceinstructions.asp)

† Consult Amphenol for current release of this contact or instruction sheet if applicable.

†† Test reports available for indicated protocols. Consult Amphenol Aerospace. Typical applications run at 150 Ohms

III
HD
Dualok
II
I
SJT
Accessories
Aquacon
Herm/Seal
PCB

HIGH SPEED
Fiber Optics
Contacts Connectors Cables

EMI Filter Transient
26482 Matrix 2
83723 III Matrix   Pyle
26500 Pyle

5015 Crimp Rear Release Matrix
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22992 Class 1
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Back-Shell's
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Options Others
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38999

## TV-R Series, MIL-DTL-38999 Series III\* Connectors

### QUADRAX CONTACTS FOR USE IN TV-R CONNECTORS

Cable	Contact Part Number (Termination Instruction Sheet)**		Impedance (Ohms)	Inner Conductor (AWG)	Contact Size	Electrical Protocol††	Crimping Tools	
	Pin	Socket					Inner Contact	Outer Contact
Tensolite 26473/02006X-4(LD) Same as 21-033384/5-31 but box pattern (not for new designs, use 21-033450/1 series) Gore RCN8328	21-033384-201†	21-033385-201†	150	26	8	Fibre-Channel (1 GBPS, 2 GBPS, 1G/2G), 1000 Base-CX (1.25 GBPS), SCSI-2 (3.2 GBPS)	M22520/2-01 with Positioner M22520/2-37 or with Daniels Positioner K709	M22520/5-01 with Die Set M22520/5-45 (Location A)
Gore RCN7625	21-033384-271	21-033385-271						
Tensolite 26473/02006X-4(LD), Gore RCN8328	21-033450-001 (L-2119-BW)	21-033451-001 (L-2119-BW)		26				
Tensolite 26473/02006X-4(LD), Gore RCN8328 (same as 21-033450/1-1 except box pattern. Mates with 21-033450/1-11 only.	21-033450-011†	21-033451-011†		26		Fibre-Channel (1 GBPS, 2 GBPS, 1G/2G), 1000 Base-CX (1.25 GBPS), SCSI-2 (3.2 GBPS)		

III

HD

Dualok

II

I

SJT

Accessories

Aquacon

Herm/Seal

PCB

HIGH SPEED

Fiber Optics

Contacts Connectors Cables

EMI Filter Transient

26482 Matrix 2

83723 III Matrix (Pyle)

26500 Pyle

5015 Crimp Rear Release Matrix

22992 Class I

Back-Shells

Options Others

Contact Part Number		Impedance (Ohms)	L Dim	Pretinned
Pin	Socket			
21-033398-021	21-033397-021	100 Ohm	1.035	X
21-033398-031	21-033397-031	100 Ohm	0.866	
21-033398-061	21-033397-061	150 Ohm	1.035	
21-033398-071	21-033397-071	150 Ohm	0.494	X
21-033398-081	21-033397-081	150 Ohm	0.780	X
21-033398-091	21-033397-091	100 Ohm	0.840	X
21-033398-111	21-033397-111	100 Ohm	0.708	
21-033398-121	21-033397-121	100 Ohm	0.859	
21-033398-131	21-033397-131	150 Ohm	0.780	X
21-033398-141	21-033397-141	100 Ohm	0.615	
21-033398-151	21-033397-151	150 Ohm	0.815	
21-033398-191	21-033397-191	100 Ohm	0.605	
21-033398-211	21-033397-211	150 Ohm	0.815	X
21-033398-221	21-033397-221	100 Ohm	0.775	
21-033398-231	21-033397-231	100 Ohm	0.494	
21-033398-241	21-033397-241	100 Ohm	0.741	
21-033398-251	21-033397-251	100 Ohm	0.788	
21-033398-271	21-033397-271	100 Ohm	0.741	
21-033398-281	21-033397-281	100 Ohm	0.806	
21-033398-291	21-033397-291	100 Ohm	1.035	
21-033398-301	21-033397-301	100 Ohm	0.836	
21-033398-311	21-033397-311	100 Ohm	0.940	
21-033398-341	21-033397-341	100 Ohm	0.901	
21-033398-351	21-033397-351	100 Ohm	0.871	
21-033398-361	21-033397-361	100 Ohm	0.939	
21-033398-371	21-033397-371	100 Ohm	0.672	
21-033398-381	21-033397-381	100 Ohm	0.914	
21-033398-391	21-033397-391	100 Ohm	0.360	
21-033398-401	21-033397-401	100 Ohm	1.009	
21-033398-411	21-033397-411	150 Ohm	0.866	
21-033398-421	21-033397-421	100 Ohm	1.169	
21-033398-431	21-033397-431	100 Ohm	0.819	
21-033398-451	21-033397-451	150 Ohm	0.494	
21-033398-461	21-033397-461	100 Ohm	0.761	
21-033398-471	21-033397-471	100 Ohm	0.889	
21-033398-481	21-033397-481	100 Ohm	0.971	
21-033398-491	21-033397-491	100 Ohm	0.418	
21-033398-501	21-033397-501	100 Ohm	0.875	
21-033398-511	21-033397-511	100/150 Ohm	0.699	
21-033398-521	21-033397-521	100 Ohm	0.582	
21-033398-531	21-033397-531	100 Ohm	0.666	
21-033398-541	21-033397-541	100 Ohm	0.946	
21-033398-551	21-033397-551	100 Ohm	0.788	X
21-033398-561	21-033397-561	100 Ohm	0.815	

Contact Part Number		Impedance (Ohms)	L Dim	Pretinned
Pin	Socket			
21-033398-581	21-033397-581	100 Ohm	0.721	
21-033398-591	21-033397-591	100/150 Ohm	0.939	
21-033398-601	21-033397-601	100 Ohm	0.939	
21-033398-611	21-033397-611	100 Ohm	1.366	
21-033452-011	21-033453-011	150 Ohm	1.035 (mates to 21-033450/51 series)	
21-033452-021	21-033453-021	150 Ohm	0.815 (mates to 21-033450/51 series)	
21-033452-031	21-033453-031	150 Ohm	0.815 (mates to 21-033450/51 series)	X
21-033452-041	21-033453-041	150 Ohm	0.866 (mates to 21-033450/51 series)	
21-033452-051	21-033453-051	150 Ohm	0.494 (mates to 21-033450/51 series)	
21-033452-061	21-033453-061	150 Ohm	0.582 (mates to 21-033450/51 series)	
21-033452-071	21-033453-071	150 Ohm	0.939 (mates to 21-033450/51 series)	

Daniels crimping tools are available from Daniels Mfg. Corp. 6103 Anno Ave., Orlando, FL 32809

\* Requires modified connector to accommodate keyed contacts.

\*\* Termination instructions are packaged with each contact and can be found on-line at: [www.amphenol-aerospace.com/serviceinstructions.asp](http://www.amphenol-aerospace.com/serviceinstructions.asp)

† Consult Amphenol Aerospace for current release of this contact or instruction sheet if applicable.

†† Test reports available for indicated protocols. Consult Amphenol Aerospace.

\*\*\* Must be used with 21-033321-005 piggyback grommet seal.

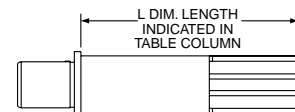
### SEALING PLUGS

Sealing Plugs for use with D38999 Connectors using Quadrax Contacts - Size 8 Cavities	Part Number
***Standard Plastic	T3-4008-59P
Standard Plastic to be used with PCB tails (shorter tail length)	T3-4008-59P1
***Metal sealing plug - can be used when mating with contacts on mating half	21-033899-8Q1
Metal sealing plug used with PCB's and mating contact on mating half	21-033899-8Q2

### PIGGYBACK GROMMET

Grommet for use with D38999 Connectors using Quadrax Contacts	Part Number
Metallized piggyback grommet	21-033321-023

Indicated length given in chart at left is the distance from the rear of the contact retention shoulder to the tip of the PCB tails.



Note: It does not indicate stickout length when installed in D38999 connector.