About Amphenol Aerospace

Your Source for Interconnect Products

Amphenol Aerospace

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Amphenol Aerospace, Amphenol Commercial Air, and Amphenol Industrial Operations Main Facility in Sidney, NY USA

About Amphenol Aerospace:

Amphenol Aerospace, a Division of Amphenol Corporation, is one of the largest manufacturers of interconnect products in the world for the Military, Commercial Aerospace and Industrial markets. Amphenol designs, manufactures and markets circular and rectangular, electronic, fiber optic, EMI/EMP filter, and a variety of special applications connectors and interconnect systems.

Our state-of-the-art facility is nestled at the foothills of the Catskill Mountains in Sidney, NY. The Amphenol complex houses many technologies including CNC machining, die-casting, molding, impact and extruding, plating, screw machining and process controls. Our fully equipped material evaluation lab and engineering organization utilize the latest in computer aided design software and analysis tools, allowing us to design, test, and qualify advanced interconnect systems. Amphenol's interconnect products are supplied to thousands of OEMs worldwide and are supported by our worldwide sales and engineering force, including the largest global network of electronic distributors.





CARE

Customer-Centric:
Our **#1 priority** is our customers who deserve quality product on time.

Accountable:
Clear owners, clear actions, clear results.

Reliable:
What we build matters and quality is imperative.

Enthusiastic:
Challenges create rewarding opportunities. Enthusiasm is contagious and we will spread it.

Quality Assurance:

Amphenol Aerospace has been awarded both AS9100 - Revision C and ISO9001:2008 Quality Assurance Certifications.

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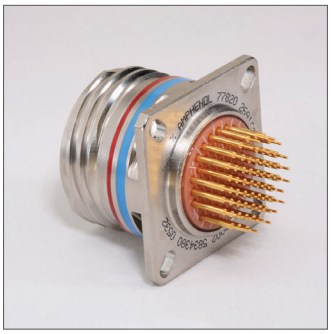
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INFINITE OPTIONS

Amphenol Aerospace is the industry leader in the design and development of D38999 Series III connectors. While the qualified Mil-Spec versions offer plenty of features, the customization and design options outside of the Mil-Spec are virtually endless. This catalog collects many of these customized options while offering additional ways to take advantage of the most popular circular connector in the military and aerospace industries.

38999 + PCB Tails



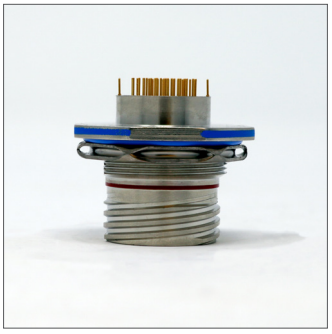
38999 + PCB Tails + Double Flange



38999 + Reduced Flange Receptacle



38999 + PCB Tails + Ground Pins



38999 + High Density



38999 + Power



38999 + Connector Saver



38999 + Integral Accessories



38999 + High Vibration Plug



BEYOND THE MIL-SPEC LIMITS

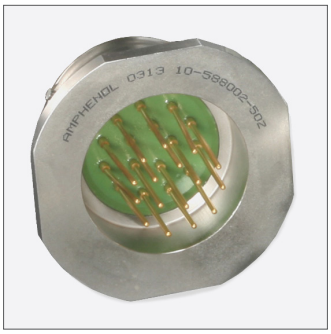
Amphenol Aerospace

Amphenol Aerospace offers the largest range of 38999 connectors on the market and manufactures many different types beyond the Mil-Spec limits. See our separate D38999 Circular Catalog for all of our Mil-Spec Offerings.

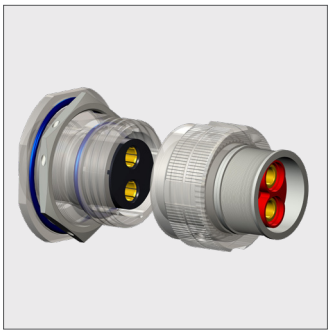
38999 + Breakaway Fail-Safe Lanyard Release



38999 + PCB Tails + Hermetics



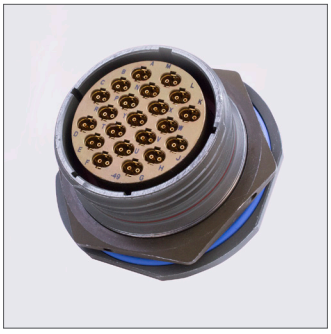
38999 + High Pressure Solutions



38999 + High Speed



38999 + Data Transmissions



38999 + Fiber Optics



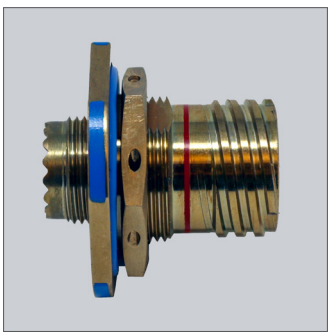
38999 + Filtering



38999 + Accessories



38999 + Custom Materials and Finishes



Shell Style Quick Reference

Shell Styles:

Amphenol's standard and derivative 38999 Plus products are intermateable with all industry standard D38999 solutions. Amphenol offers a vast array of 38999 style options which can be found in the table below. If your design requires a custom solution contact Amphenol Aerospace for further options.

TVP00 - Pg 12
Wall Mount Receptacle



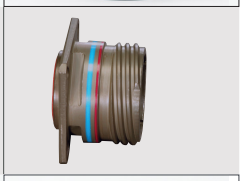
TVP10 & 11 - Pg 13
Wall Mount with Clinch Nuts (self-locking)



TVP40 - Pg 14
CTVP43 - Pg 15
Double Flange Wall Mount



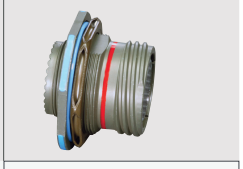
TVP02 - Pg 16
Box Mount Receptacle



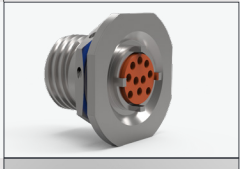
TVP12 & 13 - Pg 17
Box Mount with Clinch Nuts (self-locking)



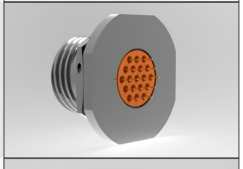
TV07 - Pg 18
Jam Nut Receptacle



TV17 - Pg 19
Flush Flange Jam Nut



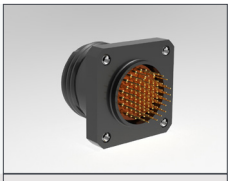
TV18 - Pg 20
Flush Flange



TV47 & TVS47- Pg 22
Double Flange Jam Nut



TVP42
Wall Mount with Integrated Helicoils



TV48 - Pg 23
Reduced Flange Jam Nut with Standoff



TV97 - Pg 24
Reduced Flange Jam Nut



TV98 - Pg 24
Reduced Flange Jam Nut with Standoff



TV96 - Pg 39
Plug with Integral Banding Platform



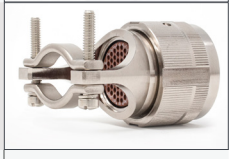
TV87 - Pg 39
Jam Nut with Integral Banding Platform



TVP80 - Pg 40
Wall Mount with Integral Banding Platform



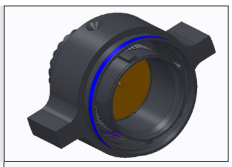
TV76 - Pg 40
Plug with Integral Strain Relief



TV56 - Pg 43
Dualok Plug



TV06 - Pg 45
Plug with Winged Coupling Nut



Lanyard - Pg 46
Release Plug



Amphenol RoHS Compliant Platings

Alternative to Cadmium

Amphenol Aerospace

The Defense Logistics Agency (DLA) has added the following cadmium alternative finishes to MIL-DTL-38999, Rev L (and other connector specs):

- Nickel Fluorocarbon Polymer
- Zinc-Nickel
- Tri-Nickel Alloy (Rev N)



DURMALON™

DURMALON™ Alternative to Cadmium

Amphenol's Answer to EU RoHS/ELV/Cadmium Free Restrictions. Commercial, Industrial & Military markets are rapidly moving away from restricted materials such as Cadmium (Cd) & Hexavalent Chromium (Cr(VI)). Both of these restricted materials are toxic and are known carcinogens. Amphenol is offering alternative finishes that comply with all customer requirements tied to these specifications.

Amphenol has qualified Durmalon, with internal part number coding "DT" finish, which meets or exceeds the 38999 designated class "T" finish, Nickel Fluorocarbon Polymer. Durmalon is also EU RoHS and Reach compliant and is Cadmium free, Lead free, and Hexavalent Chromium free.

Durmalon, like Olive-Drab Cadmium plating (Class W), meets 500 hours of dynamic salt spray, combined with 500 mating cycles and meets specified millivolt drop shell-to-shell conductivity. Durmalon has been proven to meet Potassium Formate-Deicer fluid testing performed by Boeing.

BLACK ZINC NICKEL

Black Zinc Nickel is a non-reflective, conductive black finish approved for 500 hrs salt spray making it an excellent choice for harsh environments. Black Zinc Nickel has been qualified by the DLA, with internal part number coding "DZ" finish, which meets or exceeds the 38999 designated class "Z" finish. Black Zinc Nickel is RoHS & Reach compliant.

TRI-NICKEL ALLOY (AP-93)

Amphenol's AP-93 plating meets 1,000 hours of dynamic salt spray, combined with 500 mating cycles, and meets a 200° C temperature rating. AP-93 conforms to class 'AA' in MIL-DTL-38999 and additionally meets 360 hours of S02 corrosion resistance and is fully intermateable with cadmium.

Requirements	Cadmium	Durmalon™	Black Zinc Nickel	AP-93
Coupling Torque Post 500 hr. salt	■	■	■	■
Shell to Shell Conductivity <2.5 millivolts	■	■	■	■
Cycles of Durability 500 mates	■	■	■	■
Salt Spray Dynamic 500 hours	■	■	■	
Salt Spray Dynamic 1000 hours				■
Temperature Rating 175° C	■	■	■	■
Temperature Rating 200° C				■
Non-Reflective	■	■	■	
EU RoHS/ELV Compliant*		■	■	■
Non-Magnetic	■	■	■	■
De-icing Fluid**		■	■	■

* Meets EU RoHS/ELV maximum concentration values (MCV) of 1000 ppm (0.1% w/w) or (0.01% w/w) per homogenous material.

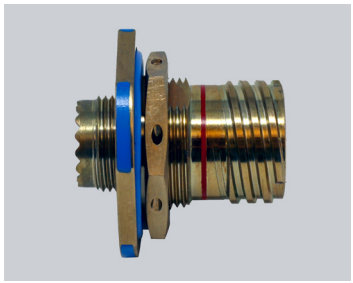
** Potassium Formate/Acetate based de-icing fluids.

Note: Specifications are subject to change without notice.

MIL-DTL-38999, Series III TV

Shell and Finish Data

SHELL COMPONENTS NON-HERMETIC*				
Finish	Shell Material	Military	Amphenol Commercial	Salt Spray (hours)
Anodic Coating (Non-Conductive)	Aluminum	C	RX (005)	500
Electroless Nickel	Aluminum	F	RF	48
Olive Drab Cadmium Plate, Nickel Base	Aluminum	W	RW	500
Durmalon™ (Nickel PTFE)	Aluminum	T	DT	500
Black Zinc Nickel	Aluminum	Z	DZ	500
Electroless Nickel Space Grade	Aluminum	G	RF (453)	48
AP-93 (Tri-Nickel Alloy)	Aluminum	AA-	DS	1,000
Tin Zinc	Aluminum	V	DV	500
Black Electroless Nickel	Aluminum		DB	100
Olive Drab Cadmium, Nickel Base (1,000 hour)	Aluminum		DW	1,000
Marine Bronze	Aluminum Bronze		RB	500
Passivated Stainless Steel (Firewall)	Stainless Steel	K	RK	500
Passivated Stainless Steel (Non-Firewall)	Stainless Steel		RKN	500
Stainless Steel w. Nickel Plate (Firewall)	Stainless Steel	S	RS	500
Stainless Steel w. Nickel Plate (Non-Firewall)	Stainless Steel	L	RL	500
AP-93 (Tri-Nickel Alloy) (Firewall)	Stainless Steel		DSK	1,000
AP-93 (Tri-Nickel Alloy) (Non-Firewall)	Stainless Steel		DSN	1,000
Electroless Nickel	Composite	M	RF	2,000
Olive Drab Cadmium Plate, Nickel Base	Composite	J	RW	2,000
Titanium, Passivated	Titanium		TR	500
Titanium, Conductive Plate	Titanium		TNR	500



MARINE BRONZE



ELECTROLESS NICKEL PLATED ALUMINUM



ZINC NICKEL PLATED ALUMINUM

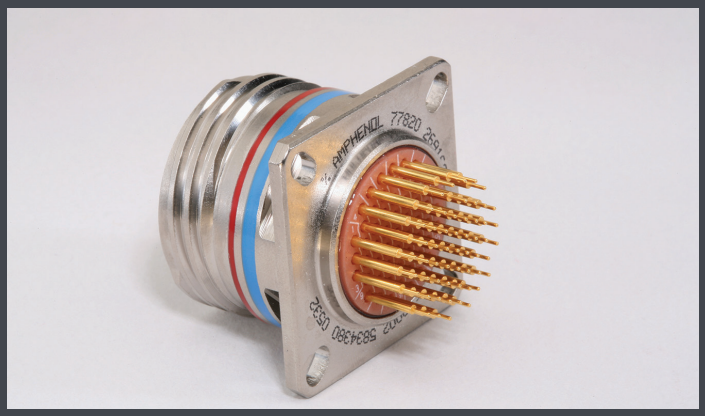


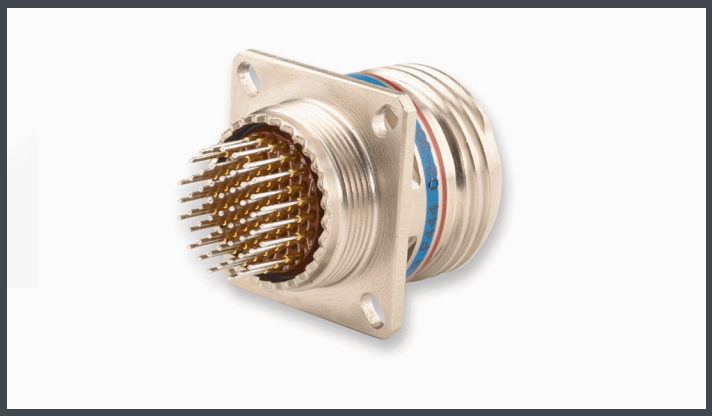
DURMALON PLATED ALUMINUM

SELECT NON-STANDARD PLATING-USE RX SERVICE CLASS AND ADD SUFFIX BELOW			
Finish	Shell Material	Amphenol Commercial	Salt Spray (hours)
Black Anodized (Non-Conductive)	Aluminum	(002)	500
Black Zinc Cobalt	Aluminum	(027)	200
Green Zinc Cobalt	Aluminum	(024)	200
Green Zinc Nickel	Aluminum	(037)	500

Amphenol Aerospace has an on-site plating facility and offers even more plating options if the above platings do not meet your needs. Please contact Amphenol factory for further details and requests

MIL-DTL-38999 Connectors with PCB Contacts





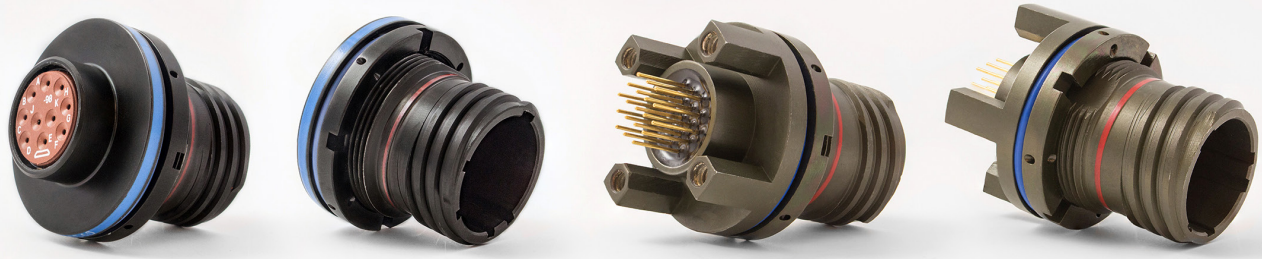
Amphenol has simplified the process of ordering a D38999 Series III connector with PC tails with the new 38999 Plus catalog. Currently all Series III arrangements (mil-spec or proprietary) with size 23, 22D, 20, 16 or 12 gauge contacts (including mixed arrangements) are available for order using the following How To Order pages (contact AAO for size 8 and larger contacts).

PCB Connectors are available in a number of shell styles and PCB lengths. Contact our factory for customized solutions.

DOUBLE FLANGE RECEPTACLES



REDUCED FLANGE RECEPTACLES



PCB MIL-DTL-38999, Series III TV

How to Order (Commercial)

Complete steps 1-8 to create your part number

PART NUMBER KEY

Note: Step 5 and 7.1 PCB Termination must match

1. Type	2. Shell Style	3. Service Class	4. Shell Size & Insert Arrangement	5. Contact Type	6. Alternate Position	7.1 PCB Termination	7.2 PCB Length	7.3 PCB Acc	7.4 PCB Tinning Option
TV	00	RB	11-4	P	N	P	45	AD	T1

RATED 175°		
1. TYPE	TV	Tri-Start-175°
	TVP	Panel Mounted Receptacle-175°
	PTV	Potted Version-175°
	PTVP	Panel Mounted Potted Version Receptacle-175°

RATED 200°		
1. TYPE	TVS	Tri-Start-200°
	TVPS	Panel Mounted Receptacle-200°
	PTVS	Potted Version-200°
	PTVPS	Panel Mounted Potted Version-200°

COMPOSITE 175°		
1. TYPE	CTV	Composite Tri-Start-175°
	CTVP	Composite Back Panel Mounted -175° Receptacle

COMPOSITE 200°		
1. TYPE	CTVS	Composite Tri-Start-200°
	CTVPS	Composite Back Panel Mounted -200° Receptacle

*Add P prefix for potted ex: PTV and PCTV

RECEPTACLE WITH PCB CONTACTS		
2. SHELL STYLE	02	PCB Box Mount Receptacle
	12	PCB Box Mount Receptacle Clinch Nuts
	13	PCB Box Mount Receptacle Metric Clinch Nuts
	00	PCB Wall Mount Receptacle
	10	PCB Wall Mount Receptacle Clinch Nuts
	11	PCB Wall Mount Receptacle Metric Clinch Nuts
	40	PCB Wall Mount Receptacle Double Flange
	42	PCB Wall Mount with Integrated Helicoils
	43	PCB Wall Mount Double Flange with Nut Plate
	07	PCB Jam Nut Receptacle
	17	PCB Jam Nut, Washout Standoffs Receptacle
	18	PCB Jam Nut, Flush Flange
	47	PCB Jam Nut Double Flange Receptacle
	48	PCB Jam Nut, Reduced Flange with Double Flange
	97	PCB Jam Nut, Reduced Flange
	98	PCB Jam Nut, Reduced Flange with Standoffs

3. Service Class, Aluminum 175°C		
DT	Durmalon: Plated alternative to cadmium, corrosion resistant, 500 hrs. extended salt spray, -50dB@10GHz	
DZ	Black Zinc-Nickel: Alternative to cadmium, 500 hrs. salt spray, conductive, -50dB@10GHz	
RW	Olive Drab Cadmium: 500 hrs. salt spray, -65dB@10GHz	
DW	Corrosion Resistant Olive Drab Cadmium: 1,000 hrs. extended salt spray	

3. Service Class, Aluminum 200°C		
RF	Electroless Nickel: 48 hrs. salt spray, -65dB@10GHz	
RB	Marine Bronze: 500 hrs. salt spray, -65dB@10GHz	
DS	AP-93™ Plating Tri-Nickel Alloy: 1,000 hrs. salt spray, intermateable with cadmium	
DB	Black Electroless Nickel: 100 hrs. salt spray	
RB	Marine Bronze: 500 hrs.	

3. Service Class, Composite 175°C		
RW	Olive Drab Cadmium: 2,000 hrs. salt spray, -65dB@10GHz	
DT	Durmalon: Plated alternative to cadmium, corrosion resistant, 500 hrs. extended salt spray, -50dB@10GHz	
DZ	Black Zinc-Nickel: Alternative to cadmium, 500 hrs. salt spray, conductive, -50dB@10GHz	

3. Service Class, Composite 200°C		
RF	Electroless Nickel: 2,000 hrs. salt spray, -65dB@10GHz	

3. Service Class, Stainless Steel 200°C		
RK	Corrosion Resistant Stainless Steel: (Firewall) 500 hrs. salt spray resistance, -65dB@10GHz	
RKN	Corrosion Resistant Passivated Stainless Steel: (Non-Firewall), 500 hrs. salt spray resistance, -65dB@10GHz	
RS	(Non-Hermetic), Nickel plated: Corrosion resistant steel, (Firewall), 500 hrs. salt spray, EMI shielding -65dB @ 10GHz specification min.	
RL	Corrosion Resistant Steel: Nickel Plated, (Non-Firewall) 500 hrs. salt spray, -50dB@10GHz	
DSK	Firewall AP93 AP-93™ Plating Tri-Nickel Alloy: 1,000 hrs. salt spray, intermateable with cadmium	
DSN	Non-Firewall AP-93™ Plating Tri-Nickel Alloy: 1,000 hrs. salt spray, intermateable with cadmium	

PCB MIL-DTL-38999, Series III TV

Amphenol Aerospace

How to Order (Commercial)

Complete steps 1-8 to create your part number

PART NUMBER KEY

Note: Step 5 and 7.1 PCB Termination must match

1. Type	2. Shell Style	3. Service Class	4. Shell Size & Insert Arrangement	5. Contact Type	6. Alternate Position	7.1 PCB Termination	7.2 PCB Length	7.3 PCB Acc	7.4 PCB Tinning Option
TV	00	RB	11-4	P	N	P	45	AD	T1

4. SHELL SIZE -INSERT ARRANGEMENT

Shell Size & Insert Arrangements are on pages 75-83. First number represents Shell Size, second number is the Insert Arrangement.

2. SHELL STYLE CLINCH NUTS

10	Wall Mount (Clinch Nuts)
11	Wall Mount (Metric Clinch Nuts)
12	Box Mount (Clinch Nuts)
13	Box Mount (Metric Clinch Nuts)
42	Wall Mount with integrated helicoils

5. CONTACT TYPE

P	Pin Contacts
S	Socket Contacts
H	Pin, 1500 cycle
J	Socket, 1500 cycle

6. ALTERNATE POSITION

A, B, C, D, E omit for normal rotation parts. See page 84 for complete information

7.1 PCB TERMINATION

P	Pin
S	Socket

7.3 ACCESSORIES

AD	Alignment Disc
	No Disc

7.2 PCB LENGTH

10	.100"
15	.150"
20	.200"
25	.250"
30	.300"
35	.350"
40	.400"
45	.450"

7.4 TINNING OPTIONS

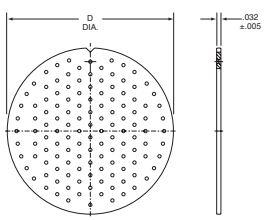
	Standard Gold Plating
T	Tin-Lead Solder
T1	Tin-Silver Solder
T2	SAC 305

Example Configuration: "P15"
PCB Connector with .150 length gold plated contacts

Example Configuration: "S25T"
PCB connector with .250 stickout length, gold plated contacts with tin-lead solder

Example Configuration: "P45ADT1" PCB connector with .450 stickout length, gold plated contacts with tin-silver solder and an alignment disc

Alignment Disc



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

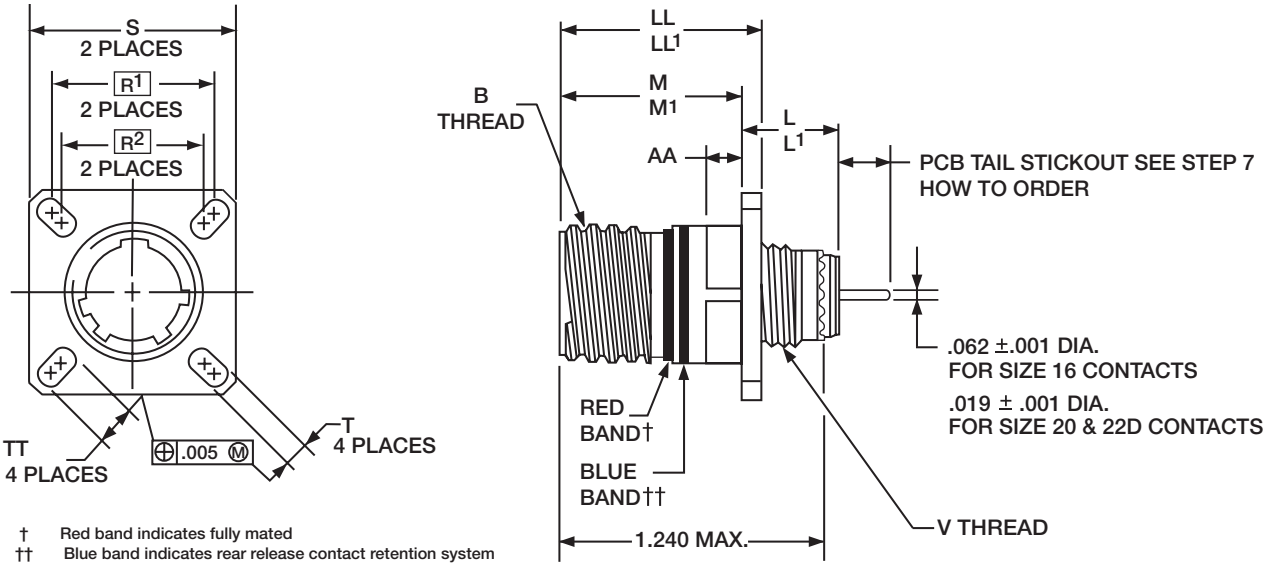
Note: Nominal (±) .040"

PCB Wall Mounting Receptacles

Back Panel Mounting (TVP00, TVPS00, CTVP00, CTVPS00)

PART NUMBER BUILDER Page 10
ONLINE CONFIGURATOR www.amphenol-aerospace.com

ALUMINUM	STAINLESS STEEL	COMPOSITE
TVP00RW	TVPS00RK	CTVPS00RF
TVP00DT	TVPS00RKN	CTVP00RW
TVP00DW	TVPS00RS	CTVP00DT
TVP00DZ	TVPS00RL	CTVP00DZ
TVPS00RF	TVPS00DSK	
TVPS00RB	TVPS00DSN	
TVPS00DB		
TVPS00DS		



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

Shell Size	B Thread Class 2A (Plated) 0.1P-0.3L-TS	L Max. (TV)	L¹ Max. (CTV)	M +.000 −.005 (TV)	M¹ +.000 −.005 (CTV)	R1	R2	S Max. (TV)	S Max. (CTV)	T +.008 −.006	V Thread Metric	AA Max. Panel Thickness	LL +.006 −.000 (TV)	LL¹ ±.005 (CTV)	TT +.008 −.006
9	.6250	.469	.514	.820	.773	.719	.594	.948	.942	.128	M12X1-6g	.234	.905	.908	.216
11	.7500	.469	.514	.820	.773	.812	.719	1.043	1.037	.128	M15X1-6g	.234	.905	.908	.194
13	.8750	.469	.514	.820	.773	.906	.812	1.137	1.131	.128	M18X1-6g	.234	.905	.908	.194
15	1.0000	.469	.514	.820	.773	.969	.906	1.232	1.226	.128	M22X1-6g	.234	.905	.908	.173
17	1.1875	.469	.514	.820	.773	1.062	.969	1.323	1.316	.128	M25X1-6g	.234	.905	.908	.194
19	1.2500	.469	.514	.820	.773	1.156	1.062	1.449	1.442	.128	M28X1-6g	.234	.905	.908	.194
21	1.3750	.500	.545	.790	.741	1.250	1.156	1.575	1.568	.128	M31X1-6g	.204	.905	.904	.194
23	1.5000	.500	.545	.790	.741	1.375	1.250	1.701	1.694	.154	M34X1-6g	.204	.905	.904	.242
25	1.6250	.500	.545	.790	.741	1.500	1.375	1.823	1.816	.154	M37X1-6g	.204	.905	.904	.242

All dimensions for reference only.
Most common options are shown; other options are available.

☐ Designates true position dimensioning

PCB Wall Mounting Receptacles Clinch Nuts

Amphenol Aerospace

Back Panel Mounting (TVP10, TVPS10, CTVP10 & CTVPS10, TVP11, TVPS11, CTVP11, CTVPS11)

PART NUMBER BUILDER Page 10
ONLINE CONFIGURATOR www.amphenol-aerospace.com

ALUMINUM

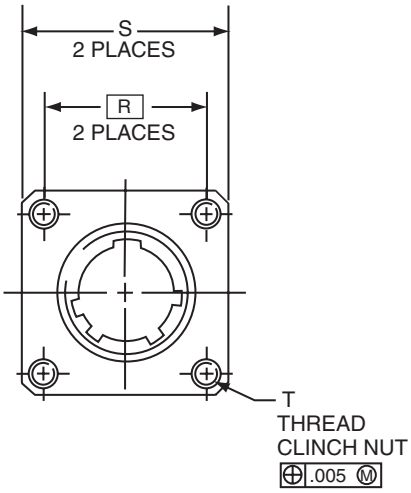
TVP10DT	TVP11DT
TVP10DW	TVP11DW
TVP10DZ	TVP11DZ
TVP10RW	TVP11RW
TVPS10RF	TVPS11RF
TVPS10RB	TVPS11RB
TVPS10DB	TVPS11DB
TVPS10DS	TVPS11DS

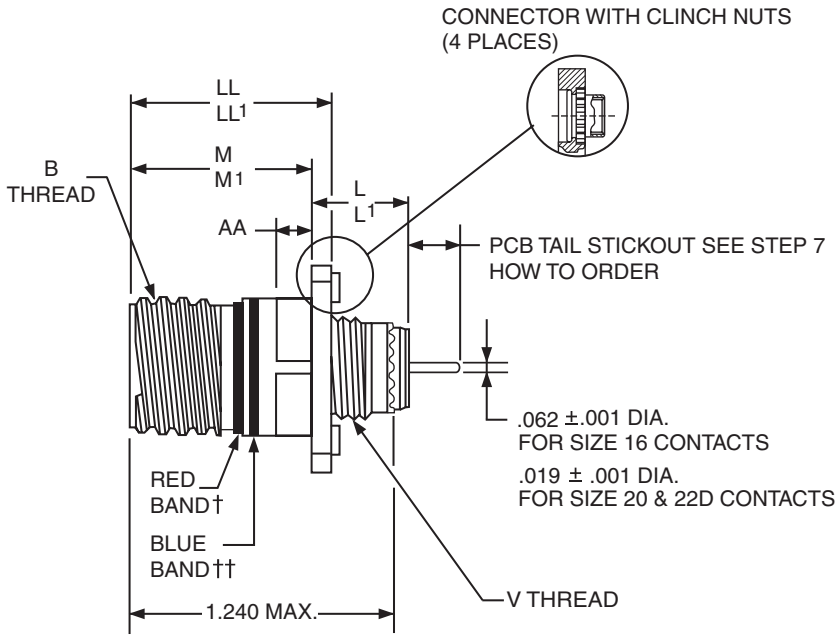
STAINLESS STEEL

TVPS10RK	TVPS11RK
TVPS10RKN	TVPS11RKN
TVPS10RS	TVPS11RS
TVPS10RL	TVPS11RL
TVPS10DSK	TVPS11DSK
TVPS10DSN	TVPS11DSN

COMPOSITE

CTVPS10RF	CTVPS11RF
CTVP10RW	CTVP11RW
CTVP10DT	CTVP11DT
CTVP10DZ	CTVP11DZ





Shell Size	B Thread Class 2A (Plated) 0.1P-0.3L-TS	L Max. (TV)	L¹ Max. (CTV)	M +.000 −.005 (TV)	M¹ +.000 −.005 (CTV)	R	S Max. (TV)	S Max. (CTV)	T Thread	V Thread Metric	AA Max. Panel Thickness	LL +.006 −.000 (TV)	LL¹ ±.005 (CTV)
9	.6250	.469	.514	.820	.773	.719	1.094	.942	.112-40UNC-3B	M12X1-6g	.234	.905	.908
11	.7500	.469	.514	.820	.773	.812	1.187	1.037	.112-40UNC-3B	M15X1-6g	.234	.905	.908
13	.8750	.469	.514	.820	.773	.906	1.281	1.131	.112-40UNC-3B	M18X1-6g	.234	.905	.908
15	1.0000	.469	.514	.820	.773	.969	1.344	1.226	.112-40UNC-3B	M22X1-6g	.234	.905	.908
17	1.1875	.469	.514	.820	.773	1.062	1.437	1.316	.112-40UNC-3B	M25X1-6g	.234	.905	.908
19	1.2500	.469	.514	.820	.773	1.156	1.531	1.442	.112-40UNC-3B	M28X1-6g	.234	.905	.908
21	1.3750	.500	.545	.790	.741	1.250	1.625	1.568	.112-40UNC-3B	M31X1-6g	.204	.905	.904
23	1.5000	.500	.545	.790	.741	1.375	1.750	1.694	.138-32UNC-3B	M34X1-6g	.204	.905	.904
25	1.6250	.500	.545	.790	.741	1.500	1.875	1.816	.138-32UNC-3B	M37X1-6g	.204	.905	.904

All dimensions for reference only.
Consult Amphenol for more information on ordering connectors with clinch nuts.
Most common options are shown; other options are available.

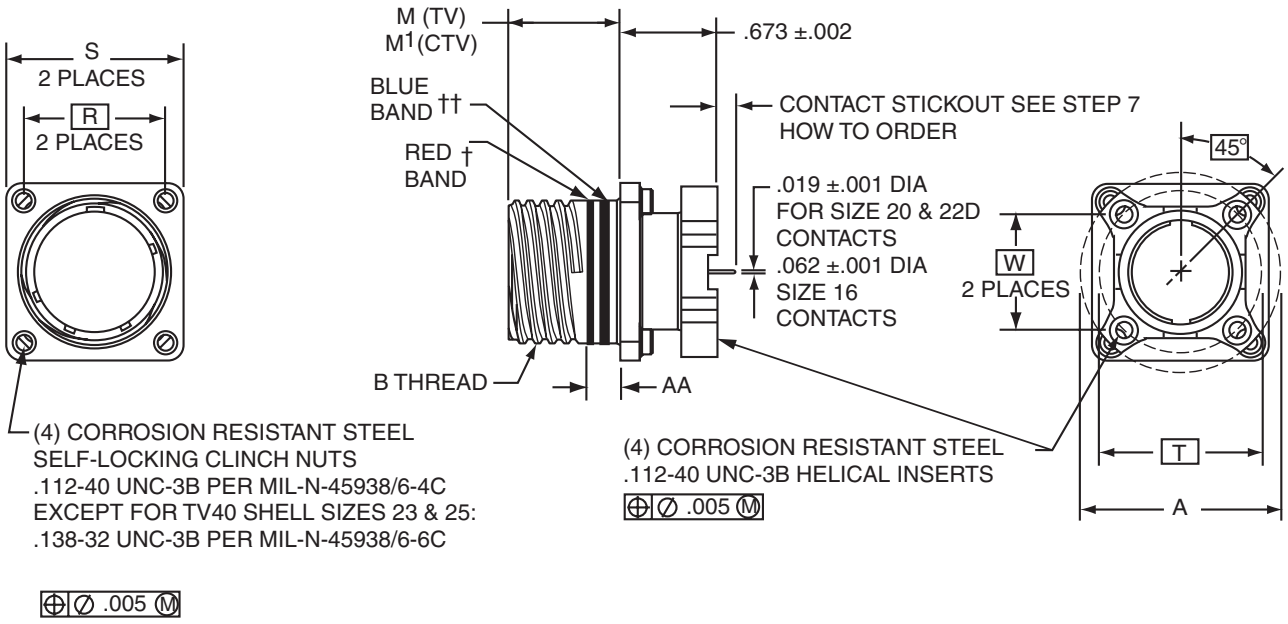
☐ Designates true position dimensioning
† Red band indicates fully mated
†† Blue band indicates rear release contact retention system

PCB Wall Mounting Double Flange Receptacle

Commercial (TVP40, TVPS40, CTVP40, CTVPS40)

PART NUMBER BUILDER Page 10
ONLINE CONFIGURATOR www.amphenol-aerospace.com

ALUMINUM	STAINLESS STEEL	COMPOSITE
TVP40RW	TVPS40RK	CTVP40RW
TVP40DT	TVPS40RKN	CTVP40DT
TVP40DW	TVPS40RS	CTVP40DZ
TVP40DZ	TVPS40RL	CTVPS40RF
TVPS40RF	TVPS40DSK	
TVPS40RB	TVPS40DSN	
TVPS40DB		
TVPS40DS		



Shell Size	MS Shell Size Code (For Ref.)	A Dia. ±.005 (TV)	A Dia. ±.005 (CTV)	B Thread Class 2A (Plated) 0.1P-0.3L-TS	M +.000 –.005	M¹ ±.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	NA	1.016	.6250	.820	.770	.719	N/A	1.134	.949	.234	NA	.532
11	B	1.062	1.148	.7500	.820	.770	.812	.766	1.227	1.042	.234	. .850	.601
13	C	1.250	1.250	.8750	.820	.770	.906	.859	1.321	1.136	.234	.994	.703
15	D	1.375	1.375	1.0000	.820	.770	.969	.938	1.381	1.230	.234	1.119	.791
17	E	1.500	1.500	1.1875	.820	.770	1.062	1.016	1.477	1.323	.234	1.237	.875
19	F	1.625	1.625	1.2500	.820	.770	1.156	1.110	1.598	1.449	.234	1.379	.975
21	G	1.750	1.750	1.3750	.820	.738	1.250	1.206	1.724	1.573	.204	1.489	1.053
23	H	1.875	1.875	1.5000	.820	.738	1.375	1.312	1.850	1.699	.204	1.619	1.195
25	J	2.000	2.000	1.6250	.820	.738	1.500	1.438	1.972	1.823	.204	1.744	1.233

All dimensions for reference only.

☐ Designates true position dimensioning
† Red band indicates fully mated
†† Blue band indicates rear release contact retention system

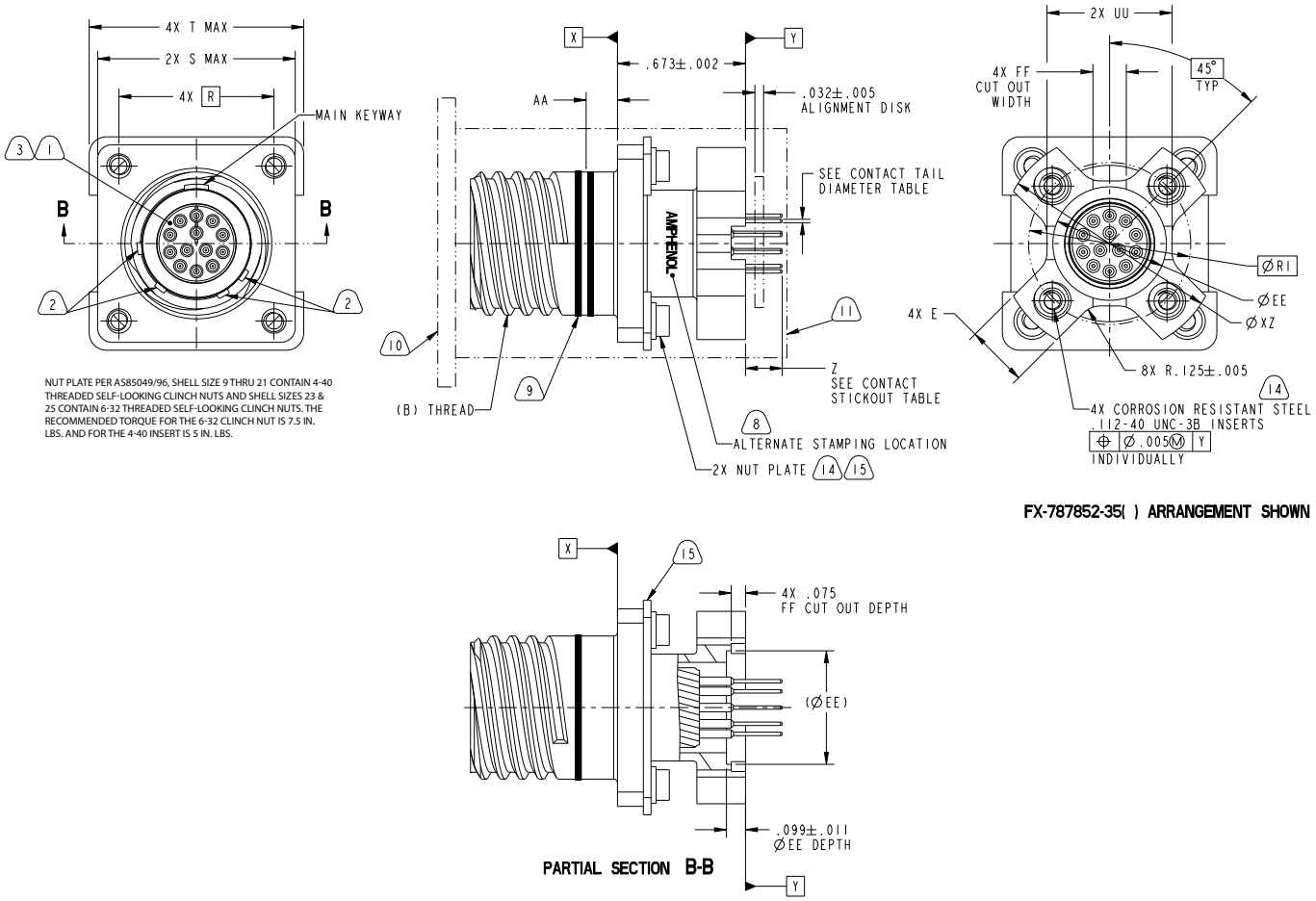
PCB Wall Mounting Double Flange Receptacle

Amphenol Aerospace

Commercial (CTVP43, CTVPS43)

PART NUMBER BUILDER Page 10
ONLINE CONFIGURATOR www.amphenol-aerospace.com

COMPOSITE
CTVP43RW
CTVP43DT
CTVP43DZ
CTVPS43RF



FX-787852-35( ) ARRANGEMENT SHOWN

PARTIAL SECTION B-B

Shell Size	MS Shell Size Code (For Ref.)	A Dia. ±.005 (CTV)	B Thread Class 2A (Plated) 0.1P-0.3L-TS	M¹ ±.003 (CTV)	R (Panel Mount) (CTV)	S Max. (CTV)	T Max.	AA Max. Panel Thickness	PCB Mounting W (CTV) TP
9	A	1.016	.6250	.770	.719	.949	1.034	.234	.532
11	B	1.148	.7500	.770	.812	1.042	1.124	.234	.601
13	C	1.250	.8750	.770	.906	1.136	1.218	.234	.703
15	D	1.375	1.0000	.770	.969	1.230	1.295	.234	.791
17	E	1.500	1.1875	.770	1.062	1.323	1.405	.234	.875
19	F	1.625	1.2500	.770	1.156	1.449	1.550	.234	.975
21	G	1.750	1.3750	.738	1.250	1.573	1.680	.204	1.053
23	H	1.875	1.5000	.738	1.375	1.699	1.800	.204	1.195
25	J	2.000	1.6250	.738	1.500	1.823	1.906	.204	1.233

All dimensions for reference only.

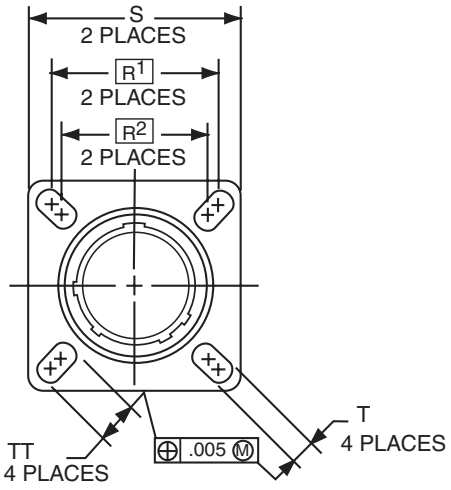
☐ Designates true position dimensioning
† Red band indicates fully mated
†† Blue band indicates rear release contact retention system

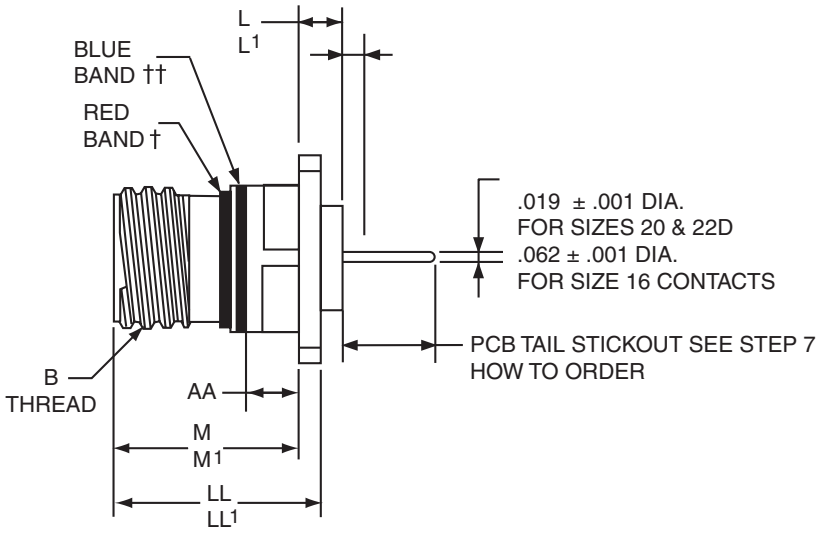
PCB Box Mounting Receptacles

(TVP02 ,TVPS02, CTVP02 , CTVPS02)

PART NUMBER BUILDER Page 10
ONLINE CONFIGURATOR www.amphenol-aerospace.com

ALUMINUM	STAINLESS STEEL	COMPOSITE
TVP02RW	TVPS02RK	CTVP02RW
TVP02DT	TVPS02RKN	CTVP02DT
TVP02DW	TVPS02RS	CTVP02DZ
TVP02DZ	TVPS02RL	CTVPS02RF
TVPS02RF	TVPS02DSK	
TVPS02RB	TVPS02DSN	
TVPS02DB		
TVPS02DS		





Shell Size	B Thread Class 2A (Plated) 0.1P-0.3L-TS	L Max. (TV)	L¹ Max. (CTV)	M +.000 −.005 (TV)	M¹ +.000 −.005 (CTV)	R1	R2	S Max. (TV)	S Max. (CTV)	T +.008 −.006	AA Max. Panel Thickness	LL +.006 −.000 (TV)	LL¹ ±.005 (CTV)	TT ±.008
9	.6250	.205	.250	.820	.773	.719	.594	.938	.942	.128	.234	.905	.908	.216
11	.7500	.205	.250	.820	.773	.812	.719	1.031	1.037	.128	.234	.905	.908	.194
13	.8750	.205	.250	.820	.773	.906	.812	1.125	1.131	.128	.234	.905	.908	.194
15	1.0000	.205	.250	.820	.773	.969	.906	1.219	1.226	.128	.234	.905	.908	.173
17	1.1875	.205	.250	.820	.773	1.062	.969	1.312	1.316	.128	.234	.905	.908	.194
19	1.2500	.205	.250	.820	.773	1.156	1.062	1.438	1.442	.128	.234	.905	.908	.194
21	1.3750	.235	.280	.790	.741	1.250	1.156	1.562	1.568	.128	.204	.905	.904	.194
23	1.5000	.235	.280	.790	.741	1.375	1.250	1.688	1.694	.154	.204	.905	.904	.242
25	1.6250	.235	.280	.790	.741	1.500	1.375	1.812	1.816	.154	.204	.905	.904	.242

All dimensions for reference only.
Most common options are shown; other options are available.

□ Designates true position dimensioning
† Red band indicates fully mated
†† Blue band indicates rear release contact retention system

PCB Box Mounting Receptacles / Clinch Nuts

(TVP12, TVPS12, CTVP12, CTVPS12, TVP13, TVPS13, CTVP13, CTVPS13)

PART NUMBER BUILDER Page 10
ONLINE CONFIGURATOR www.amphenol-aerospace.com

ALUMINUM

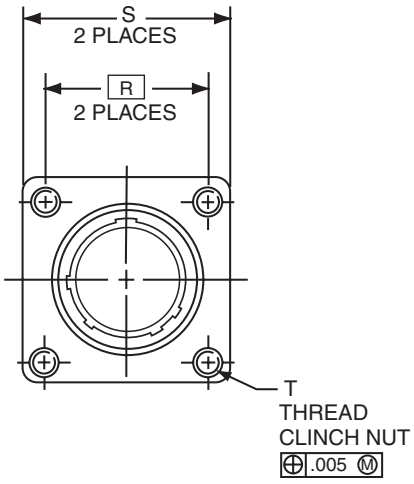
TVP12RW	TVP13RW
TVP12DT	TVP13DT
TVP12DW	TVP13DW
TVP12DZ	TVP13DZ
TVPS12RF	TVPS13RF
TVPS12RB	TVPS13RB
TVPS12DB	TVPS13DB
TVPS12DS	TVPS13DS

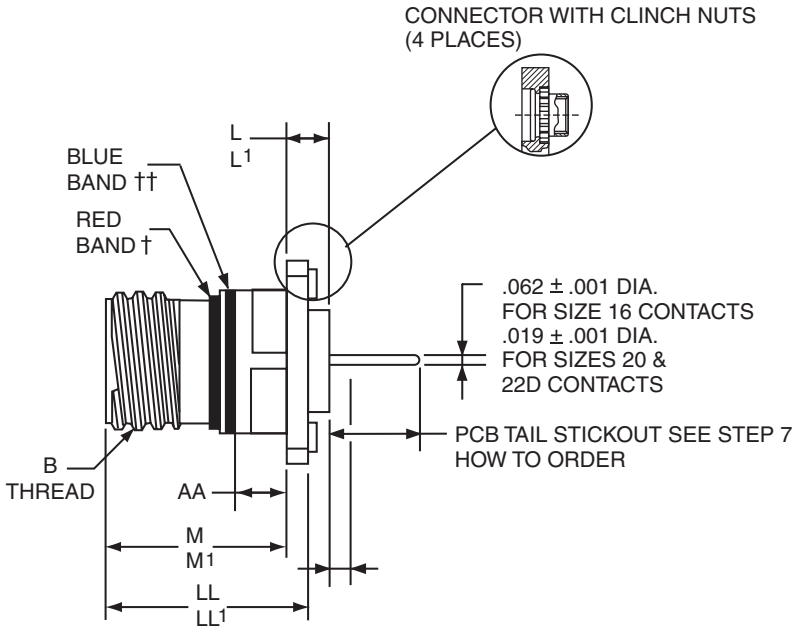
STAINLESS STEEL

TVPS12RK	TVPS13RK
TVPS12RKN	TVPS13RKN
TVPS12RS	TVPS13RS
TVPS12RL	TVPS13RL
TVPS12DSK	TVPS13DSK
TVPS12DSN	TVPS13DSN

COMPOSITE

CTVP12RW	CTVP13RW
CTVP12DZ	CTVP13DZ
CTVP12DT	CTVP13DT
CTVPS12RF	CTVPS13RF





Shell Size	B Thread Class 2A (Plated) 0.1P-0.3L-TS	L Max. (TV)	L¹ Max. (CTV)	M +.000 −.005 (TV)	M¹ +.000 −.005 (CTV)	R	S Max. (TV)	S Max. (CTV)	T Thread	V Thread Metric	AA Max. Panel Thickness	LL +.006 −.000 (TV)	LL¹ ±.005 (CTV)
9	.6250	.469	.514	.820	.773	.719	1.094	.942	.112-40UNC-3B	M12X1-6g	.234	.905	.908
11	.7500	.469	.514	.820	.773	.812	1.187	1.037	.112-40UNC-3B	M15X1-6g	.234	.905	.908
13	.8750	.469	.514	.820	.773	.906	1.281	1.131	.112-40UNC-3B	M18X1-6g	.234	.905	.908
15	1.0000	.469	.514	.820	.773	.969	1.344	1.226	.112-40UNC-3B	M22X1-6g	.234	.905	.908
17	1.1875	.469	.514	.820	.773	1.062	1.437	1.316	.112-40UNC-3B	M25X1-6g	.234	.905	.908
19	1.2500	.469	.514	.820	.773	1.156	1.531	1.442	.112-40UNC-3B	M28X1-6g	.234	.905	.908
21	1.3750	.500	.545	.790	.741	1.250	1.625	1.568	.112-40UNC-3B	M31X1-6g	.204	.905	.904
23	1.5000	.500	.545	.790	.741	1.375	1.750	1.694	.138-32UNC-3B	M34X1-6g	.204	.905	.904
25	1.6250	.500	.545	.790	.741	1.500	1.875	1.816	.138-32UNC-3B	M37X1-6g	.204	.905	.904

All dimensions for reference only.
Consult Amphenol for more information on ordering connectors with clinch nuts.
Most common options are shown; other options are available.

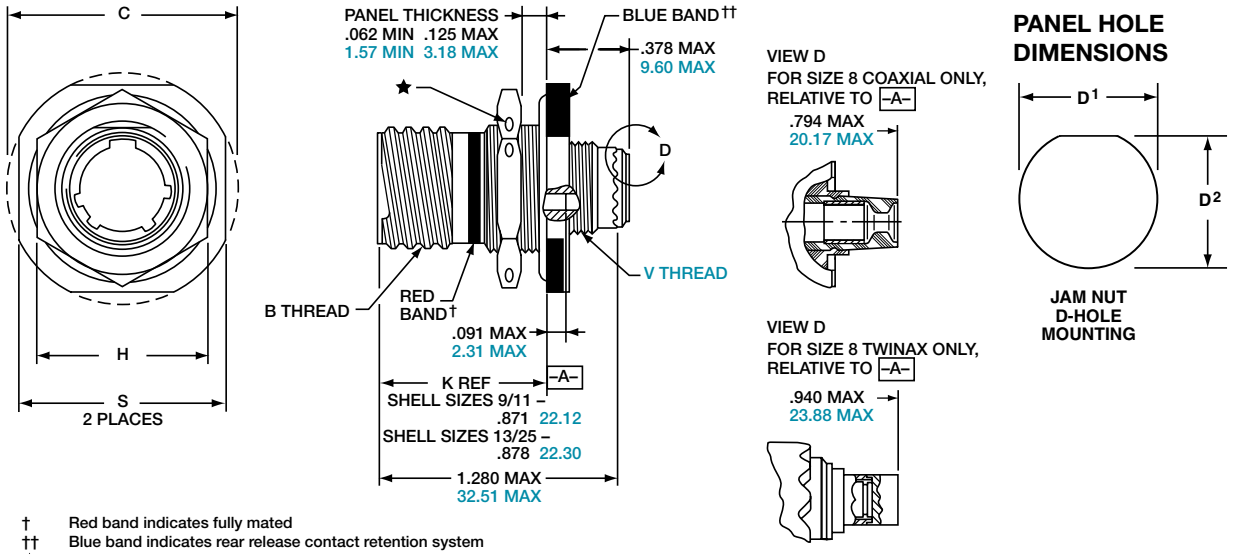
☐ Designates true position dimensioning
† Red band indicates fully mated
†† Blue band indicates rear release contact retention system

PCB Jam Nut Receptacles

(TV07, TVS07, CTV07, CTVS07)

PART NUMBER BUILDER Page 10
ONLINE CONFIGURATOR www.amphenol-aerospace.com

ALUMINUM	STAINLESS STEEL	COMPOSITE
TV07RW	TVS07RK	CTV07RW
TV07DT	TVS07RKN	CTV07DT
TV07DW	TVS07RS	CTV07DZ
TV07DZ	TVS07RL	CTVS07RF
TVS07RF	TVS07DSK	
TVS07RB	TVS07DSN	
TVS07DB		
TVS07DS		



† 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[1] +.010 –.000	D[2] +.000 –.010	H Hex +.017 –.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

All dimensions for reference only.
Most common options are shown; other options are available.

† Red band indicates fully mated
†† Blue band indicates rear release contact retention system
★ .059 dia. min. 3 lockwire holes or formed lockwire hole design (6 holes).
**"D" shaped mounting hole dimensions

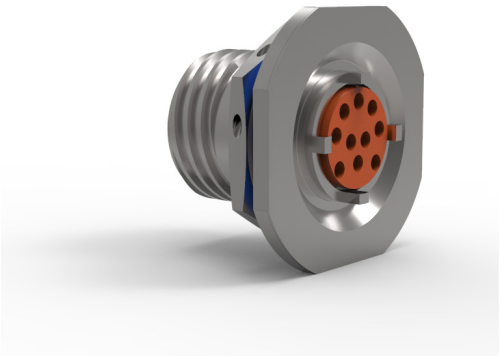
PCB Jam Nut with Washout Standoffs Receptacle

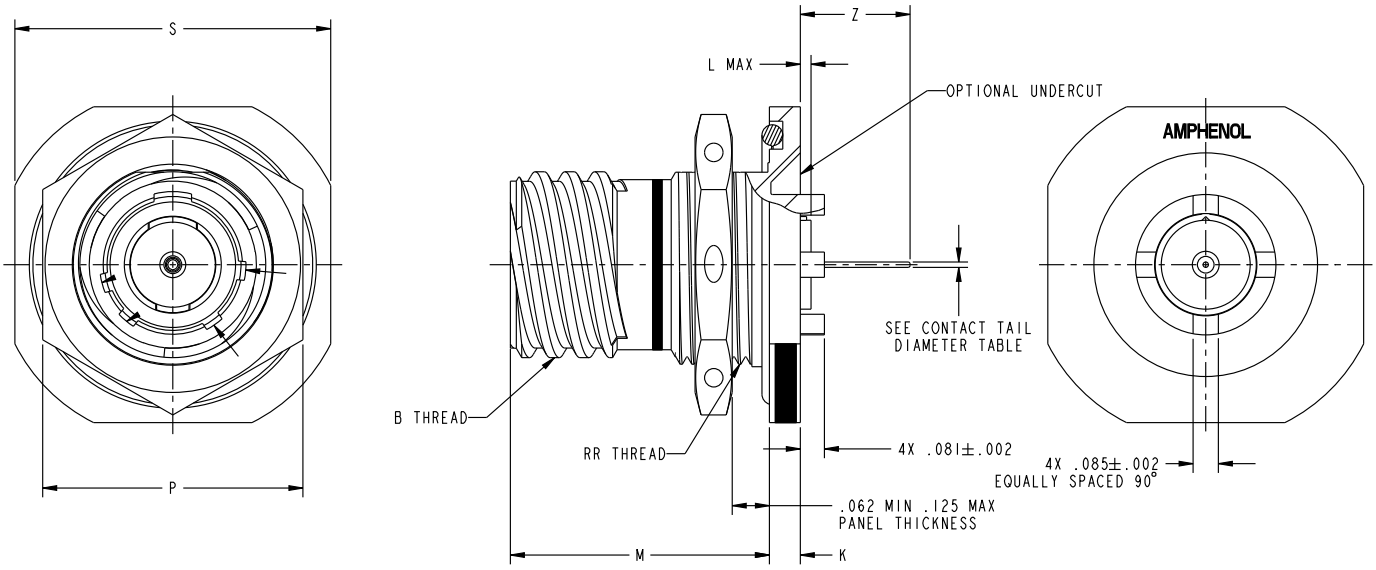
Commercial (TV17, TVS17)

Amphenol Aerospace

PART NUMBER BUILDER Page 10
ONLINE CONFIGURATOR www.amphenol-aerospace.com

ALUMINUM	STAINLESS STEEL
TV17RW	TVS17RK
TV17DT	TVS17RKN
TV17DW	TVS17RS
TV17DZ	TVS17RL
TVS17RF	TVS17DSK
TVS17RB	TVS17DSN
TVS17DB	
TVS17DS	





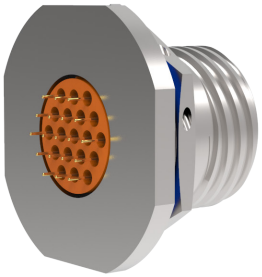
All dimensions for reference only.
Most common options are shown;
other options are available.

Shell Size	B THREAD CLASS 2A (PLATED) PER 9-3200-2	K +.010 -.005	L MAX	M	P HEX +.017 -.016	S +.011 -.010	RR Thread (Plated) 9-7543
9	6250-0.1P-0.3L-TS	.104	.056	.871	.875	1.062	M17X1-6g 0.100R
11	7500-0.1P-0.3L-TS	.104	.056	.871	1.000	1.250	M20X1-6g 0.100R
13	8750-0.1P-0.3L-TS	.104	.049	.878	1.188	1.375	M25X1-6g 0.100R
15	1.0000-0.1P-0.3L-TS	.104	.049	.878	1.312	1.500	M28X1-6g 0.100R
17	1.1875-0.1P-0.3L-TS	.104	.049	.878	1.438	1.625	M32X1-6g 0.100R
19	1.2500-0.1P-0.3L-TS	.135	.018	.878	1.562	1.812	M35X1-6g 0.100R
21	1.3750-0.1P-0.3L-TS	.135	.018	.878	1.688	1.938	M38X1-6g 0.100R
23	1.5000-0.1P-0.3L-TS	.135	.018	.878	1.812	2.062	M41X1-6g 0.100R
25	1.6250-0.1P-0.3L-TS	.135	.018	.878	2.000	2.188	M44X1-6g 0.100R

PCB Jam Nut Receptacle Flush Flange

Commercial (TV18, TVS18, CTV18, CTVS18)

PART NUMBER BUILDER Page 10
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ALUMINUM

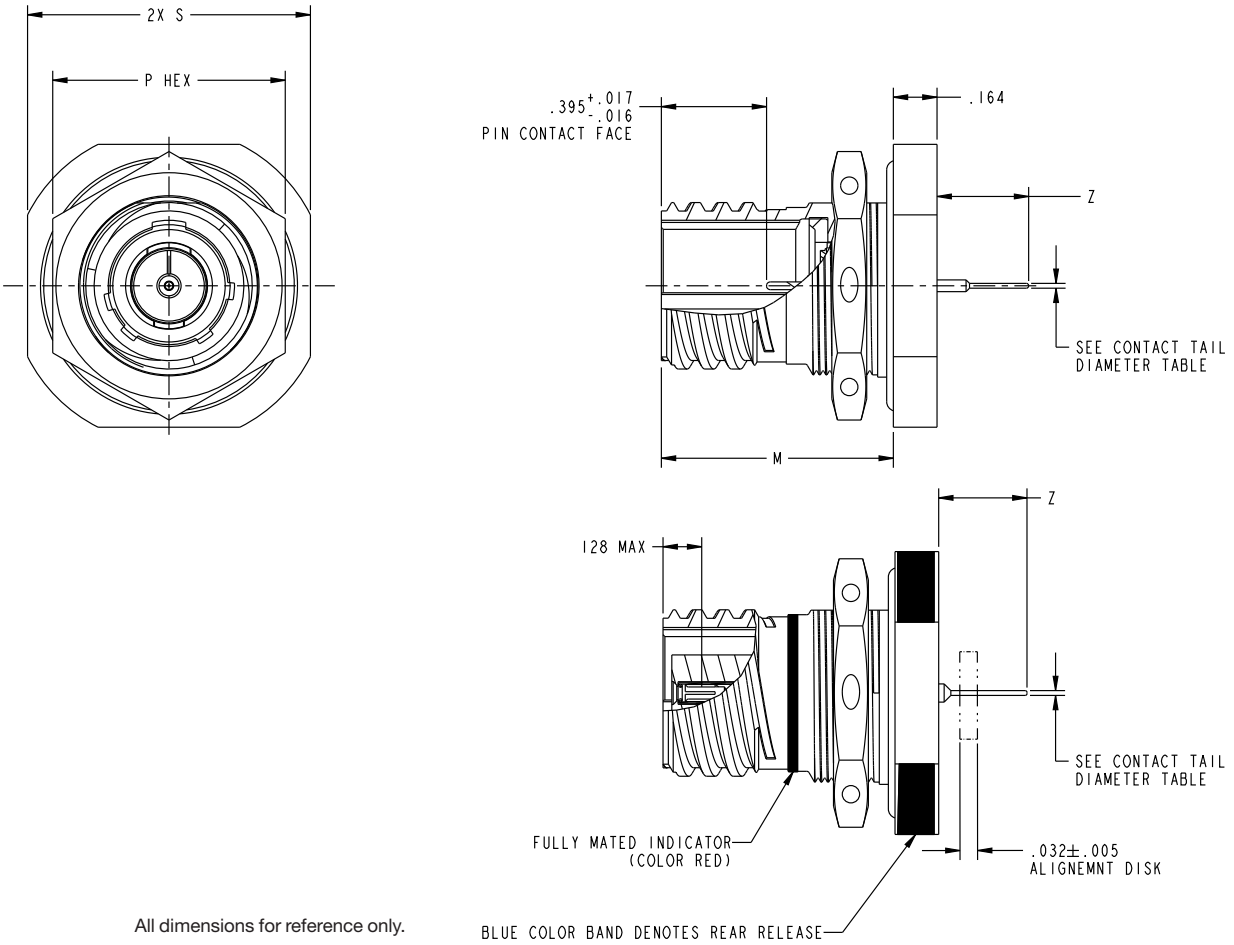
TV18RW
TV18DT
TV18DW
TV18DZ
TVS18RB
TVS18RF
TVS18DB
TVS18DS

STAINLESS STEEL

TVS18RK
TVS18RKN
TVS18RS
TVS18RL
TVS18DSK
TVS18DSN

COMPOSITE

CTV18RW
CTV18DT
CTV18DZ
CTVS18RF



All dimensions for reference only.
Most common options are shown; other options are available.

Shell Size	BB THREAD PER MIL-DTL-38999 CLASS 2A	A +.010 -.005	M	P HEX +.017 -.016	S +.011 -.010	RR THREAD (METRIC)
9	.6250-0.1P-0.3L-TS	.104	.871	875	1.062	M17X1-6g 0.100R
11	.7500-0.1P-0.3L-TS	.104	.871	1.000	1.250	M20X1-6g 0.100R
13	.8750-0.1P-0.3L-TS	.104	.878	1.188	1.375	M25X1-6g 0.100R
15	1.0000-0.1P-0.3L-TS	.104	.878	1.312	1.500	M28X1-6g 0.100R
17	1.1875-0.1P-0.3L-TS	.104	.878	1.438	1.625	M32X1-6g 0.100R
19	1.2500-0.1P-0.3L-TS	.135	.878	1.562	1.812	M35X1-6g 0.100R
21	1.3750-0.1P-0.3L-TS	.135	.878	1.688	1.938	M38X1-6g 0.100R
23	1.5000-0.1P-0.3L-TS	.135	.878	1.812	2.062	M41X1-6g 0.100R
25	1.6250-0.1P-0.3L-TS	.135	.878	2.000	2.188	M44X1-6g 0.100R

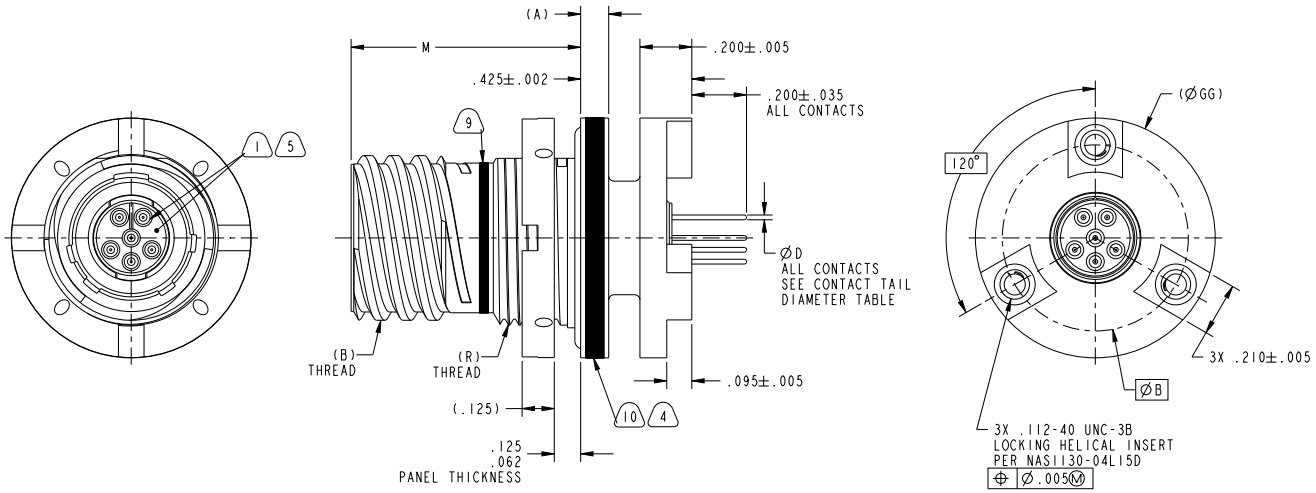
PCB Jam Nut Receptacle, 3 Post Reduced Flange

Amphenol Aerospace

Commercial (TV38, TVS38)

PART NUMBER BUILDER Page 10
ONLINE CONFIGURATOR www.amphenol-aerospace.com

ALUMINUM	STAINLESS STEEL
TV38RW	TVS38RK
TV38DT	TVS38RKN
TV38DW	TVS38RS
TV38DZ	TVS38RL
TVS38RF	TVS38DSK
TVS38RB	TVS38DSN
TVS38DB	
TVS38DS	



Shell Size	BB THREAD PER MIL-DTL-38999 CLASS 2A	A +.010 -.005	Ø B	Ø M ±.004	Ø GG MAX	RR Thread (Metric)
9	6250-0.1P-0.3L-TS	.104	.706	.871	.915	M17X1-6g 0.100R
11	7500-0.1P-0.3L-TS	.104	.833	.871	1.042	M20X1-6g 0.100R
13	8750-0.1P-0.3L-TS	.104	1.031	.878	1.240	M25X1-6g 0.100R
15	1.0000-0.1P-0.3L-TS	.104	1.148	.878	1.375	M28X1-6g 0.100R
17	1.1875-0.1P-0.3L-TS	.104	1.421	.878	1.630	M32X1-6g 0.100R
19	1.2500-0.1P-0.3L-TS	.135	1.607	.878	1.816	M35X1-6g 0.100R
21	1.3750-0.1P-0.3L-TS	.135	1.733	.878	1.942	M38X1-6g 0.100R
23	1.5000-0.1P-0.3L-TS	.135	1.858	.878	2.067	M41X1-6g 0.100R
25	1.6250-0.1P-0.3L-TS	.135	1.981	.878	2.190	M44X1-6g 0.100R

All dimensions for reference only.
Most common options are shown; other options are available.

† Red band indicates fully mated
†† Blue band indicates rear release contact retention system
★ .059 dia. min. 3 lockwire holes. Formed lockwire hole design (6 holes) is optional.*"D" shaped mounting hole dimensions

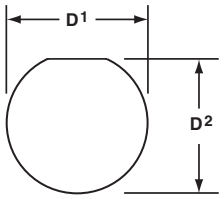
PCB Jam Nut Double Flange Receptacles

(TV47 , TVS47)

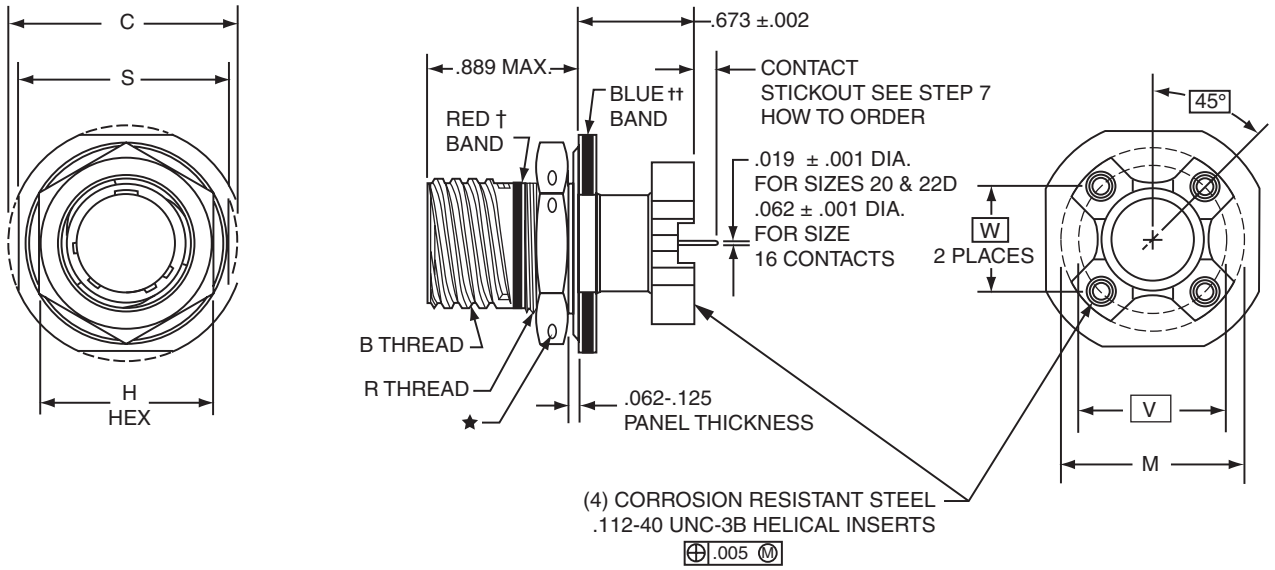
PART NUMBER BUILDER Page 10
ONLINE CONFIGURATOR www.amphenol-aerospace.com

ALUMINUM	STAINLESS STEEL	COMPOSITE
TV47RW	TVS47RK	CTV47RW
TV47DT	TVS47RKN	CTV47DT
TV47DW	TVS47RS	CTV47DZ
TV47DZ	TVS47RL	CTVS47RF
TVS47RF	TVS47DSK	
TVS47RB	TVS47DSN	
TVS47DB		
TVS47DS		

PANEL HOLE DIMENSIONS



JAM NUT D-HOLE MOUNTING



Shell Size	MS Shell Size Code (For Ref.)	B Thread Class 2A 0.1P-0.3L-TS (Plated)	C ±.005 (Jam Nut Flange Dia.	D¹ +.010 −.000	D² +.000 −.010	H Hex +.017 −.016	M Dia. ±.005 (TV)	M Dia. ±.005 (CTV)	R Thread Metric (Plated)	S +.011 −.010	PCB Mounting Dimensions	
											V Dia. (TV) TP	W (CTV) TP
9	A	.6250	1.188	.700	.670	.875	1.062	1.016	M17X1-6g0.100R	1.062	.753	.532
11	B	.7500	1.375	.825	.770	1.000	1.062	1.148	M20X1-6g0.100R	1.250	.850	.601
13	C	.8750	1.500	1.010	.955	1.188	1.250	1.250	M25X1-6g0.100R	1.375	.994	.703
15	D	1.0000	1.625	1.135	1.085	1.312	1.375	1.375	M28X1-6g0.100R	1.500	1.119	.791
17	E	1.1875	1.750	1.260	1.210	1.438	1.500	1.500	M32X1-6g0.100R	1.625	1.237	.875
19	F	1.2500	1.937	1.385	1.335	1.562	1.625	1.625	M35X1-6g0.100R	1.812	1.379	.975
21	G	1.3750	2.062	1.510	1.460	1.688	1.750	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	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	2.000	M44X1-6g0.100R	2.188	1.744	1.233

All dimensions for reference only.
† Red band indicates fully mated
†† Blue band indicates rear release contact retention system.
★ .059 dia. min. (1.5 dia. min.) 3 lockwire holes or formed lockwire hole design (6 holes).

PCB Jam Nut Receptacle, Reduced Double Flange

Amphenol Aerospace

(TV48, TVS48, CTV48, CTVS48)

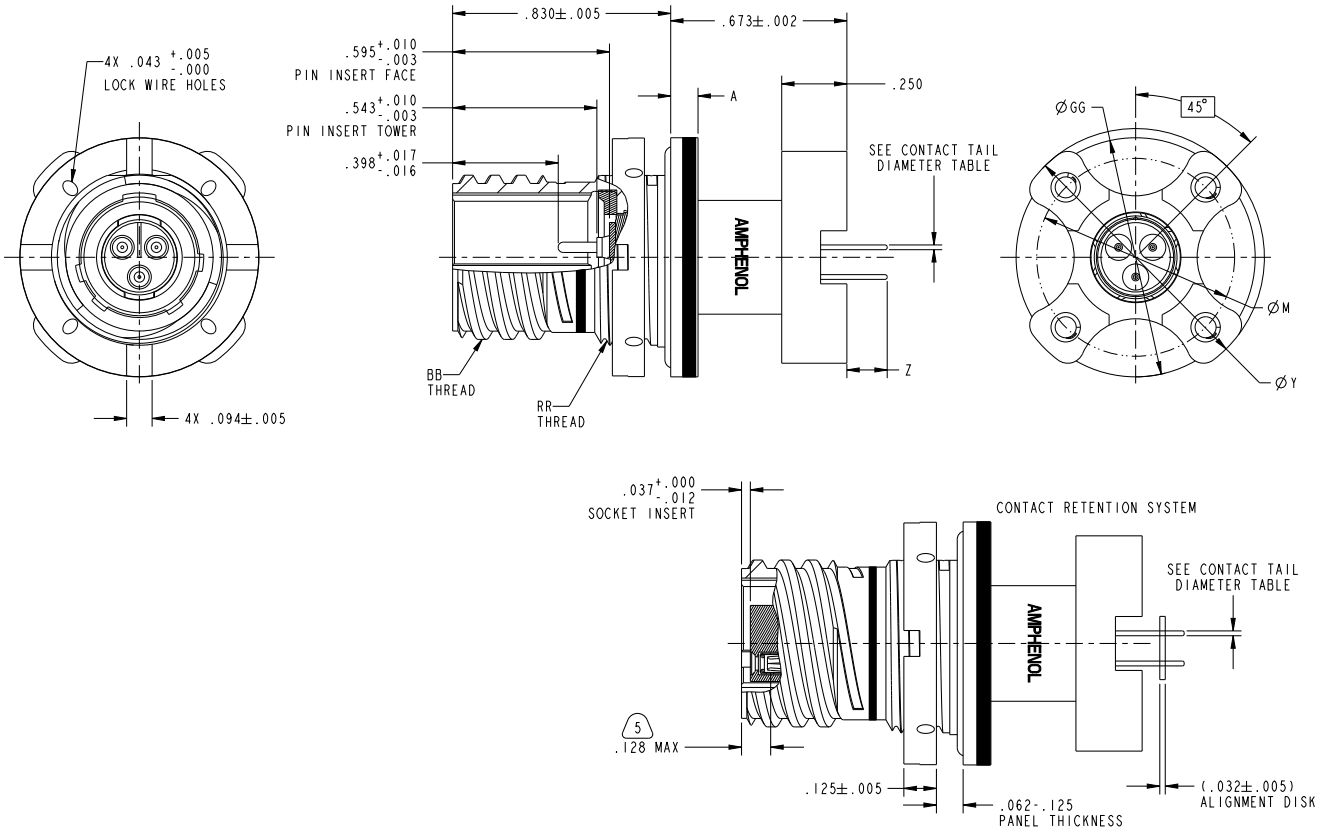
PART NUMBER BUILDER Page 10
ONLINE CONFIGURATOR www.amphenol-aerospace.com

ALUMINUM
TV48RW
TV48DT
TV48DW
TV48DZ
TVS48RF
TVS48RB
TVS48DB
TVS48DS

STAINLESS STEEL
TVS48RK
TVS48RKN
TVS48RS
TVS48RL
TVS48DSK
TVS48DSN

COMPOSITE
CTV48RW
CTV48DT
CTV48DZ
CTVS48RF





Shell Size	BB THREAD PER MIL-DTL-38999 CLASS 2A	A +.010 -.005	Ø M	Ø Y ±.005	Ø GG MAX	RR Thread (Metric)
9	6250-0.1P-0.3L-TS	.104	.753	.982	.915	M17X1-6g 0.100R
11	7500-0.1P-0.3L-TS	.104	.850	1.062	1.042	M20X1-6g 0.100R
13	8750-0.1P-0.3L-TS	.104	.994	1.250	1.240	M25X1-6g 0.100R
15	1.0000-0.1P-0.3L-TS	.104	1.119	1.375	1.375	M28X1-6g 0.100R
17	1.1875-0.1P-0.3L-TS	.104	1.237	1.500	1.630	M32X1-6g 0.100R
19	1.2500-0.1P-0.3L-TS	.135	1.379	1.625	1.816	M35X1-6g 0.100R
21	1.3750-0.1P-0.3L-TS	.135	1.489	1.750	1.942	M38X1-6g 0.100R
23	1.5000-0.1P-0.3L-TS	.135	1.644	1.875	2.067	M41X1-6g 0.100R
25	1.6250-0.1P-0.3L-TS	.135	1.744	2.000	2.190	M44X1-6g 0.100R

All dimensions for reference only.
† Red band indicates fully mated
†† Blue band indicates rear release contact retention system.

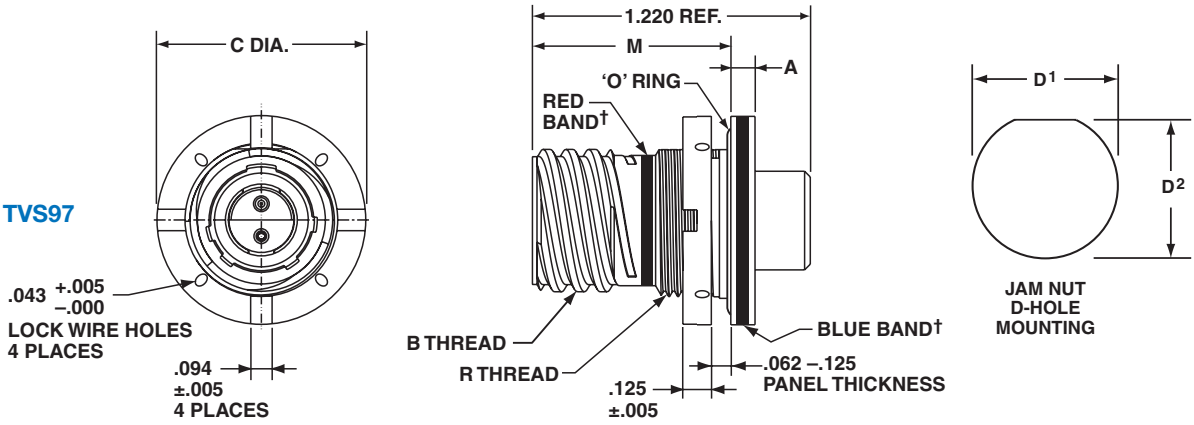
PCB Reduced Flange Jam Nut Receptacles

(TV97, TVS97, TV98, TVS98)

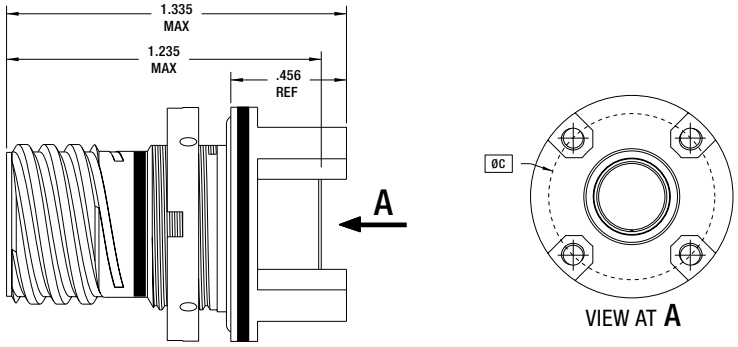
PART NUMBER BUILDER Page 10
ONLINE CONFIGURATOR www.amphenol-aerospace.com

ALUMINUM		STAINLESS STEEL	
TV97DT	TV98DT	TVS97RK	TVS98RK
TV97DW	TV98DW	TVS97RKN	TVS98RKN
TV97DZ	TV98DZ	TVS97RS	TVS98RS
TV97RW	TV98RW	TVS97RL	TVS98RL
TVS97DB	TVS98RB	TVS97DSK	TVS98DSK
TVS97RB	TVS98RF	TVS97DSN	TVS98DSN
TVS97RF	TVS98DB		
TVS97DB	TVS98DS		
TVS97DS			

TVS97



TVS98



Shell Size	Footprint Reduction	Ø B Max	Ø GG Max	Ø C MAX
9	42%	.443	.915	.744
11	46%	.567	1.042	.862
13	37%	.680	1.240	1.020
15	36%	.811	1.357	1.141
17	21%	.936	1.630	1.385
19	21%	1.042	1.816	1.531
21	21%	1.167	1.942	1.656
23	21%	1.292	2.067	1.782
25	22%	1.417	2.190	1.910

Shell Size	MS Shell Size Code	B Thread Class 2A 0.1P-0.3L-TS (Plated)	A +.010 –.005	C Dia. Max.	D[1] +.010 –.000	D[2] +.000 –.010	M	R Thread (Plated) 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

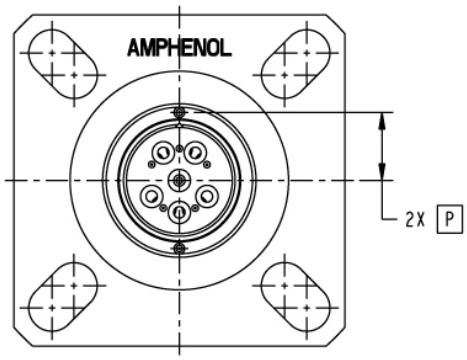
38999 PCB Connector with Ground Pins



- Available in box mount and jam nut style shells
- Intermateable with any MIL-DTL-38999 Series III plugs and Accessories
- Allows for PCB to be grounded directly to board
- Multiple ground pin positions available
- Available in aluminum with all Amphenol standard plating options

Example: TV07DZ-15-35P(P25B)
Only available is shell style 02 and 07. See page 10 for complete How to Order options.

1.	2.	3.	4.	5.	6.	7.	8.
Connector Type	Shell Style	Service Class	Shell Size - Insert Arrangement	Contact Type	Alternate Position	PCB Length	Pin Orientation
TV or PTV (Potted Version)	07	RF	15-35	P	A	(P25)	B



Shell Size	P
9	.194
11	.257
13	.315
15	.378
17	.441
19	.494
21	.556
23	.619
25	.681

Ground Pin Orientation Table		
# of Pins	Location	Suffix
1	Upper	U
	Lower	L
2	Both	B

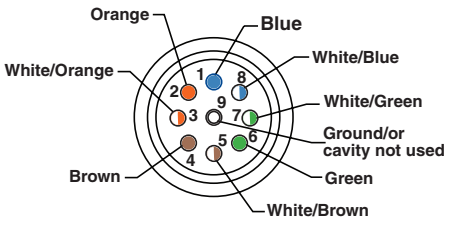
High Density Interconnects



The HD38999 family of connectors has 30% more contact density than the highest density Mil Spec 38999 connectors of comparable size. This series of connectors was designed to utilize Military Specified 38999 components with the exception of the contacts and inserts arrangement. Utilizing existing qualified M39029 size 23 contacts and 38999 insert materials, these connectors are essentially a drop-in replacement for a standard 38999 connector.

HD38999 is tested and meets the requirements of MIL-DTL-38999 Series III. If you need a customized version please contact us with your requirment.

Signal-Ground Pin Configuration
Wiring Recommendations



View Rear of Connector

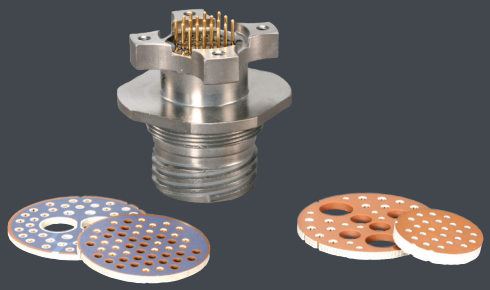
HD38999 for Gigabit Ethernet Applications

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 AmphenolAero space for more information)

Filtered HD38999 Connectors - for EMI/EMP Protection

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



High Density Interconnects

Amphenol Aerospace

How to Order

PART NUMBER KEY

1. Type	2. Shell Style	3. Service Class	4. Shell Size & Insert Arrangement	5. Contact Type	6. Alternate Position*	7.1 PCB Termination	7.2 PCB Length	7.3 PCB Acc	7.4 PCB Tinning Option
TVP	07	RW	23-151	P	A	P	45	AD	T1

P (prefix forPotted)

1. CONNECTOR TYPE	
TV	Tri-Start Series Connector
TVP	Panel Mounted Receptacle
CTV	Composite Tri-Start Series
CTVP	Panel Mounted Composite

*Add P prefix for potted ex: PTV

RECEPTACLE CRIMP		
2. SHELL STYLE	02	Box Mount Recptacle Panel Mount
	00	Wall Mount Receptacle Panel Mount
	80	Wall Mount with Integral Banding Platform
	07	Jam Nut Receptacle
	87	Jam Nut with Integral Banding Plaform
	01	Inline Receptacle
	81	Line Mount with Integral Banding Platform
	96	Plug with Integral Banding Platform
	76	Plug with Integral Strain Relief

PLUG		
2. SHELL STYLE	06	Straight Plug
	09	Flange Mount Plug
	56	Straight Plug with Dualok

RECEPTACLE WITH PCB CONTACTS		
2. SHELL STYLE	02	PCB Box Mount Receptacle
	12	PCB Box Mount Receptacle Clinch Nuts
	13	PCB Box Mount Receptacle Metric Clinch Nuts
	00	PCB Wall Mount Receptacle
	10	PCB Wall Mount Receptacle Clinch Nuts
	11	PCB Wall Mount Receptacle Metric Clinch Nuts
	40	PCB Wall Mount Receptacle Double Flange
	07	PCB Jam Nut Receptacle
	47	PCB Jam Nut Receptacle Double Flange
	42	PCB Wall Mount with integrated helicoils

RECEPTACLE HERMETIC (STAINLESS STEEL)		
2. SHELL STYLE	02	Box Mount Receptacle Hermetic
	07	Jam Nut Receptacle Hermetic
	I	Solder Mount Receptacle Hermetic
	HI	Weld Mount Receptacle Hermetic

High Density Interconnects

How to Order

PART NUMBER KEY

1. Type	2. Shell Style	3. Service Class	4. Shell Size & Insert Arrangement	5. Contact Type	6. Alternate Position*	7.1 PCB Termination	7.2 PCB Length	7.3 PCB Acc	7.4 PCB Tinning Option
TVP	07	RW	23-151	P	A	P	45	AD	T1

3. SERVICE CLASS (ALL 175°C)

RW	Corrosion resistant olive drab cadmium plated aluminum, 500 hour extended salt spray	
DT	Durmalon plated, alternative to cadmium. Corrosion resistant, 500 hour extended salt spray	✓
DZ	Black Zinc-Nickel alternative to cadmium. 500 hour salt spray, conductive	✓
DW	Corrosion resistant olive drab cadmium plated aluminum, 1,000 hour extended salt spray	
RB	Marine Bronze - 500 hour salt spray	✓
RF	Electroless nickel plated aluminum, 48 hour salt spray	✓
RK	Corrosion resistant stainless steel, firewall capability, plus 500 hour salt spray resistance	✓
RKN	Corrosion resistant stainless steel, Nonfirewall capability, plus 500 hour salt spray resistance	✓
RL	Corrosion resistant steel, electro deposited nickel, 500 hour salt spray, non firewall	✓
RS	(Non-hermetic connectors), Nickel plated, corrosion resistant steel, firewall capability, 500 hour salt spray	✓
DB	Black Electroless Nickel, 100 hour salt spray	✓
DS	AP-93 Tri-Nickel Alloy, Aluminum, 1000 Hr., 200°C, -65dB@100Hz*	✓

4. SHELL SIZE – INSERT ARRANGEMENT

Shell Size	Insert Arrangement Number
9-	9
11-	19
13-	32
15-	55
17-	73
19-	88
21-	121
23-	151
25-	187

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

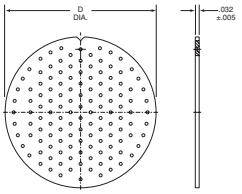
5. CONTACT TYPE

P	500 Cycle Pin Contacts
S	500 Cycle Socket Contacts
H	1500 Cycle Pin Contacts
J	1500 Cycle Socket Contacts

6. ALTERNATE POSITION

A, B, C, D, E and omit for normal Rotation. See page 93 for complete information

Alignment Disc



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

7.1 TERMINATION

P	Pin
S	Socket

7.2 PCB LENGTH

10	.100"
15	.150"
20	.200"
25	.250"
30	.300"
35	.350"
40	.400"
45	.450"

7.3 ACCESSORIES

AD	Alignment Disc
	No Disc

7.4 TINNING OPTIONS

	Standard Gold Plating
T	Tin-Lead Solder
T1	Tin-Silver Solder
T2	SAC 305 (lead Free)

Example Configuration: "P15" PCB Connector with .150 length gold plated contacts
Example Configuration: "S25T" PCB connector with .250 stickout length, gold plated contacts with tin-lead solder
Example Configuration: "P45ADT1" PCB connector with .450 stickout length, gold plated contacts with tin-silver solder and an alignment disc

Powersafe 38999 High-Power Connectors







High-Power connectors with safety design, derived from MIL-DTL-38999

Amphenol's PowerSafe MIL-DTL-38999 Series III High Power Connector uses first mate/last break and last mate/first break technology and is designed for transmitting high power with voltages up to 500V in harsh environments, all while keeping user safety in mind. PowerSafe offers six contact arrangements for three phase and single-phase applications. Ideal for C5ISR, military avionics and ground vehicles, and missile and naval applications.

Features & Benefits:

- Designed for power applications up to 500V with user safety in mind
- First Mate/Last Break and Last Mate/First Break technology
- Same panel drilling as standard MIL-DTL-38999 Series III
- Compatible with standard caps and M85049 backshells
- Available in aluminum, stainless steel and bronze shell materials
- Standard Amphenol plating options and shell styles available

Environmental & Electrical Characteristics:

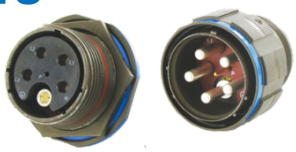
- 500 mating cycles
- Temperature range from -85° F (-65° C) to 302° F (150° C) or 392° F (200° C), depending on material, plating and insert type
- IP68 when mated, IP28 unmated (socket version)
- Shell to shell conductivity between 1 and 5 mΩ
- EMI/RFI Protection: Shell to shell bottoming and grounding fingers on plug shell

Contacts Options:

- Six contact arrangements: 2 X three-phase inserts and 4 X single-phase inserts
- Contact sizes range from 20 to 4 AWG, 16 to 100 amps
- Power (phase), ground and pilot pins
- Crimp contacts – gold plating for pilot contact and silver plating for protective, phase and neutral contacts

Powersafe 38999 High-Power Connectors

How to Order



1. Connector Type	2. Shell Style	3. Service Class	4. Shell Size - Insert Arrangement	5. Contact Type	6. Alternate Positions	7. Modifications (Optional)
TV	06	RW	15-V4	P	A	

1. CONNECTOR TYPE

TV	Tri-Start 175°F (175°C)
TVS	Tri-Start, 392°F (200°C)
TVP	Tri-Start, Panel Mounted, 347°F (175°C)
TVPS	Tri-Start, Panel Mounted, 392°F (200°C)

2. SHELL TYPE

06	Straight Plug
00	Square Flange Receptacle
07	Jam Nut Receptable

3. CLASS: MATERIAL & FINISH

	Shell Material	Shell Finish	
RW	Aluminum	Olive Drab Cadmium 175°C, 500 hr extended salt spray	
RF		Electroless Nickel plated, 200°C, 48 hr salt spray	
ZN		Black Zinc Nickel, 175°C, 500 hr salt spray	
ZR		Black Zinc Nickel without Chromium 6+, 175°C	
TZ		Tin Zinc, 175°C	
RB	Marine Bronze	500 hr salt spray, 200°C	
RK	Stainless Steel	Corrosion resistant passivated stainless steel, 200° C, firewall capability, plus 500 hour salt spray resistance	
RS		Nickel plated, corrosion resistant steel, 200° C, firewall capability, 500 hour salt spray	

4. SHELL SIZE - INSERT ARRANGEMENT

13-E4
15-E4
17-E6
21-E4
23-E4
23-E6
25-E6

Please note that standard inserts have a Comparative Tracking Index (CT) <100V and can withstand a temperature up to 392°F(200°C) depending on shell material and platings.

5. CONTACT TYPE

P	Pin
S	Socket

4. SHELL SIZE - INSERT ARRANGEMENT

13-V4
15-V4
17-V6
21-V4
23-V4
23-V6
25-V6

Please note that VG inserts have a Comparative Tracking Index (CTI) between 175 & 400V (Material Group IIIa) and can withstand a temperature up to 302°F(150°C).

6. ALTERNATE POSITIONS

Size	Normal Leave Blank	A	B	C	D
13	100	80	68	132	120
15	100	79	66	134	121
17	100	82	70	130	118
21	100	82	70	130	118
23	100	85	74	126	115
25	100	85	74	126	115

7. MODIFICATIONS (OPTIONAL)

F312	Reduced flange receptacle with standard nut (Jam Nut Only)

Powersafe 38999 High-Power Connectors

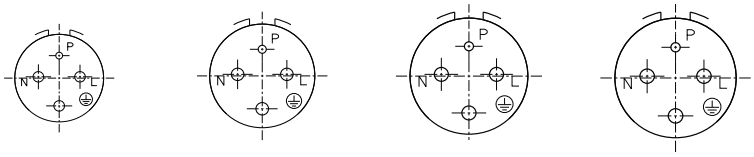
Amphenol Aerospace

Insert Arrangement

Amphenol PowerSafe range offers 6 contact arrangements to fit all your power needs, with single-phase & three-phase layouts, and a choice of 2 insert materials for each layout depending on the need :

- V inserts : developped according to VG96944 standard with a material less impacted by the disconnection under load. Able to withstand a maximum temperature of 302°F(150°C) & have a CTI between 175 & 400 (Material Group IIIa)
- E inserts : using the same material than our 38999 series connectors and able to whistand a temperature up to 392°F (200°C)

SINGLE-PHASE LAYOUTS:



V Insert	13-V4	15-V4	21-V4	23-V4
E Insert	13-E4	15-E4	21-E4	23-E4
Pilot Contact (P)	1 Size 20	1 Size 16	1 Size 16	1 Size 16
Phase & Neutral (N & L)	2 Size 16	2 Size 12	2 Size 6	2 Size 4
Protective Contact	1 Size 16	1 Size 12	1 Size 6	1 Size 4

Contact Arrangement	Pilot Contact - P		Phase, Neutral and Protective Contact - N, L &		DWV
	Contact Rating	Operating Voltage (Vrms)	Contact Rating	Operating Voltage (Vrms)	
13-V4 | 13-E4	0.5 A	60 V	16 A	1100 | 250	3300 | 1500
15-V4 | 15-E4	0.5 A	60 V	25 A	1100 | 250	3300 | 1500
21-V4 | 21-E4	0.5 A	60 V	63 A	1100 | 500	3300 | 2500
23-V4 | 23-E4	0.5 A	60 V	84 A	1100 | 500	3300 | 2500

THREE-PHASE LAYOUTS:



V Insert	17-V6	23-E6	25-V6
E Insert	17-E6	23-V6	25-E6
Pilot contact (P)	1 Size 16	1 Size 16	1 Size 16
Phase & neutral (N & L)	4 Size 12	4 Size 8	4 Size 6
Protective Contact	1 Size 12	1 Size 8	1 Size 6

Contact Arrangement	Pilot Contact - P		Phase, Neutral and Protective Contact - N, L1, L2, L3 &		DWV (Vrms)
	Contact Rating	Operating Voltage	Contact Rating A	Operating Voltage (Vrms)	
17-V6 | 17-E6	0.5 A	60 V	25	1100 | 500	3300 | 2500
23-E6 | 23-V6	0.5 A	60 V	47	1100 | 500	3300 | 2500
25-V6 | 25-E6	0.5 A	60 V	63	500	2500

Tri-Power with RADSOK® Technology







Amphenol has combined the reliability of D38999 connectors with the high-current RADSOK® contact design.
The Amphenol Power Connectors incorporate the proven design of the MIL-DTL-38999 Series III Tri-Start connectors with the evolving technology of the High Power RADSOK® contacts. This newly designed product enables customers to choose contacts ranging from 70 to 120 amps (240 to 620 amps per connector) allowing more power in a smaller connector.

Using standard shell sizes for 38999 connectors will allow the Power Connectors to mate to existing mounting holes without changing the customer's original design. In addition, Amphenol offers oversized 38999-style shells which are able to provide more power and amperage, while maintaining the proven, trusted MIL-DTL-38999 style design.

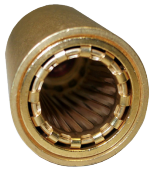
High Reliability:
Unique RADSOK® design and construction technology create an electrical contact interface that exceeds typical interconnect requirements. Applications in aerospace, medical, industrial, automotive, mining, offshore, and other harsh environments depend on high reliability of the Amphenol RADSOK® technology.

Low Contact Resistance:
The large interface area between the socket lamella and pin surface result in very low contact resistance, enabling the RADSOK® contacts' high current ratings compared to traditional power contact designs.

High Mating Cycle Durability:
Even with continuous exposure to harsh environmental abuse (salt, sand, and high humidity), RADSOK® contacts have been tested to maintain low contact resistance beyond 10,000 mating cycles.

Low Contact Engagement/ Separation Forces:
The hyperbolic lamella socket contact construction distributes normal forces over a high percentage of the mating pin surface. This creates a smooth, even engagement effort.

Tri-Power with Radsok Contacts



Amphenol Aerospace

How to Order

1. Connector Type	2. Shell Style	3. Service Class	4. Shell Size	5. Insert Arrangement	6. Contact Type	7. Alternate Positions
MP	00	RF	21	AH	P	B

1. CONNECTOR TYPE

MP	Tri-Power

2. SHELL STYLE

00	Wall Mount Receptacle
06	Plug
07	Jam Nut Receptacle

3. SERVICE CLASS

RS	Nickel plated, corrosion resistant steel, firewall capability, 500 hour salt spray, 200°C
RF	Electroless nickel plated aluminum 48 hour salt spray, 200°C
RW	Corrosion resistant olive drab cadmium plated aluminum, 500 hour extended salt spray, 175°C
DT	Durmalon: Gray non-reflective finish, RoHS® compliant cad & Hexavalent Chromium free. 500 hours extended salt spray, 175°C
DZ	Black Zinc-Nickel alternative to cadmium. Corrosion resistant, 500 hour salt spray, conductive, 175°C

4. SHELL SIZE

21	MIL Shell Size G
23*	MIL Shell Size H
25	MIL Shell Size J
25L	-Proprietary
33	-Proprietary

* Consult Amphenol for availability

5. INSERT ARRANGEMENT

See drawings to the right

6. CONTACT TYPE

P	Pin Contacts
S	Socket Contacts

* For Special termination methods such as threaded or solder cup, contact factory

7. ALTERNATE POSITION

A, B, C, D, E omit for normal rotation parts. See page 93 for complete information



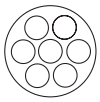
21-AH
(4) Size 8 Contacts



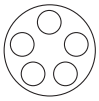
25-AH
(2) Size 4 Contacts



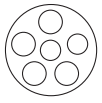
25L-3
(2) Size 4 (1) Size 8



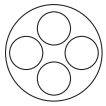
25L-7
(7) Size 8 Contacts



33-5
(5) Size 4

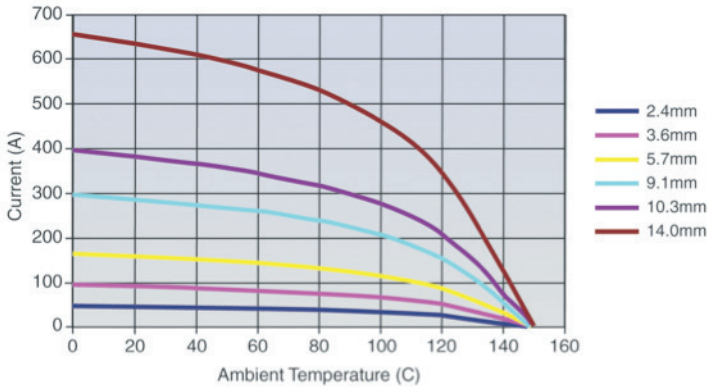


33-6
(2) Size 8 (4) Size 4



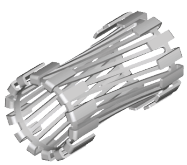
37-5
(4) Size 0

RADSOK Contact Derating Chart



Standard Contacts	
Size	Amps
8	46
4	80
0	150

RADSOK Contacts	
Size	Amps
8	70
4	120
0	250



Bulkhead Feed-Throughs, Connector Savers & Plug Adapters



Bulkhead Feed-Through Connectors remove the need for discrete wire termination when assembling the connector

Amphenol Aerospace's Bulkhead Feed-Through connectors are double-ended receptacles with feed through contacts that mate to standard MIL-DTL-D38999 plugs. Available in multiple shell and contact gender configurations, they are designed to meet applicable requirements for 38999 series III and allow for usage in new applications where standard connectors won't suffice.

Connector Savers:

Amphenol's Connector Savers protect connectors subjected to repeated mating cycles and prevent costly repairs associated with replacement of connectors and/or cables. These connectors can also be used when mating plugs to alternate plated receptacle in efforts to avoid corrosion. Fully compatible with standard MIL-DTL-38999 connectors and protection caps.

Features & Benefits:

- **Corrosion Resistance:** Several Shell Finishes capable of withstanding 500 hours of salt spray.
- **Environmentally Sealed:** Environmentally sealed when mated with Mil-Spec plug.
- **Gender Availability:** Available in a variety of gender options tailored to your application needs.
- **Contact Protection:** Recessed pins in this 100% scoop-proof connector minimize potential contact damage.
- **Versitile:** Mates to standard D38999 plug connectors (D38999/26).
- **Temperature:** Performs in ranges from -65°C through 200°C.

Options:

- Fully tooled in all Standard D38999 insert patterns
- Contact Amphenol for Firewall Capability
- Amphenol standard platings available for both aluminum and stainless steel shells
- Also avaiblable: thermocouple, filtering, custom, mixed keying arrangements, and high speed. Contact Amphenol for more information.



Bulkhead Feed-Through & Connector Savers

Amphenol Aerospace

How to Order (Ex: BTV07RW-21-35SPB)

1. Connector Type	2. Shell Style	3. Service Class	4. Shell Size - Insert Arrangement	5. Contact Type	6. Alternate Positions	7. Modifications
BTV	07	RW	21-35	SP	B	(Optional)

Note: Panel Accomodations .060 - .150"

1. CONNECTOR TYPE

BTV	Bulkhead Feed-Through Connector
TVCS	Connector Saver

2. SHELL STYLE

00	Wall Mount Receptacle
01	Line Receptacle (Plug Adapter)
07	Jam Nut Receptacle
10	Wall Mount with Clinch Nuts
	Omit for Connector Saver

3. 175°C SERVICE CLASS

RW	Corrosion resistant olive drab cadmium plated aluminum, 500 hour extended salt spray	
DT	Durmalon plated, alternative to cadmium. Corrosion resistant, 500 hour extended salt spray	RoHS
DZ	Black Zinc-Nickel alternative to cadmium. 500 hour salt spray, conductive	RoHS
DW	Corrosion resistant olive drab cadmium plated aluminum, 1,000 hour extended salt spray	

4. SHELL SIZE - INSERT ARRANGEMENT

9-	Fill in applicable 38999 Insert Pattern
11-	
13-	
15-	
17-	
19-	
21-	
23-	
25-	

5. CONTACT TYPE

SP	Socket-Pin
PS	Pin-Socket
PP	Pin-Pin
SS	Socket-Socket

Note: For Jam Nut/Wall Mount versions the first letter designates the panel side of the connector (see drawing) while the second letter in the sequence designates the opposite side. The In-Line can be reversed.

6. ALTERNATE POSITION

A, B, C, D, E omit for normal rotation parts. See page 93 for complete information

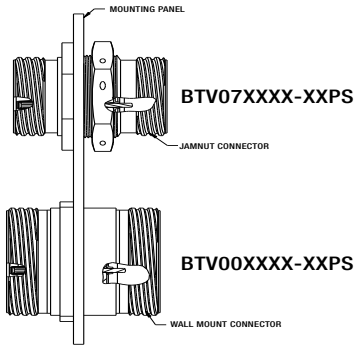
3. 200°C SERVICE CLASS

RB	Marine Bronze - 500 hour salt spray	RoHS
RF	Electroless nickel plated aluminum, 48 hour salt spray	RoHS
RK	Corrosion resistant stainless steel, fire-wall capability, plus 500 hour salt spray resistance	RoHS
RL	Corrosion resistant steel, electro deposited nickel, 500 hour salt spray, non firewall	RoHS
DB	Black Electroless Nickel, 100 hour salt spray	RoHS

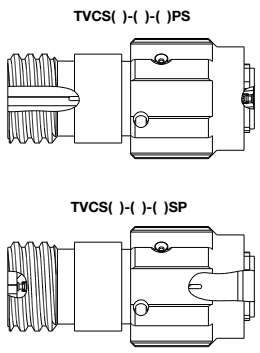
7. MODIFICATIONS

(PWR)	Replace coax/twinax contacts with power contacts

Bulkhead Feed-Through Connector



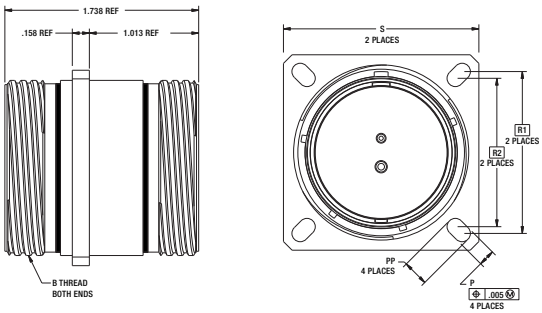
Connector Saver



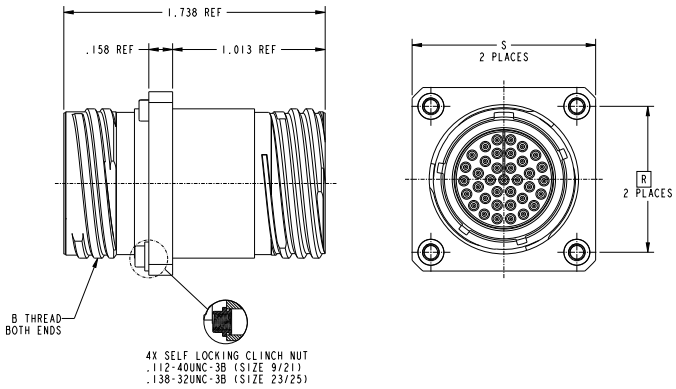
Bulkhead Feed-Through Connectors

Wall Mount (BTV00), Wall Mount with Clinch Nuts (BTV10) Line Mount (BTV01)

BTV00 - Wall Mount

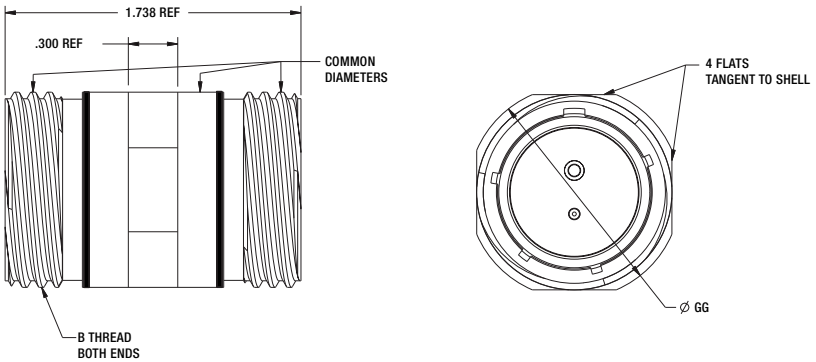


BTV10 - Wall Mount with Clinch Nuts



Connector Size	B Thread Class 2A, Blunt Start per 9-3200-2	P ±.007	PP ±.007	R1	R2	S ±.010
9	.6250-0.IP-0.3L-TS	.128	.216	.719	.594	.937
11	.7500-0.IP-0.3L-TS	.128	.194	.812	.719	1.031
13	.8750-0.IP-0.3L-TS	.128	.194	.906	.812	1.126
15	1.0000-0.IP-0.3L-TS	.128	.173	.969	.906	1.220
17	1.1875-0.IP-0.3L-TS	.128	.194	1.062	.969	1.311
19	1.2500-0.IP-0.3L-TS	.128	.194	1.156	1.062	1.437
21	1.3750-0.IP-0.3L-TS	.128	.194	1.250	1.156	1.563
23	1.5000-0.IP-0.3L-TS	.154	.242	1.375	1.250	1.689
25	1.6250-0.IP-0.3L-TS	.154	.242	1.500	1.375	1.811

BTV01- Line Mount



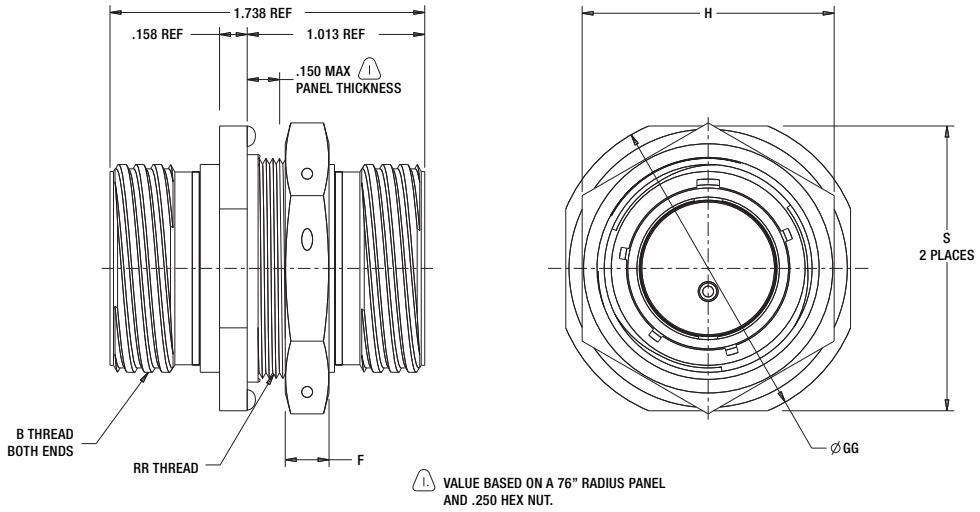
Connector Size	B Thread Class 2A, Blunt Start	Ø GG
9	.6250-0.IP0.3L-TS	.725
11	.7500-0.IP0.3L-TS	.850
13	.8750-0.IP0.3L-TS	.975
15	1.0000-0.IP0.3L-TS	1.100
17	1.1875-0.IP0.3L-TS	1.290
19	1.2500-0.IP0.3L-TS	1.350
21	1.3750-0.IP0.3L-TS	1.475
23	1.5000-0.IP0.3L-TS	1.600
25	1.6250-0.IP0.3L-TS	1.725

Bulkhead Feed-Through Connectors

Jam Nut (BTV07)

Amphenol Aerospace

BTV07 - Jam Nut



Connector Size	B Thread Class 2A	S	Ø GG	RR Thread		H Hex ±.016
9	.6250-0.IP-0.3L-TS	1.062	1.188	M17X1-6g	N/A	.875
11	.7500-0.IP-0.3L-TS	1.250	1.375	M20X1-6g	N/A	1.000
13	.8750-0.IP-0.3L-TS	1.375	1.500	M25X1-6g	N/A	1.188
15	1.0000-0.IP-0.3L-TS	1.500	1.625	M28X1-6g	N/A	1.312
17	1.1875-0.IP-0.3L-TS	1.625	1.750	M32X1-6g	31.92-31.80	1.438
19	1.2500-0.IP-0.3L-TS	1.812	1.938	M35X1-6g	N/A	1.562
21	1.3750-0.IP-0.3L-TS	1.938	2.062	M38X1-6g	N/A	1.688
23	1.5000-0.IP-0.3L-TS	2.062	2.188	M41X1-6g	N/A	1.812
25	1.6250-0.IP-0.3L-TS	2.188	2.312	M44X1-6g	N/A	2.000

F
.184 + .002 -.005
.250 + .010 -.000

38999 Connectors with Integral Accessories



The 38999 Series III style connectors feature integral accessories that eliminate the need for an additional backshell

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, or provide strain relief for their wire bundle. This provides superior EMI shielding, enhanced sealing and ease for overmold applications. These are available in aluminum and stainless steel shells with most Amphenol platings.

Features & Benefits:

- Eliminates need for additional accessory
- Time savings during order and installation
- Cost effective
- Space and weight savings
- EMI protection
- Compatible with overmolding processes (Integral banding platform)
- Integral strain relief eliminates accessory backoff concern
- Eliminates industry problem of misaligned accessory teeth

Connectors with Integral Accessories

How to Order

Amphenol Aerospace

1.	2.	3.	4.	5.	6	7.
Connector Type	Shell Style	Service Class	Shell Size - Insert Arrangement	Contact Type	Alternate Position	Modifications (Optional)
TVS	76	DZ	15-35	P	A	

1. CONNECTOR TYPE

TV	Tri-Start 175°C
TVS	Tri-Start 200°C
TVPS	Panel Mounted, 200°C

2. SHELL STYLE

96	Plug with Integral Banding Platform
87	Jam Nut with Integral Banding Platform
80	Wall Mount with Integral Banding Platform
81	Line Mount with Integral Banding Platform
76	Plug with Integral Strain Relief

3. 175°C SERVICE CLASS

RW	Corrosion resistant olive drab cadmium plated aluminum, 500 hour extended salt spray	
DT	Durmalon plated, alternative to cadmium. Corrosion resistant, 500 hour extended salt spray	RoHS
DZ	Black Zinc-Nickel alternative to cadmium. 500 hour salt spray, conductive	RoHS
DW	Corrosion resistant olive drab cadmium plated aluminum, 1,000 hour extended salt spray	

4. SHELL SIZE - INSERT ARRANGEMENT

See page 84-92 for Insert Arrangements chart and illustrations.

5. CONTACT TYPE

P	Pin
S	Socket
H	1500 Cycle Pin Contacts
J	1500 Cycle Socket Contacts

3. 200°C SERVICE CLASS

RB	Marine Bronze - 500 hour salt spray	RoHS
RF	Electroless nickel plated aluminum, 48 hour salt spray	RoHS
RK	Corrosion resistant stainless steel, firewall capability, plus 500 hour salt spray resistance	RoHS
RL	Corrosion resistant steel, electro deposited nickel, 500 hour salt spray, non firewall	RoHS
DB	Black Electroless Nickel, 100 hour salt spray	RoHS
DS	AP-93 Tri-Nickel Alloy, Aluminum, 1000 Hr., 200°C, -65dB@100Hz*	RoHS

7. MODIFICATIONS (OPTIONAL)

(PWR)	Replace coax/twinax contacts with power contacts

6. ALTERNATE POSITION PG 84

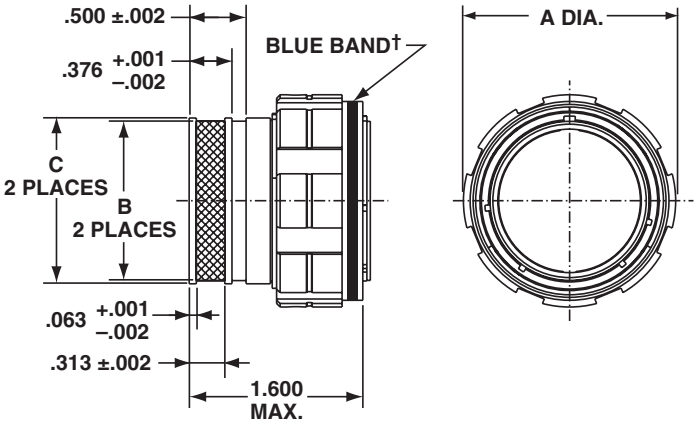
	Blank for normal rotation
A	A rotation
B	B rotation
C	C rotation
D	D rotation
E	E rotation

*See page 93 for more information.

Plug with Integral Banding Platform

(TV96, TVS96)

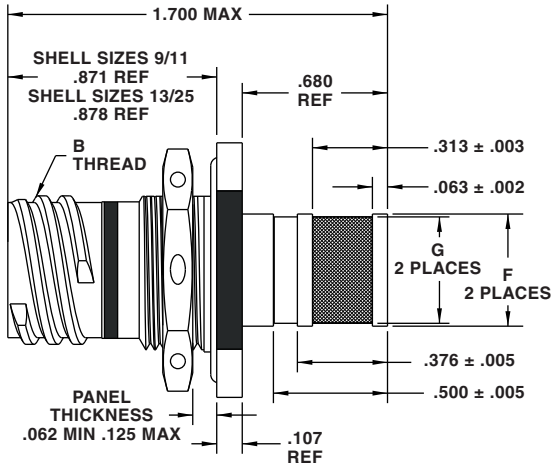
PART NUMBER BUILDER Page 38

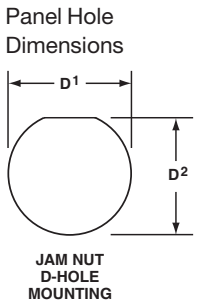


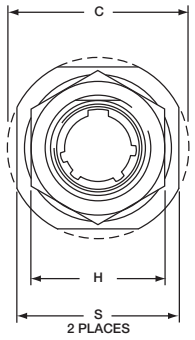
Shell Size	MS Shell Size Code	A Max.	B +.005 -.000	C +.003 -.002
9	A	.859	.416	.472
11	B	.969	.524	.580
13	C	1.141	.652	.708
15	D	1.266	.810	.866
17	E	1.391	.928	.984
19	F	1.500	1.046	1.102
21	G	1.625	1.164	1.220
23	H	1.750	1.282	1.338
25	J	1.875	1.400	1.456

Jam Nut with Integral Banding Platform

(TV87, TVS87)





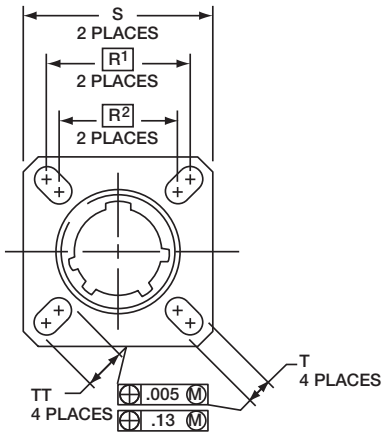


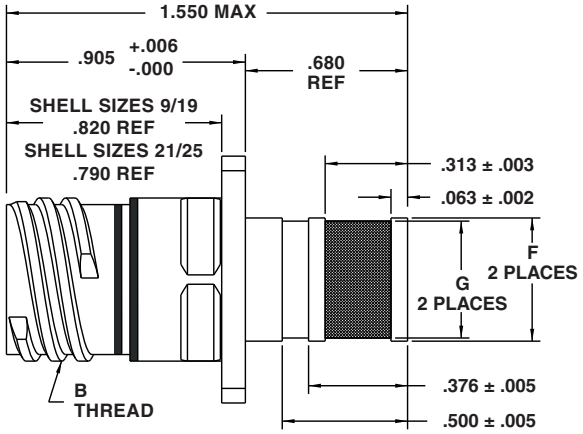
Shell Size	MS Shell Size Code	G +.005 -.000	F +.003 -.002	B Thread Class 2A 0.1P-0.3L-TS (Plated)	C Max.	D¹ +.010 -.000	D² +.010 -.000	H Hex +.017 -.016	S ±.010
9	A	.416	.472	.6250	1.199	.693	.657	.875	1.062
11	B	.524	.580	.7500	1.386	.825	.770	1.000	1.250
13	C	.652	.708	.8750	1.511	1.010	.955	1.188	1.375
15	D	.810	.866	1.0000	1.636	1.135	1.085	1.312	1.500
17	E	.928	.984	1.1875	1.761	1.260	1.210	1.438	1.625
19	F	1.046	1.102	1.2500	1.949	1.385	1.335	1.562	1.812
21	G	1.164	1.220	1.3750	2.073	1.510	1.460	1.688	1.938
23	H	1.282	1.338	1.5000	2.199	1.635	1.585	1.812	2.062
25	J	1.400	1.456	1.6250	2.323	1.760	1.710	2.000	2.188

Wall Mount with Integral Banding Platform

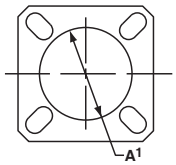
(TVP80, TVPS80)

PART NUMBER BUILDER Page 38

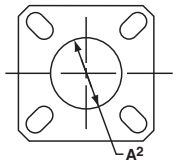




Panel Hole Dimensions



BACK PANEL MOUNTING



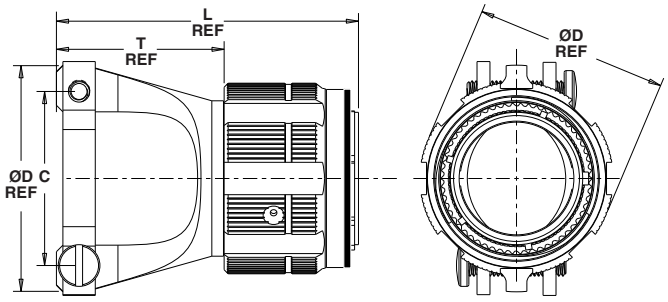
FRONT PANEL MOUNTING

Shell Size	MS Shell Size Code	G +.005 -.000	F +.003 -.002	B Thread Class 2A 0.1P-0.3L-TS (Plated)	R	R	S Max	T ±.008	A¹ Back Panel Mount	A² Front Panel Mount	TT ±.008
9	A	.416	.472	.6250	.719	.594	.948	.128	.655	.516	.216
11	B	.524	.580	.7500	.812	.719	1.043	.128	.796	.625	.194
13	C	.652	.708	.8750	.906	.812	1.137	.128	.922	.750	.194
15	D	.810	.866	1.0000	.969	.906	1.232	.128	1.047	.906	.173
17	E	.928	.984	1.1875	1.062	.969	1.323	.128	1.219	1.016	.194
19	F	1.046	1.102	1.2500	1.156	1.062	1.449	.128	1.297	1.141	.194
21	G	1.164	1.220	1.3750	1.250	1.156	1.575	128	1.442	1.266	.194
23	H	1.282	1.338	1.5000	1.375	1.250	1.701	.154	1.547	1.375	.242
25	J	1.400	1.456	1.6250	1.500	1.375	1.823	.154	1.672	1.484	.242

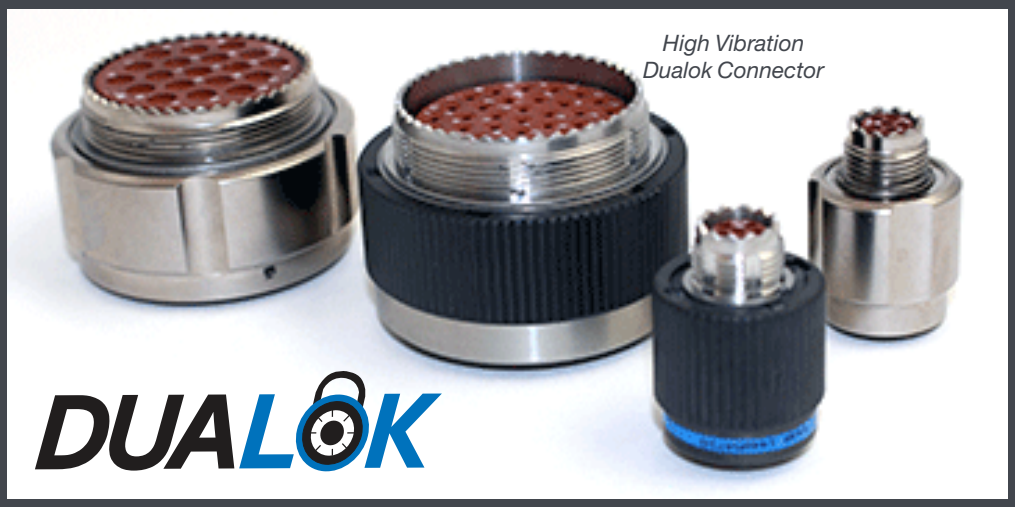
Plug with Integral Strain Relief

(TV76, TVS76)

Shell Size	MS Shell Size Code	A Max.	C	D DIA REF	L REF	T REF
9	A	0.859	0.688	0.950	1.890	0.815
11	B	0.969	0.812	1.110	1.985	0.910
13	C	1.141	0.945	1.270	2.080	1.005
15	D	1.266	1.062	1.430	2.175	1.100
17	E	1.391	1.250	1.590	2.270	1.195
19	F	1.500	1.344	1.750	2.365	1.290
21	G	1.625	1.500	1.880	2.490	1.415
23	H	1.750	1.656	2.010	2.615	1.540
25	J	1.875	1.781	2.150	2.740	1.665



High Vibration Dualok



High Vibration Dualok Connector

Testing on D38999 Series III aluminum plugs with Dualok showed 75% less millivolt drop than Mil-Spec requirements.

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 represents the latest in high performance connector designs from Amphenol. Featuring a newly developed locking mechanism, the Dualok plug ensures rock-solid coupling and metal-to-metal bottoming in the most severe vibration environments.

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 beenqualified to Boeing Specification BACC63EK.



Features and Benefits:

- Mates with standard D38999 receptacles and utilizes standard D38999 inserts.
- Designed to withstand and stay mated under vibration levels that exceed MIL-DTL-38999 levels
- Dualok stainless steel provides a weight savings of up to 42%compared to standard D38999 stainless steel designs
- Stainless steel, aluminum, composite, or aluminum bronze materials of construction
- Dualok aluminum provides ~ 10% weight reduction over D38999 Aluminum
- Coupling mechanism that does not “settle” under vibration levels exceeding MIL-DTL-38999
- Metal-to-metal bottoming for maximum EMI shielding under extreme vibration
- Improved performance under lighting strikes



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.

High Vibration Dualok, 38999 Series III Type

Amphenol Aerospace

How to Order (TV56, TVS56)

1. Connector Type	2. Shell Style	3. Service Class	4. Shell Size - Insert Arrangement	5. Contact Type	6. Alternate Position	7. Modicications****
TVS	56	RF	15-35	P	A	(740)

1. CONNECTOR TYPE

TV	Tri-Start 175°C
TVS	Tri-Start 200°C

2. SHELL STYLE

56	Dualok Shell

4. SHELL SIZE AND INSERT ARRANGEMENT

For available insert arrangements, please refer to page 84-92.

3.SERVICE CLASS — ALUMINUM 175°C

DT-	Durmalon: Plated alternative to cadmium, corrosion resistant, 500 hrs. extended salt spray, -50dB@10GHz
DZ-	Black Zinc-Nickel: Alternative to cadmium, 500 hrs. salt spray, conductive, -50dB@10GHz
RW-	Olive Drab Cadmium-500 hrs. salt spray, -65dB@10GHz
DW-	Corrosion Resistant Olive Drab Cadmium: 1,000 hrs. extended salt spray

3. SERVICE CLASS — ALUMINUM 200°C

RF-	Durmalon: Plated alternative to cadmium, corrosion resistant, 500 hrs. extended salt spray, -50dB@10GHz
DS-	Black Zinc-Nickel: Alternative to cadmium, 500 hrs. salt spray, conductive, -50dB@10GHz
DB-	Olive Drab Cadmium-500 hrs. salt spray, -65dB@10GHz

3. SERVICE CLASS — STAINLESS STEEL 200°C

RK-	Corrosion Resistant Stainless Steel: (Firewall) 500 hrs. salt spray resistance, -65dB@10GHz***
RKN-	Corrosion Resistant Passivated Stainless Steel: (Non-Firewall), 500 hrs. salt spray resistance, -65dB@10GHz
RS-	(Non-Hermetic), Nickel plated: Corrosion resistant steel, (Firewall), 500 hrs. salt spray, EMI shielding -65dB@10GHz specification min.***
RL-	Corrosion Resistant Steel: (Non-Firewall) 500 hrs. salt spray, -500dB@10GHz

5. CONTACT

P	Pin
S	Socket

6. ALTERNATE POSITIONS PG 93 FOR COMPLETE INFO

	Blank for normal rotation
A	A rotation
B	B rotation
C	C rotation
D	D rotation
E	E rotation

7. MODIFICATIONS

	Blank for normal rotation
(740)	Hybrid steel-composite coupling mechanism
(742)	Hybrid aluminum - composite coupling mechanism

*Contact the factory for additional modifications

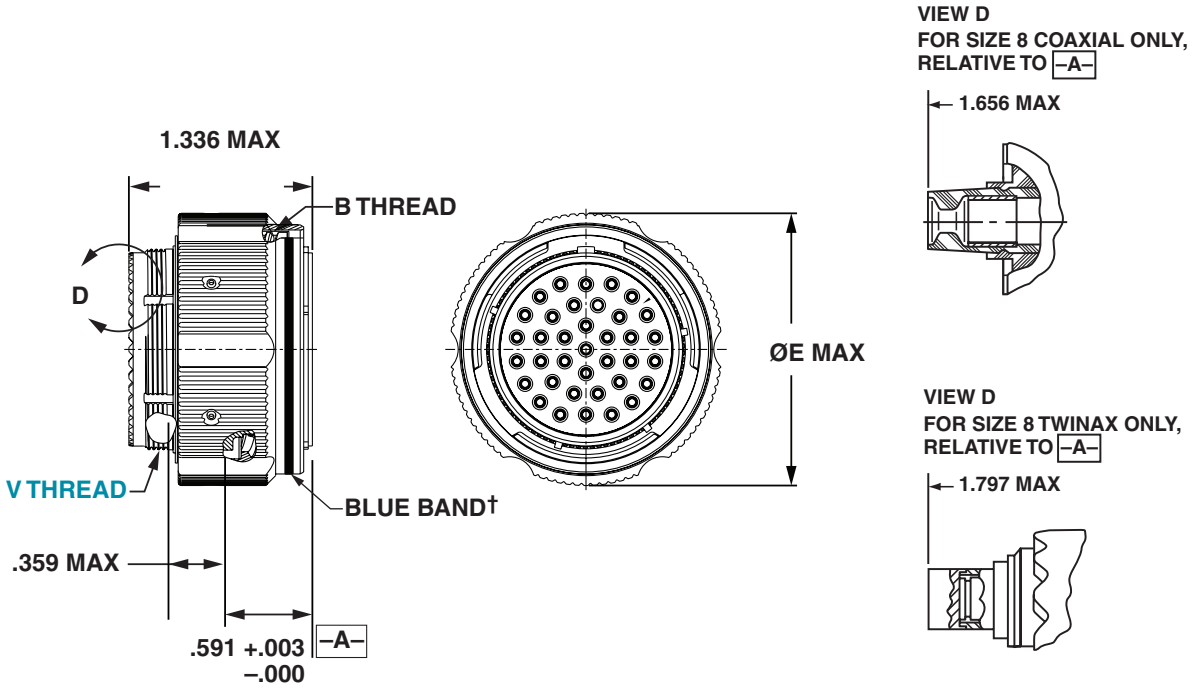
***Firewall connectors default to the hybrid steel-composite coupling mechanism with no need for mod code

High Vibration Dualok 38999 Series III Type

Plug (TV56, TVS56)

PART NUMBER BUILDER Page 42

ALUMINUM	STAINLESS STEEL
TVS56RF	TVS56RK
TV56RW	TVS56RKN
TV56DT	TVS56RS
TV56DZ	TVS56RL
TV56RGF	
TV56RGW	
TVS56RB	



Shell Size	B Thread 0.1-0.3L-TS-2B (Plated)	E Dia. Max.	V Thread Metric.
9	.6250	.953	M12X1-6g
11	.7500	1.053	M15X1-6g
13	.8750	1.252	M18X1-6g
15	1.0000	1.365	M22X1-6g
19	1.2500	1.605	M28X1-6g
21	1.3750	1.735	M31X1-6g
25	1.6250	1.975	M37X1-6g

38999 Series III, TV, Plugs

How to Order (Commercial)

Amphenol Aerospace

1. Connector Type	2. Shell Style	3. Service Class	4. Shell Size - Insert Arrangement	5. Contact Type	6. Alternate Position	7. Modifications
TV or TVS	06	RF	15-35	P	A	(474)

1. CONNECTOR TYPE

TV	Plug, 175°C
TVS	Plug, 200°C

2. SHELL STYLE

06	Straight Plug
09	Flange Mounted Plug

3. 175°C SERVICE CLASS

RW	Corrosion resistant olive drab cadmium plated aluminum, 500 hour extended salt spray	
DT	Durmalon plated, alternative to cadmium. Corrosion resistant, 500 hour extended salt spray	RoHS
DZ	Black Zinc-Nickel alternative to cadmium. 500 hour salt spray, conductive	RoHS
DW	Corrosion resistant olive drab cadmium plated aluminum, 1,000 hour extended salt spray	

4. SHELL SIZE - INSERT ARRANGEMENT

Shell Size & Insert Arrangements are on pages 84-92. First number represents Shell Size, second number is the Insert Arrangement.

5. CONTACT TYPE

P	Pin Contacts
S	Socket Contacts
H	1500 Cycle Pin Contacts
J	1500 Cycle Socket Contacts

3. 200°C SERVICE CLASS

RB	Marine Bronze - 500 hour salt spray	RoHS
RF	Electroless nickel plated aluminum, 48 hour salt spray	RoHS
RK	Corrosion resistant stainless steel, firewall capability, plus 500 hour salt spray resistance	RoHS
RKN	Corrosion resistant stainless steel, Nonfirewall capability, plus 500 hour salt spray resistance	RoHS
RL	Corrosion resistant steel, electro deposited nickel, 500 hour salt spray, non firewall	RoHS
RS	Nickel plated, corrosion resistant steel, firewall capability, 500 hour salt spray	RoHS
DB	Black Electroless Nickel, 00 hour salt spray	RoHS
DS	AP-93 Tri-Nickel Alloy, Aluminum, 1000 Hr., 200°C, -65dB@100Hz*	RoHS

6. ALTERNATE POSITION

A, B, C, D, E omit for normal rotation parts. See page 93 for complete information

7. MODIFICATIONS

(474)	RotoLok Plug see page 44
(734)	Wing Nut Plug (Glove applications) see page 44

Contact Amphenol for other modification codes.

RotoLok High Vibration Plug Solutions

Add the (474) suffix to the end of TV06 or TVS06 Part Number

PART NUMBER BUILDER Page 44

Amphenol extends its high vibration family of products with the RotoLok plugs. These plugs have been tried and tested for years in the field and remain a trusted product for high vibration requirements in the most demanding of environments.

Please refer to page 33 How-to-order. Add suffix (474) to modification code to order RotoLok high vibration plug

TV06 - add suffix (474)
TVS06 - add suffix (474)

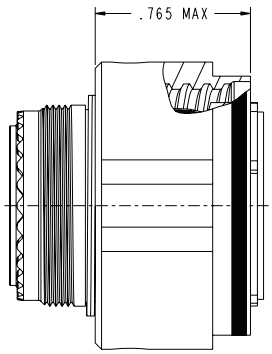


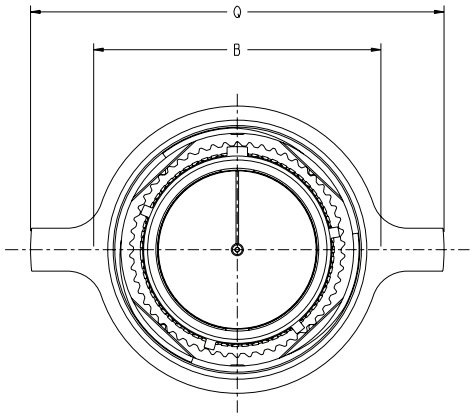
- All Aluminum shell sizes available in most finishes
- Intermateable with any MIL-DTL-38999 Series III receptacle and accessory
- Improves electrical performance by minimizing contact fretting
- EMI/RFI shielding advantages of D38999 Series III plugs

Wing Nut Plug

Add the (734) suffix to the end of TV06 or TVS06 Part Number

TV06 - add suffix (734)
TVS06 - add suffix (734)





Shell Size	B Thread 0.1P-0.3L-YS (Plated)	B Dia Max.	B Dia. Max.	Q Dia. Max.
9	.6250	.830	.830	1.485
11	.7500	.935	.935	1.598
13	.8750	1.106	1.106	1.772
15	1.0000	1.234	1.234	1.898
17	1.1875	1.371	1.371	2.024
19	1.2500	1.478	1.478	2.134
21	1.3750	1.605	1.605	2.256
23	1.5000	1.722	1.722	2.382
25	1.6250	1.849	1.849	2.677

TV Breakaway Fail-Safe Lanyard Release

Commercial version of D38999/31, Type 6 & others



Quick-disconnect with an axial pull of lanyard

Features and Benefits:

- 25 lanyard lengths
- Available in all size 25 arrangements
- Low force separation capabilities
- Compatible with all mil-spec backshells and accessories
- Mates to existing D38999 receptacles

Amphenol offers a commercial version of D38999/31 Series III, Type 6 connectors. Built from the same time-tested and quality components used in its Mil-Spec counterpart, Amphenol's commercial variant is designed to accept a wider variety of insert arrangements the Mil-Spec does not include. Available in shell size 25, these fail-safe connectors adopt an incredible amount of versatility without sacrificing performance or durability. Consult Amphenol Aerospace for more information.



Backshells are offered for use with Breakaway Fail Safe Connectors in three heights

Low Profile Backshells in shell size 25 with the following features:

- 90 degree termination
- Low profile design with three heights ranging from 1.010 to 1.660
- Rear access covers to help ease harness assembly and repairability
- Amphenol part numbers: 10-640000-XXX

Other Advantages Include:

- Lower profile compared to full metal breakaway Fail-Safe connectors
- Less weight
- Meets MIL-DTL-38999/31
- Random & sine vibration
- Ice resistance
- Fluid immersion and hydrolytic stability test.
- Available in shell sizes 25 and 17

Metal shells with Composite Operating Sleeve

New Hybrid Lanyard Breakaway Fail-Safe connector with a composite thermoplastic outer operating sleeve for greater durability.

Amphenol's hybrid lanyard design offers greater durability over D38999 aluminum and composite designs because of its ability to handle abuse taken after weapons release.

TV Breakaway Fail-Safe Lanyard Release

Commercial (725010, 725014, 725041) Version of D38999/31 Type 6

HOW TO ORDER

1. Service Class	2. Shell Style	3. Insert Arrg.	4. Alternate Keying Position (End A)	5. Lanyard Length Code
88-	725010-	04	P	K

1. SERVICE CLASS*

88-	Olive Drab Cadmium
91-	Electroless Nickel
F2-	Black Zinc-Nickel alternative to cadmium. Corrosion resistant, 500 hour salt spray, 175°C
F7-	Durmalon plated, alternative to cadmium. Corrosion resistant, 500 hour extended salt spray, 175°C

* Contact Amphenol for availability of other finishes.

2. SHELL STYLE

725010-	D38999/31 Type 6
725014-	Extended Backskirt
725041-	Integrated Banding Platform

3. INSERT ARRANGEMENT

04	25-4
07	25-7
11	25-11
17	25-17
20	25-20
24	25-24
26	25-26
29	25-29
35	25-35
37	25-37
41	25-41
43	25-43
46	25-46
61	25-61
62	25-62
90	25-90
F4	25-F4
187	25-187

4. KEYING

Key Position	Pin	Socket
N	P	S
A	G	H
B	I	J
C	K	L
D	M	N
E	R	T

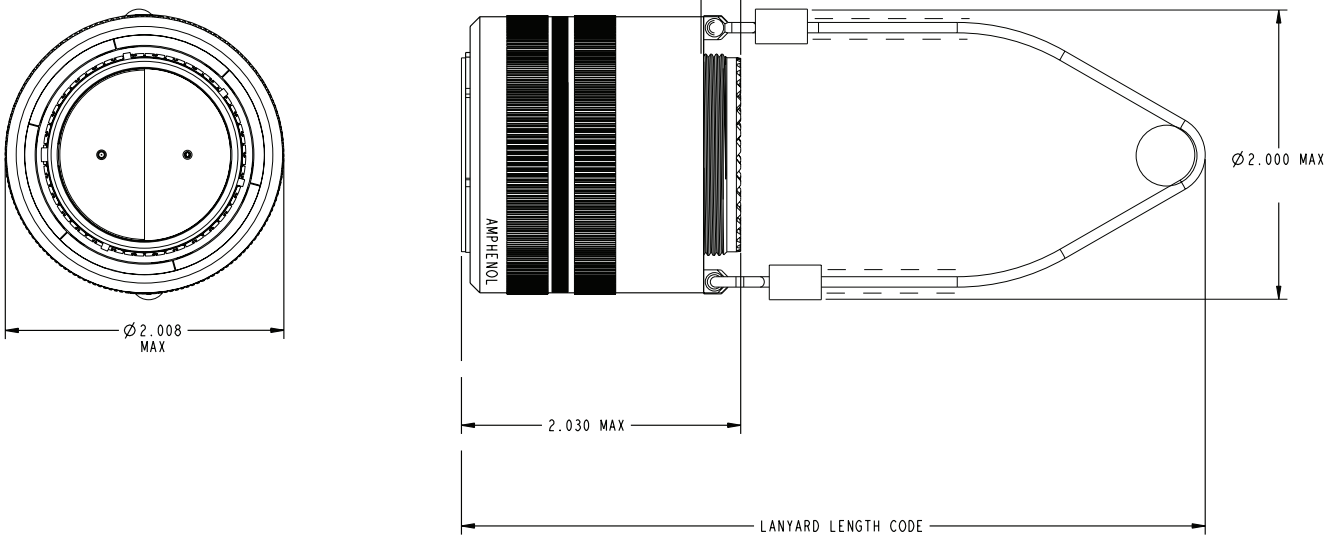
5. LANYARD LENGTH CODE

Lanyard Length (in.) ± .236	Lanyard Length (mm) ± 6.0	Lanyard Length Code For Part Number
4.016	102	A
4.528	115	B
5.000	127	C
5.512	140	D
6.024	153	E
6.535	166	F
7.008	178	G
7.520	191	H
7.992	203	I
8.503	216	J
9.016	229	K
9.528	242	L
10.000	254	M
10.512	267	N
11.024	280	P
11.535	293	R
12.008	305	S
12.520	318	T
13.031	331	U
14.016	356	V
15.000	381	W
16.024	407	X
17.008	432	Y
18.031	458	Z

TV Breakaway Fail-Safe Lanyard Release

Commercial (725010) Version of D38999/31 Type 6

PART NUMBER BUILDER Page 47

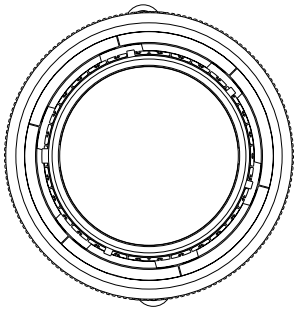


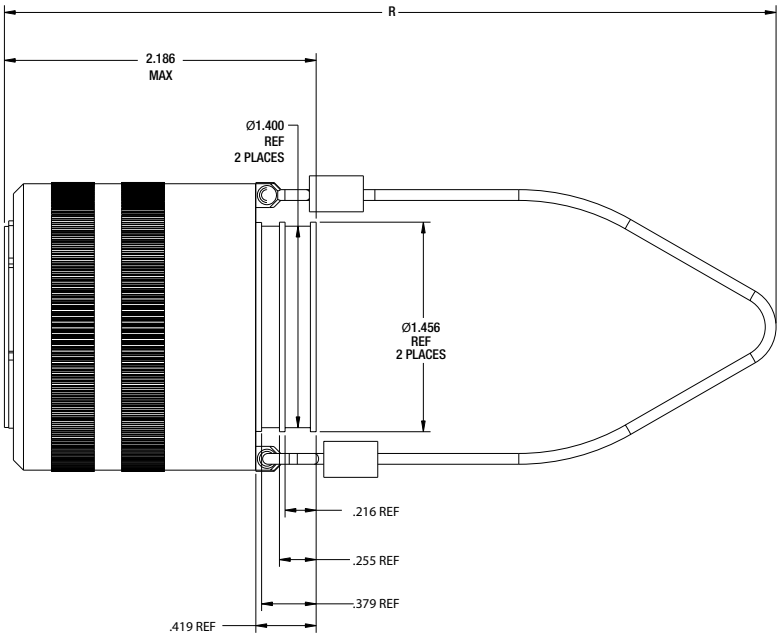
TV Breakaway Fail-Safe Lanyard Release

Commercial (725014 & 725041) Version of D38999/31 Type 6

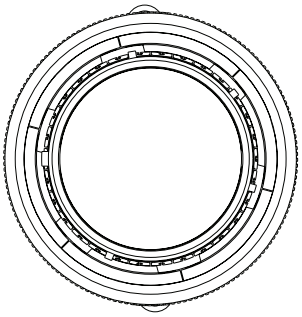
PART NUMBER BUILDER Page 47

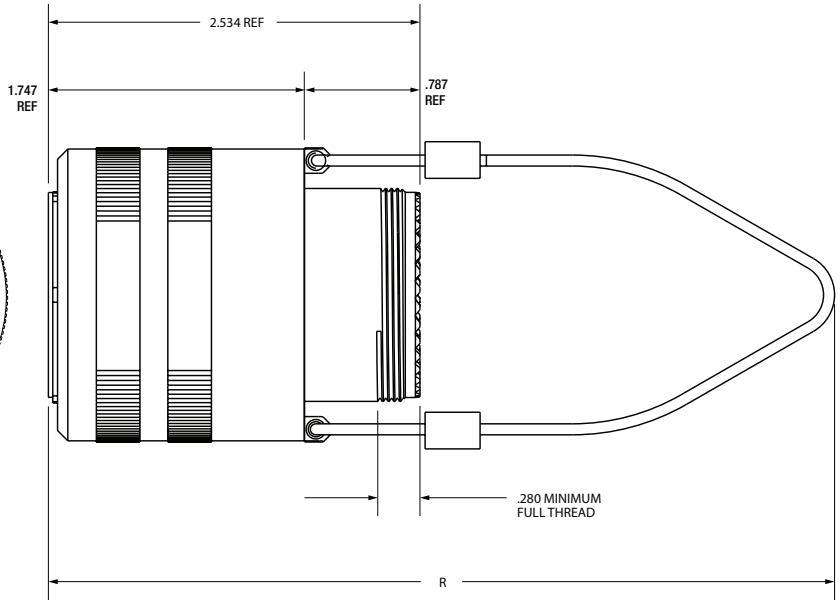
725041 Integrated Banding Platform





88-725014 Extended Backskirt





TV Breakaway Fail-Safe Lanyard Release Plug

(88-5565 & 91-5565) Commercial Version of D38999/29 and /30

Amphenol Aerospace

HOW TO ORDER

1. Service Class	2. Shell Style	3. Insert Arrg.	4. Required Field	5. Lanyard Length Code	6. Contact Type/Alternate Keying Position
88-	5565-	04	0	P	K

1. SERVICE CLASS*

88-	Olive Drab Cadmium
91-	Electroless Nickel
F2-	Black Zinc-Nickel alternative to cadmium. Corrosion resistant, 500 hour salt spray, conductive, -65°C to +175°C
F7-	Durmalon plated, alternative to cadmium. Corrosion resistant, 500 hour extended salt spray, 175°C

* Contact Amphenol for availability of other finishes.

2. SHELL STYLE

5565-	Designates MIL-DTL-38999, Series III Tri-Start Lanyard Release Plug

3. INSERT ARRANGEMENT

08	11-2
06	11-35
07	11-98
10	13-4
11	13-8
14	13-35
13	13-98
18	15-5
23	15-15
22	15-18
19	15-19
20	15-35
21	15-97
27	17-6
28	17-8
29	17-26
30	17-35
31	17-99
37	19-11

3. INSERT ARRANGEMENT

39	19-32
40	19-35
47	21-11
48	21-16
49	21-35
51	21-39
50	21-41
57	23-21
58	23-35
59	23-53
61	23-54
60	23-55
71	25-4
66	25-19
74	25-20
72	25-24
67	25-29
68	25-35
69	25-43
73	25-46
70	25-61

* Contact Amphenol for other availability arrangement.

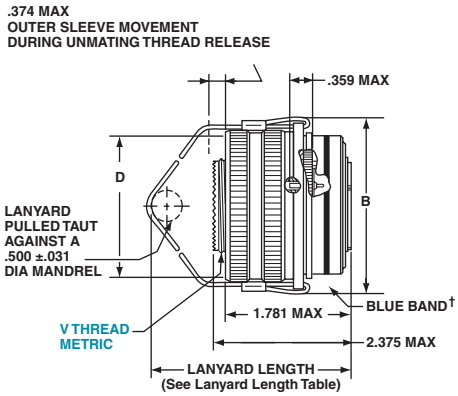
4. REQUIRED FIELD

0	The required field is always 0

5. LANYARD LENGTH CODE

Lanyard Length (in.) ± .236	Lanyard Length (mm) ± 6.0	Lanyard Length Code For Part Number
4.016	102	A
4.528	115	B
5.000	127	C
5.512	140	D
6.024	153	E
6.535	166	F
7.008	178	G
7.520	191	H
7.992	203	I
8.503	216	J
9.016	229	K
9.528	242	L
10.000	254	M
10.512	267	N
11.024	280	P
11.535	293	R
12.008	305	S
12.520	318	T
13.031	331	U
14.016	356	V
15.000	381	W
16.024	407	X
17.008	432	Y
18.031	458	Z

METAL



† Blue band indicates rear release contact retention system

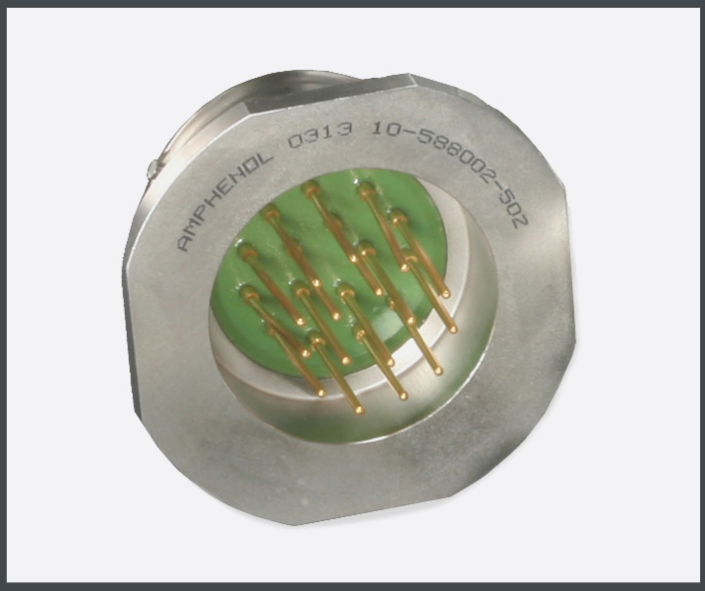
Inches

Shell Size	MS Shell Size Code	B Max	D Max Accessory Dia.
11	B	1.846	1.109
13	C	1.972	1.250
15	D	2.079	1.375
17	E	2.205	1.500
19	F	2.301	1.625
21	G	2.472	1.750
23	H	2.594	1.875
25	J	2.705	2.000

6. CONTACT TYPE/ALTERNATE KEYING POSITION

Pin Contacts		Socket Contacts	
MS Letter	Amphenol letter	MS Letter	Amphenol Letter
PN	P (normal)	SN	S (normal)
PA	G	SA	H
PB	I	SB	J
PC	K	SC	L
PD	M	SD	N
PE	R	SE	T

PCB Hermetic Series III



Tri-Start, MIL-DTL-38999, Series III with Stainless Steel shells

Amphenol Tri-Start 38999 Series III hermetic connectors offer the highest performance capabilities for severe environment applications; meeting or exceeding MIL-DTL-38999 Series III requirements.



Features:

- **Hermetic**
  Air leakage limited to 1 X 10^{-7} cm^3 per second
- **Fused Glass**
  Fused glass in stainless or carbon steel shell
- **Tail Lengths**
  Three standard stickout lengths available



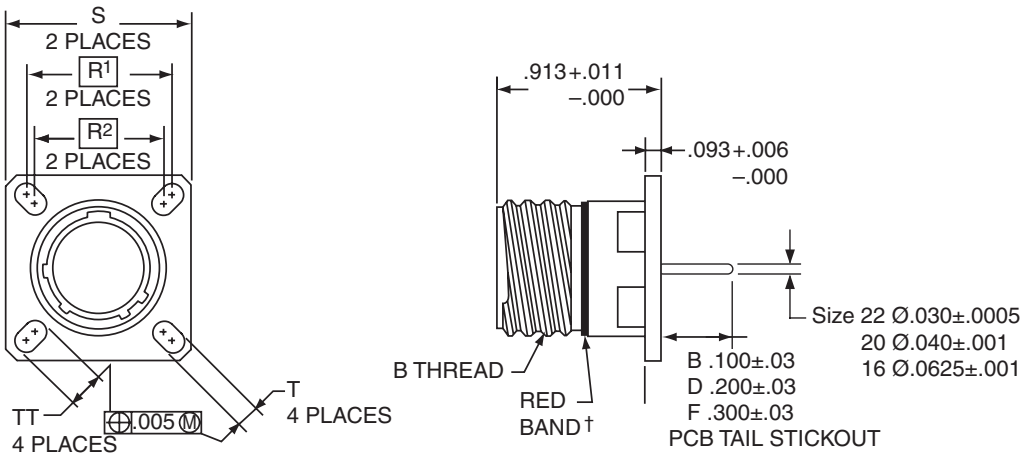
Stainless Steel with Nickel Plating



Passivated Stainless Steel and Carbon Stainless Steel

PCB Hermetic Box Mounting Receptacle

Amphenol Aerospace



	1.	2.	3.	4.	5.	6.
PART # See chart below	Base Number	Coded Shell Size	Insert Arrg.	Contact Type/ Alt. Keying	Shell Finish	Tail Length
	10-626	501	-35	P	1	B

HOW TO ORDER

1. BASE NUMBER

10-626	Base Number for MIL-DTL-38999 Series III Hermetic with PCB Tail

2. CODED SHELL SIZE

See chart below **501-509**, designates size **9-25** shell size.

3. INSERT ARRANGEMENTS

-35	Designates Insert Arrangement Number. Refer to chart on pages 84-92.

4. CONTACT TYPE/ALTERNATE KEYING

P	Designates Pin Contacts in Normal Position.

Refer to page 93 for alternate rotation letters to use.

5. SHELL FINISH

1	Hermetic seal, passivated Stainless Steel, 200°C
2	Hermetic seal, Stainless Steel w/Nickel Plate
3	Carbon Steel w/reflowed tin plate

6. TAIL LENGTH

B	.100±.03
D	.200±.03
F	.300±.03

Shell Size	Part Number	B Thread 0.1P-0.3L-TS (Plated)	R1	R2	S ±.010	T ±.008	TT ±.008
9	10-626**501**-XXX	.6250	.719	.594	.938	.128	.216
11	**502**-XXX	.7500	.812	.719	1.031	.128	.194
13	**503**-XXX	.8750	.906	.812	1.125	.128	.194
15	**504**-XXX	1.0000	.969	.906	1.219	.128	.173
17	**505**-XXX	1.1875	1.062	.969	1.312	.128	.194
19	**506**-XXX	1.2500	1.156	1.062	1.438	.128	.194
21	**507**-XXX	1.3750	1.250	1.156	1.562	.128	.194
23	**508**-XXX	1.5000	1.375	1.250	1.688	.154	.242
25	**509**-XXX	1.6250	1.500	1.375	1.812	.154	.242

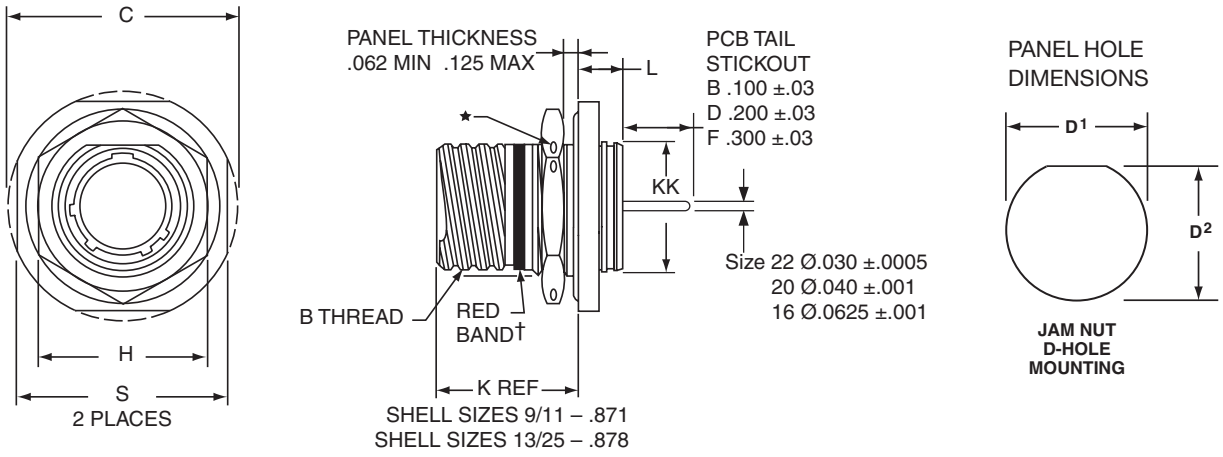
† Red band indicates fully mated

NOTE: Consult Amphenol Aerospace for availability of non-glass-sealed versions with printed circuit tail contacts.

All dimensions for reference.

☐ Designates true position dimensioning

PCB Hermetic Jam Nut Receptacle



	1.	2.	3.	4.	5.	6.
PART # See chart below	Base Number	Coded Shell Size	Insert Arrg.	Contact Type/ Alt. Keying	Shell Finish	Tail Length
	10-626	471	-35	P	1	B

HOW TO ORDER

1. BASE NUMBER

10-626	Base Number for MIL-DTL-38999 Series III Hermetic with PCB Tail

2. CODED SHELL SIZE

See chart below **471-479**, designates size **9-25** shell size.

3. INSERT ARRANGEMENTS

-35	Designates Insert Arrangement Number. Refer to chart on pages 84-92.

† Red band indicates fully mated

★ .059 dia. min. (1.5 dia. min.) 3 lockwire holes. Formed lockwire hole design (6 holes) is optional.

4. CONTACT TYPE/ALTERNATE KEYING

P	Designates Pin Contacts in Normal Position.

Refer to page 93 for alternate rotation letters to use.

5. SHELL FINISH

1	Hermetic seal, passivated Stainless Steel, 200°C
2	Hermetic seal, Stainless Steel w/Nickel Plate
3	Carbon Steel w/reflowed tin plate

6. TAIL LENGTH

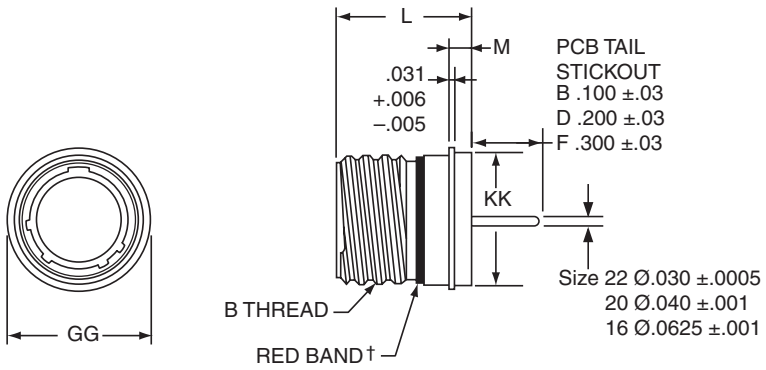
B	.100±.03
D	.200±.03
F	.300±.03

Shell Size	Part Number	A+ +.000 –.010	B Thread Class 2A 0.1P-0.3L-TS (Plated)	C Max	D1 +.010 –.000	D1 +.000 –.010	H Hex +.017 –.016	L Max	S ±.010	T+ +.010 –.000	KK +.011 –.000
9	**10-626**471-XXX	.669	.6250	1.199	.700	.670	.875	.357	1.062	.697	.642
11	472-XXX	.769	.7500	1.386	.825	.770	1.000	.357	1.250	.822	.766
13	473-XXX	.955	.8750	1.511	1.010	.955	1.188	.357	1.375	1.007	.892
15	474-XXX	1.084	1.0000	1.636	1.135	1.085	1.312	.357	1.500	1.134	1.018
17	475-XXX	1.208	1.1875	1.761	1.260	1.210	1.438	.357	1.625	1.259	1.142
19	476-XXX	1.333	1.2500	1.949	1.385	1.335	1.562	.381	1.182	1.384	1.268
21	477-XXX	1.459	1.3750	2.073	1.510	1.460	1.688	.381	1.938	1.507	1.392
23	478-XXX	1.575	1.5000	2.199	1.635	1.585	1.812	.381	2.062	1.634	1.518
25	479-XXX	1.709	1.6250	2.323	1.760	1.710	2.000	.381	2.188	1.759	1.642

All dimensions for reference only.

PCB Hermetic Solder Mounting Receptacle

Amphenol Aerospace



	1.	2.	3.	4.	5.	6.
PART # See chart below	**Base Number**	**Coded Shell Size**	**Insert Arrg.**	**Contact Type/ Alt. Keying**	**Shell Finish**	**Tail Length**
	10-626	481	-35	P	1	B

HOW TO ORDER

1. BASE NUMBER

10-626	Base Number for MIL-DTL-38999 Series III Hermetic with PCB Tail

2. CODED SHELL SIZE

See chart below **481-489**, designates size **9-25** shell size.

3. INSERT ARRANGEMENTS

-35	Designates Insert Arrangement Number. Refer to chart on pages 84-92.

4. CONTACT TYPE/ALTERNATE KEYING

P	Designates Pin Contacts in Normal Position.

Refer to page 93 for alternate rotation letters to use.

5. SHELL FINISH

1	Hermetic seal, passivated Stainless Steel, 200°C
2	Hermetic seal, Stainless Steel w/Nickel Plate
3	Carbon Steel w/reflowed tin plate

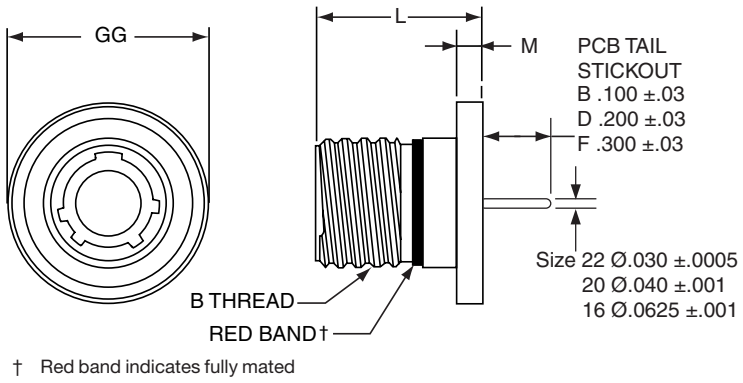
6. TAIL LENGTH

B	.100±.03
D	.200±.03
F	.300±.03

† Red band indicates fully mated

Shell Size	Part Number	B Thread Class 2A 0.1P-0.3L-TS (Plated)	L +.011 –.005	M +.006 –.005	GG Dia. +.011 –.010	KK Dia +.011 –.005
9	**10-626**481-XXX	.6250	.806	.125	.750	.672
11	482-XXX	.7500	.806	.125	.844	.781
13	483-XXX	.8750	.806	.125	.969	.906
15	484-XXX	1.0000	.806	.125	1.094	1.031
17	485-XXX	1.1875	.806	.125	1.218	1.156
19	486-XXX	1.2500	.806	.125	1.312	1.250
21	487-XXX	1.3750	.806	.125	1.438	1.375
23	488-XXX	1.5000	.838	.156	1.563	1.500
25	489-XXX	1.6250	.838	.156	1.688	1.625

PCB Hermetic Weld Mounting Receptacle



† Red band indicates fully mated

	1.	2.	3.	4.	5.	6.
PART # See chart below	Base Number	Coded Shell Size	Insert Arrg.	Contact Type/ Alt. Keying	Shell Finish	Tail Length
	10-626	491	-35	P	1	B

HOW TO ORDER

1. BASE NUMBER

10-626	Base Number for MIL-DTL-38999 Series III Hermetic with PCB Tail

2. CODED SHELL SIZE

See chart below **491-499**, designates size **9-25** shell size.

3. INSERT ARRANGEMENTS

-35	Designates Insert Arrangement Number. Refer to chart on pages 84-92.

4. CONTACT TYPE/ALTERNATE KEYING

P	Designates Pin Contacts in Normal Position.

Refer to page 93 for alternate rotation letters to use.

5. SHELL FINISH

1	Hermetic seal, passivated Stainless Steel, 200°C
2	Hermetic seal, Stainless Steel w/Nickel Plate
3	Carbon Steel w/reflowed tin plate

6. TAIL LENGTH

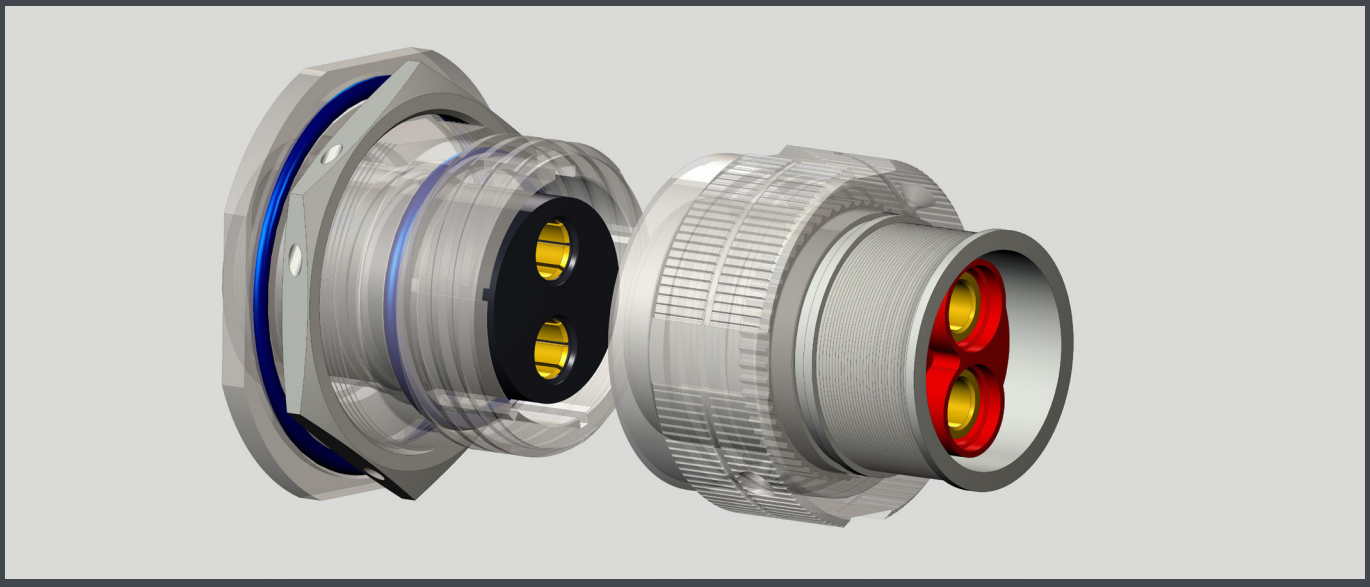
B	.100±.03
D	.200±.03
F	.300±.03

Shell Size	Part Number	B Thread Class 2A 0.1P-0.3L-TS (Plated)	L +.011 –.000	M +.006 –.005	GG Dia. +.011 –.010
9	10-626491-XXX	.6250	.806	.125	.973
11	492-XXX	.7500	.806	.125	1.095
13	493-XXX	.8750	.806	.125	1.221
15	494-XXX	1.0000	.806	.125	1.347
17	495-XXX	1.1875	.806	.125	1.434
19	496-XXX	1.2500	.806	.125	1.579
21	497-XXX	1.3750	.806	.125	1.721
23	498-XXX	1.5000	.838	.156	1.886
25	499-XXX	1.6250	.838	.156	1.973

* Not available for weld mount. All dimensions for reference only.

AmpheSEAL

38999 High Pressure Solution



The AmpheSEAL connectors provide sealing between the plug and receptable interfaces and have been tested to withstand pressure to at least 300 PSI. Not intermateable with standard products. Must use AmpheSEAL on both sides of mated pair.

Features:

- Internal O-ring seals to at least 300 PSI
- Rear connector sealing method customized to meet the specific application
- Any D38999 size and insert arrangement is available
- All Aluminum shell sizes available in most finishes
- EMI/RFI shielding advantages of D38999 Series III plugs
- Contact Amphenol for how to order information

Ground Plane Connectors

Coax/Triax/Twinax



For High Speed Data Bus, LAN and Coax, Triax and Twinax Data Transmission:

MIL-DTL-38999 type connectors are available with metal inserts to maintain a common ground plane with the connector shell for all the shielded contacts contained in the connector.

These electrical connectors are available for all MIL-DTL-38999 insert patterns using size 16, 10, 12 or 8 contacts. This data sheet contains some of the popular insert patterns that are commonly used for ground plane connector applications. Options include crimp termination and printed circuit tail contacts in either solder or compliant pin configurations. Composite shells are also available.
To order contact Amphenol Aerospace.

Applications:

Applications for ground plane connectors include MIL-STD 1553B data bus as well as video, signal and multiplex transmission.

INSERT ARRANGEMENT AVAILABLE
9-5
11-2
13-4
15-5
15-15
15-97
17-2
17-6
17-8
17-22
17-99
19-11
19-31
21-11
21-16
21-39
21-75
23-21
23-54
25-4
25-11
25-19
25-20
25-24
25-29
25-37
25-43
25-46

OCS (Oval Contact System)

Newest 38999 Style Connector





Plug



Receptacle

The OCS (Oval Contact System) is the newest 38999 Interconnect Product offering that provides many advantages for high speed data transmission.

OCS Mechanical/Physical Properties

- Mating Cycles 500 (min.)
- Operating temperature –65C to 175C
- Contact materials and platings consistent w/AS39029
- IR 500 VDC
- DWV 500 VAC rms

Max Current Rating:

- 1.5 amps inner contacts
- 3.0 amps outer contacts



Applications:

High Speed Applications-for use with, but not limited to, the following electrical protocols (Cable selection may limit data rate of protocols).

- 10G Base T
- HDMI
- Fibre Channel (AI)
- 40G Base-T
- SATA 2.0
- SATA 3.0 (limited to 3 meters max)
- Serial RapidIO
- PCI Express 3.0

Features and Benefits:

- A wide variety of insert arrangements available
- Patterns range from (1) to (21), 100 Ohm differential pairs capable of delivering data transfer speeds of 10Gbps per pair
- MIL-DTL-38999 shell styles available from size 9 to 25
- Front-release, rear-removable contact system for easy repair
- Meets environmental requirements of MIL-DTL-38999
- Uses off-the-shelf Mil Spec backshells
- PCB Tails contacts available, sockets only, epoxy backfilled.

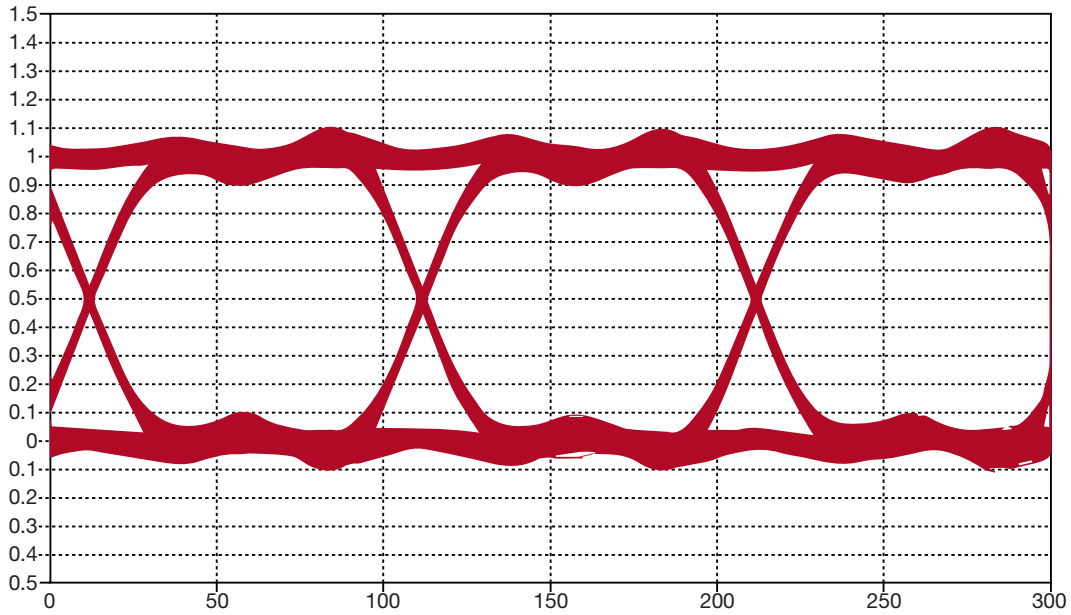
OCS (Oval Contact System) Connectors

BTVContact Eye Pattern at 10 Gbps

OCS Signal Integrity Performance

Data rate:	10Gbps per pair
Insertion loss:	<0.3 dB up to 5 GHz
Return loss:	>20 dB up to 5 GHz
NEXT and FEXT:	>40 dB up to 5 GHz
Differential to common mode conversion:	>50 dB up to 5 GHz

Eye diagram (Real Part)



Individually Shielded Twinax cable is recommended for use with the OCS connectors. Other type of wires can be used, but will not be compatable with the rear accessory supplied with the connectors. Below is a list of recommended cables. Additional cables can be used if they meet specifications.

The provided grommet assembly will accommodate cable diameters ranging from Ø.124 to Ø.175. Larger diameters may work based on cable construction.

Impedance (Ohms)	Conductor (AWG)	Pairs	Cable Part Number
100	24	1	Tensolite 24463/9P025X-2(LD)
			Thermax MX100-24
			PIC E10224
			Gore GSC-05-82559-00 (space rated)
			Gore DXN2602
	24	4	Gore RCN 9034-24 (CAT6A Ethernet)*
	26	4	Gore RCN 9034-26 (CAT6A Ethernet)*
		1	Spectra Strip 160-2699-952

*Optimized for 13-53 insert pattern.

OCS cable assemblies available, please consult Amphenol Aerospace for details.

OCS (Oval Contact System) Connectors

Amphenol Aerospace

How to Order

1. Connector Type and Shell Style	2. Service Class	3. Shell Size – Insert Arrangement	4. Contact Type	5. Alternate Keying Position	6. Suffix Code
TVP00	RZW	13 –53	P	B	(595)

1. CONNECTOR TYPE

TVP00	Wall Mount Back panel mounted receptacle with metal shells
CTVP00	Wall Mount Back panel mounted receptacle with composite shells
TV06	Straight Plug
CTV06	Straight Plug composite shells
TV07	Jam Nut
CTV07	Jam Nut composite shells

3. SHELL SIZE -INSERT ARRANGEMENT

Shell Size & Insert Arrangements are on pages 61. First number represents Shell Size, second number is the Insert Arrangement.

4. CONTACT TYPE

P	Pin contacts 21-033585-001
S	Socket contacts 21-033586-001

Inner contacts accept 28, 26, and 24 awg cable.

5. ALTERNATE KEYING POSITION

A, B, C, D , and omit for Normal Position. See page 93 for more information.

A plug with a given rotation letter will mate with a receptacle with the same rotation letter.

2. SERVICE CLASS

(Z) Threaded Backshell Style	(W) Integral Backshell Style*	Description
RZF	RWF	Electroless nickel plated
RGZF	RGWF	Electroless nickel plated ground plane
RZW	RWW	Olive drab cadmium plate
RGZW	RGWW	Olive drab cadmium plated ground plane
RZB	RWB	NiAlBronze
RGZB	RGWB	NiAlBronze ground plane
RZK	RWK	Corrosion resistance stainless steel
RGZK	RGWK	Stainless steel ground plane
ZDT	WDT	Durmalon plated, Nickel-PTFE alternative to cadmium
GZDT	GWDT	Groundplane Durmalon
ZDZ	WDZ	Black Zinc

6. SUFFIX CODE

595	Space Grade
591	Space Grade with critical dimensions verified at 100%

Order information for Removal Tool OCS Contact
10-6460C1-001

* Integral Backshell - an integral backshell style eliminates the need for costly backshell accessories, and allows the user to attach the shield of their cable directly to the backshell. The integral shell style also provides superior EMI shielding and ease for overmold applications.



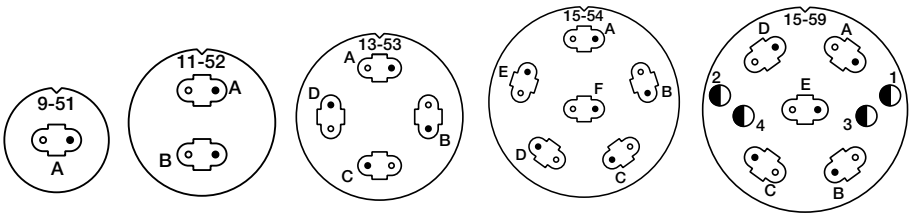
For unused OCS connector cavities:

- Leave the contact insert cavity empty in the connector.
- Size 12 MS27488-12-2 (orange color) sealing plug can be installed into the grommet of the backshell large end first.

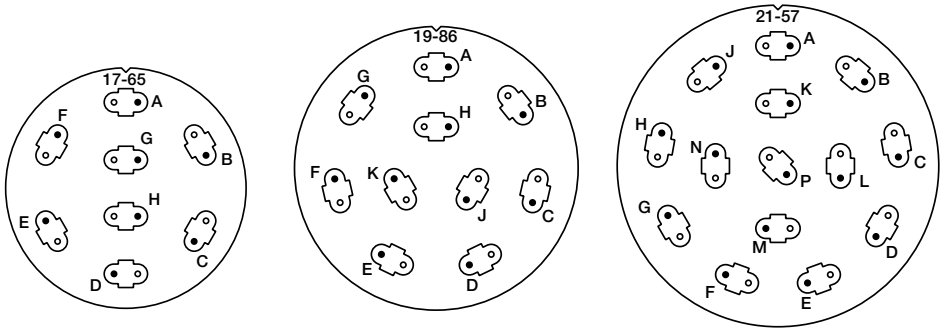


OCS (Oval Contact System) Connectors

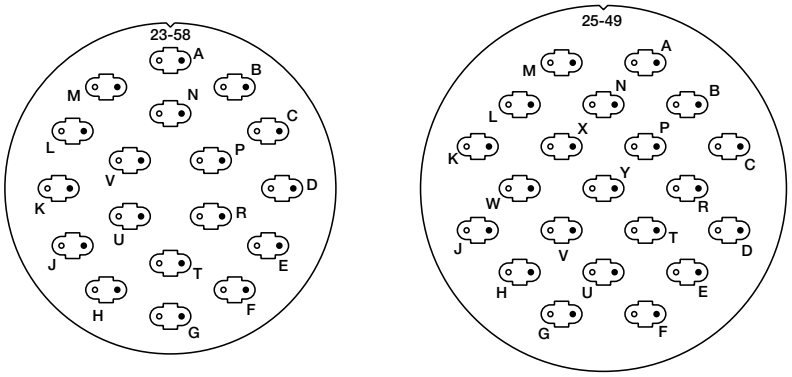
Insert Arrangements - Front face of pins illustrated



Insert Arrangement	9-51	11-52	13-53*	15-54	15-59*
Number of Contacts	1	2	4	6	5 OCS, 4 22D



Insert Arrangement	17-65	19-86*	21-57*
Number of Contacts	8	10	14



Insert Arrangement	23-58*	25-49*
Number of Contacts	18	21

* Indicates Insert currently tooled
• Designates pin 1 location within the OCS contact assembly

38999 Insert Arrangements

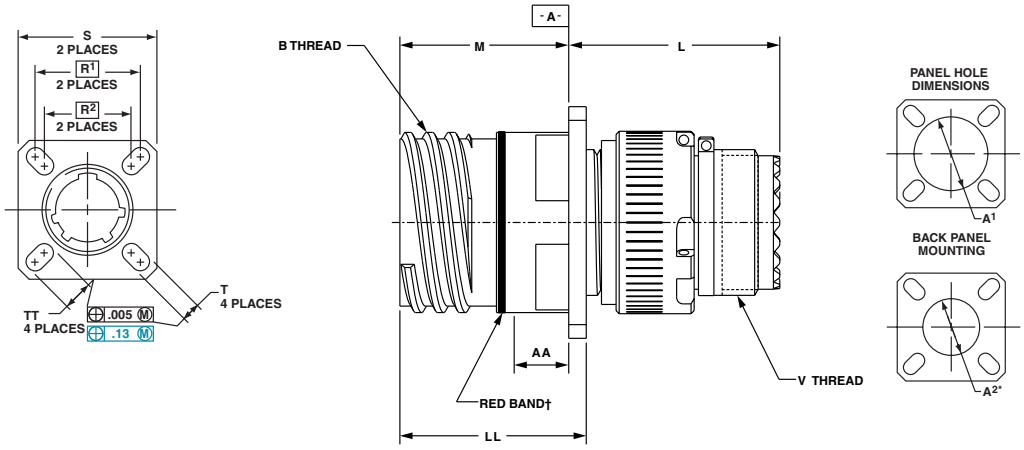
The list is available patterns incorporating Octonet, Quadrax and Differential twinax contacts with D38999, Series III connectors. Unless otherwise stated, size 8 cabities can be filled with Quadrax or Differential Twinax contacts.

INSERT ARRANGEMENT AVAILABLE
9-5
17-2
17-22
17-25
17-52
17-60
19-18
19-31
19-AB
19-AD
21-65
21-75
21-79
23-6
25-7
25-8
25-17
25-20
25-26
25-46
25-62
25-AT

OCS (Oval Contact System) Connectors

Amphenol Aerospace

TVP00 - Crimp, Metal & CTVP00 - Crimp, Composite Wall Mounting

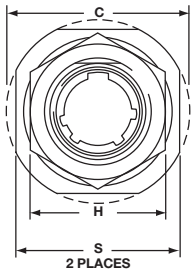


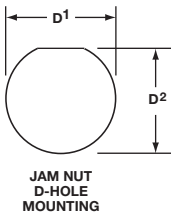
Shell Size	B Thread Class 2A 0.1P-0.3L-TS (Plated)	L Max. (TV)	L' Max. (CTV)	M +.000 −.005 (TV)	M' +.000 −.005 (CTV)	R¹	R²	S Max.	T ±.008	A¹ Back Panel Mount	A² Front Panel Mount	AA Max. Panel Thickness	LL +.006 −.000 (TV)	LL ±.005 (CTV)	TT ±.008	V Thread Metric
9	.6250	1.039	1.086	.820	.773	.719	.594	.948	.128	.655	.845	.234	.905	.908	.216	M12X1-6g
11	.7500	1.039	1.086	.820	.773	.812	.719	1.043	.128	.796	.963	.234	.905	.908	.194	M15X1-6g
13	.8750	1.039	1.086	.820	.773	.906	.812	1.137	.128	.922	1.081	.234	.905	.908	.194	M18X1-6g
15	1.0000	1.039	1.086	.820	.773	.969	.906	1.232	.128	1.047	1.239	.234	.905	.908	.173	M22X1-6g
17	1.1875	1.039	1.086	.820	.773	1.062	.969	1.323	.128	1.219	1.357	.234	.905	.908	.194	M25X1-6g
19	1.2500	1.039	1.086	.820	.773	1.156	1.062	1.449	.128	1.297	1.475	.234	.905	.908	.194	M28X1-6g
21	1.3750	1.069	1.118	.790	.741	1.250	1.156	1.575	.128	1.442	1.593	.204	.905	.904	.194	M31X1-6g
23	1.5000	1.069	1.118	.790	.741	1.375	1.250	1.701	.154	1.547	1.711	.204	.905	.904	.242	M34X1-6g
25	1.6250	1.069	1.118	.790	.741	1.500	1.375	1.823	.154	1.672	1.829	.204	.905	.904	.242	M37X1-6g

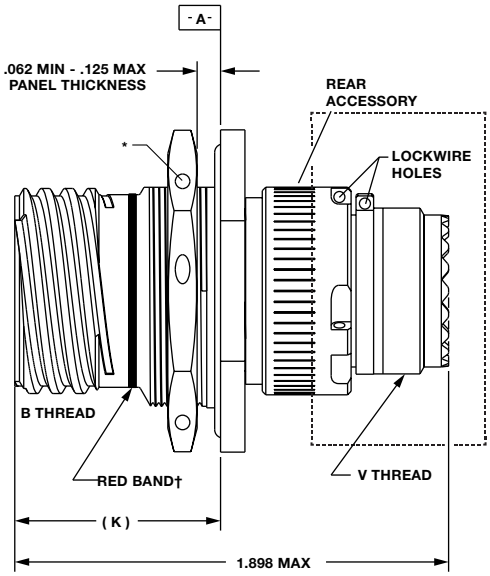
† Red band indicates fully mated * A2 dimensions are larger than standard D38999 dimensions to accomodate backshell. All dimensions for reference only.

OCS (Oval Contact System) Connectors

TV07R-Crimp, Metal & CTV07R-Crimp, Composite Jam Nut Receptacle





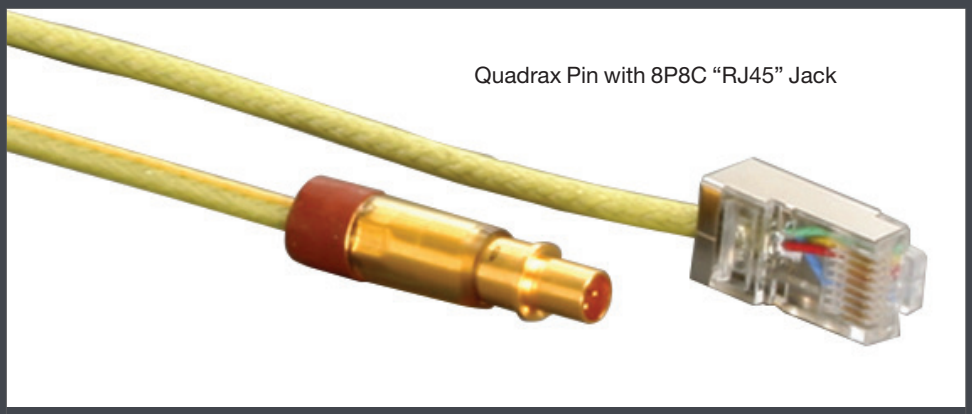


Shell Size	B Thread Class 2A 0.1P-0.3L-TS (Plated)	C Max.	D¹ +.010 −.000	D² +.000 −.010	H Hex +.017 −.016	K Ref.	S ±.010	V Thread Metric
9	.6250	1.199	.693	.657	.875	.871	1.062	M12X1-6g
11	.7500	1.386	.825	.770	1.000	.871	1.250	M15X1-6g
13	.8750	1.511	1.010	.955	1.188	.878	1.375	M18X1-6g
15	1.0000	1.636	1.135	1.085	1.312	.878	1.500	M22X1-6g
17	1.1875	1.761	1.260	1.210	1.438	.878	1.625	M25X1-6g
19	1.2500	1.949	1.385	1.335	1.562	.878	1.812	M28X1-6g
21	1.3750	2.073	1.510	1.460	1.688	.878	1.938	M31X1-6g
23	1.5000	2.199	1.635	1.585	1.812	.878	2.062	M34X1-6g
25	1.6250	2.323	1.760	1.710	2.000	.878	2.188	M37X1-6g

† Red band indicates fully mated

* .059 dia min., 3 lockwire holes, Formed lockwire hole design (6 holes) is optional

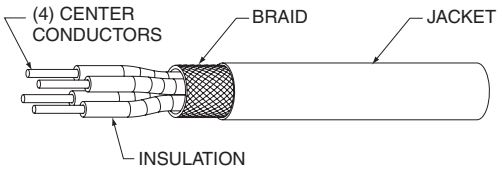
Quadrax Contacts

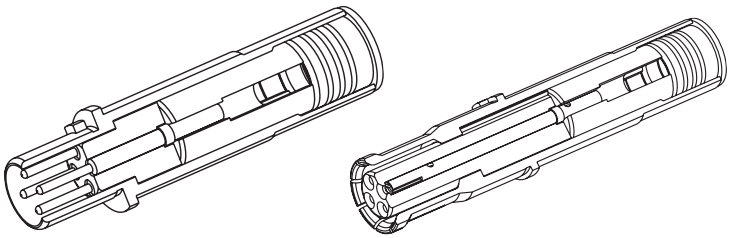


Typical Quadrax Socket Contacts
Has socket outer contact with a socket inner contact

Amphenol Quadrax Contacts
Offers 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. The Outer contact has a rugged wall section for durability. Available in size 8 crimp termination style. Also available in size 8 with PC tails see online High-Speed Contact Product Guide. Requires modification of MIL-DTL-38999 connector to accommodate keyed contacts.

Cable Illustration - Quadrax Contact





Quadrax Contacts are Gold Plated, Crimp Termination
Finish of mating contact parts: supplied with 0.000050 min. gold over nickel on mating interface.

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

Typical Quadrax Pin Contact:
Has pin outer contact with a pin inner contact

How to Order D38999, Series III Connectors with Standard 100 Ohm Quadrax Contacts

Amphenol Aerospace

21-033385-051 Socket, 21-033384-051 Pin Contacts*

For all other quadrax contacts or differential twinax contacts, please consult Amphenol Aerospace for part numbers.

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

1. CONNECTOR TYPE

TV	Tri-Start series connector with metal shells
TVP	Back panel mounted receptacle with metal shells
CTV	Tri-Start series connector with composite shells
CTVP	Back panel mounted receptacle with composite shells

2. SHELL STYLE

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

3. SERVICE CLASS WITH QUADRAX

RQF	Electroless nickel plated
RGQF	Electroless nickel plated ground plane
RQW	Olive drab cadmium plate
RGQW	Olive drab cadmium plated ground plane
RQK	Corrosion resistance stainless steel
RGQK	Stainless steel ground plane
QDT	Durmalon plated, Nickel-PTFE alternative to cadmium
GQDT	Groundplane Durmalon
QDZ	Zinc nickel black conductive
RQS	Stainless steel
JFW	Aluminum Bronze

4. SHELL SIZE AND INSERT ARRANGEMENT

See insert arrangements available with Quadrax contacts on pages 84-92. First number represents shell size, second number is the insert arrangement.

5. CONTACT TYPE

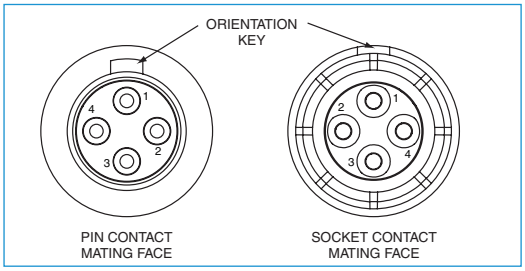
P	Pin contacts
S	Socket contacts

* The incorporation of Quadrax or Differential Twinax contacts requires a modified connector to accommodate keyed contacts.

6. ALTERNATE KEYING POSITION

A, B, C, D, and omit for normal rotation please see page 84 for more information.

Suggested Numbering for Quadrax Contacts



Differential Pairs, contacts 1-3, 2-4.
Quadrax differential pairs are 1 and 3, 2 and 4.

Octonet Contacts

Superior Ethernet Contact System for MIL-DTL-38999, Series III



Eight strategically spaced inner contacts form four 100 Ohm matched impedance differential pairs.



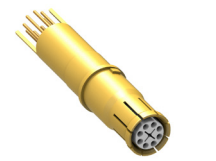
Pin for 24 awg



Socket for 24 awg



Pin PCB Tail



Socket PCB Tail

Specs:

Environmental Sealing:	IAW connector specification
Corrosion Resistance:	500 hours salt spray
EMI Shielding:	360 degree shielding on each pair
Mating Cycles:	500 cycles
Voltage Rating:	500 Vrms max @ sea level
Dielectric Withstanding Voltage:	500 VAC RMS sea level

Features:

- Available in size 8 crimp termination style
- Can be installed in existing size 8 Quadrax cavities
- Meets performance specifications of CAT-6A cable
- 10G Ethernet compliant
- Overall higher bandwidth than standard CAT5E Quadrax-supports up to 4.0 Gbps per pair
- Enhanced crosstalk performance (compared to standard Quadrax)
- Supports wire ranges 26 to 24 gauge
- Requires modification of MIL-DTL-38999 connector to accommodate keyed contacts
- Operating Temp -65°C to 175°C
- Requires special backshell.
- Easy drop-in replacement to installed connectors
- Self removing contact feature - no extra contact extraction tool needed (24 Gauge only) no need to redesign

Octonet Contacts

Amphenol Aerospace

Superior Ethernet Contact System for MIL-DTL-38999, Series III

*Not limited to cables shown

Pin	Socket	*Cable	AWG
21-032904-001	21-032905-001	Thermax: MX10G-24HP	24
21-032904-011	21-032905-011	W.L.Gore: RCN8966-24	
21-032904-021	21-032905-021	PIC E6A3824, Harbour E10024065, E10024064	
21-032904-031	21-032905-031	W.L.Gore: GSC-03-84043-01	
21-032904-041	21-032905-041	Axon P542810	
21-032904-051	21-032905-051	PIC E6A6826	
21-032904-061	21-032905-061	Thermax MX10G-24FLX4	
PCB Pin	**PCB Socket**	**L Dimension + or - 15**	
21-032906-001	21-032907-001	Pin .884 / Socket 1.024	
21-032906-011	21-032907-011	.884	
21-032906-021	21-032907-021	.884	
21-032906-031	21-032907-031	.950	
21-032906-041	21-032907-041	.859	
21-032906-051	21-032907-051	.518	
21-032906-061	21-032907-061	.788	

finish table

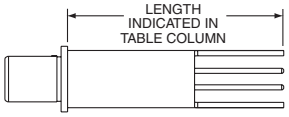
Prefix	Description
F2	Black Zinc Nickel
F4	Green Zinc Nickel
F7	Durmaol
F9	Thick OD Cadmium plate, Nickle Base
FH	Thick Electroless Nickel
FJ	Black Electroless Nickel

Length table

Prefix	S ±.060
3	1.500
4	2.000
5	2.500
6	3.000
7	3.500
8	4.000
9	4.500

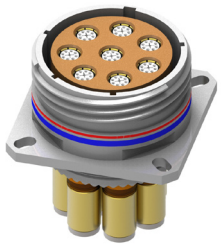
Note: it does not indicate stickout length when installed in D38999 connector.

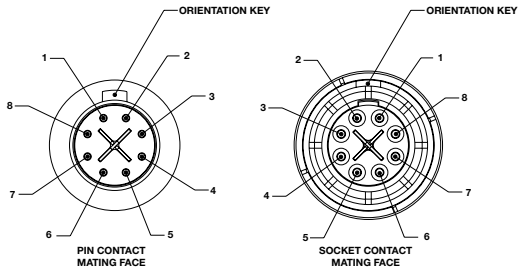
PCB L dimension length given in chart is the distance from the rear of the contact retention shoulder to the tip of the PCB tails.

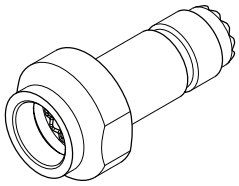


Backshell Extender

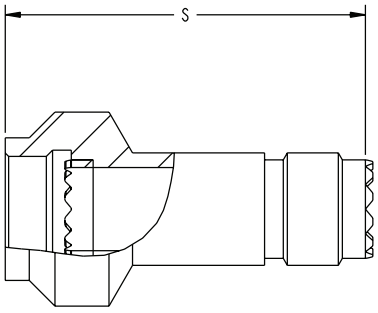
Due to the protusion of the Octonet Contacts through the rear of the grommet, a Backshell Extender must be used. The Extender is compatible with any Mil-Spec Backshell. Consult the factory for more information.







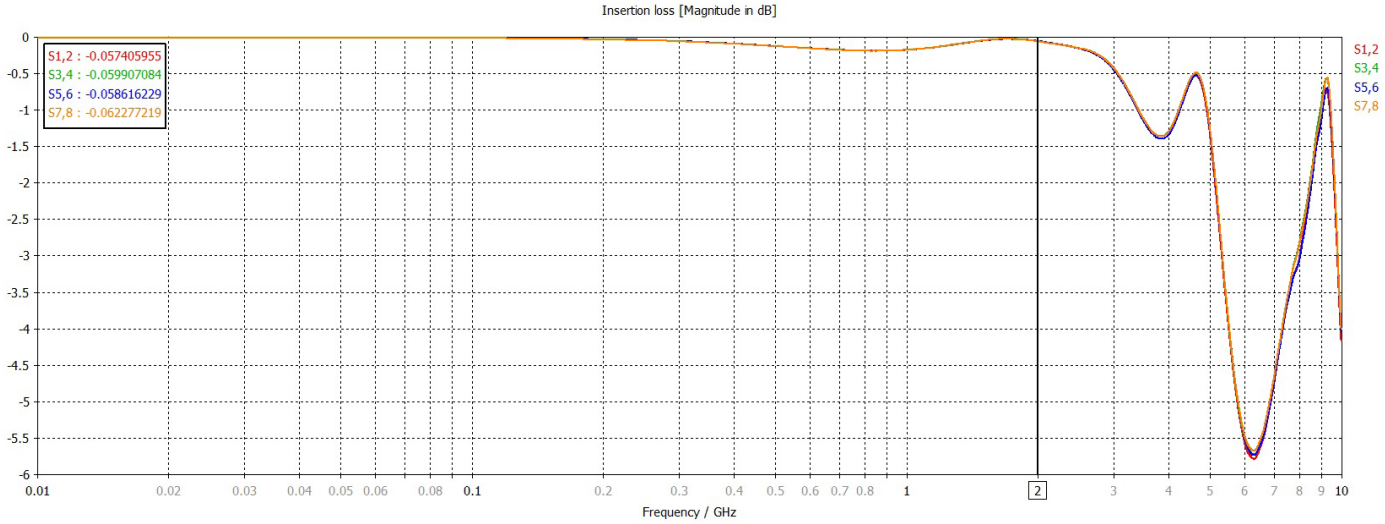
Part Number	Shell Size
FX-646409-01 ( )	9
FX-646409-02 ( )	11
FX-646409-03 ( )	13
FX-646409-04 ( )	15
FX-646409-05 ( )	17
FX-646409-06 ( )	19
FX-646409-07 ( )	21
FX-646409-08 ( )	23
FX-646409-09 ( )	25



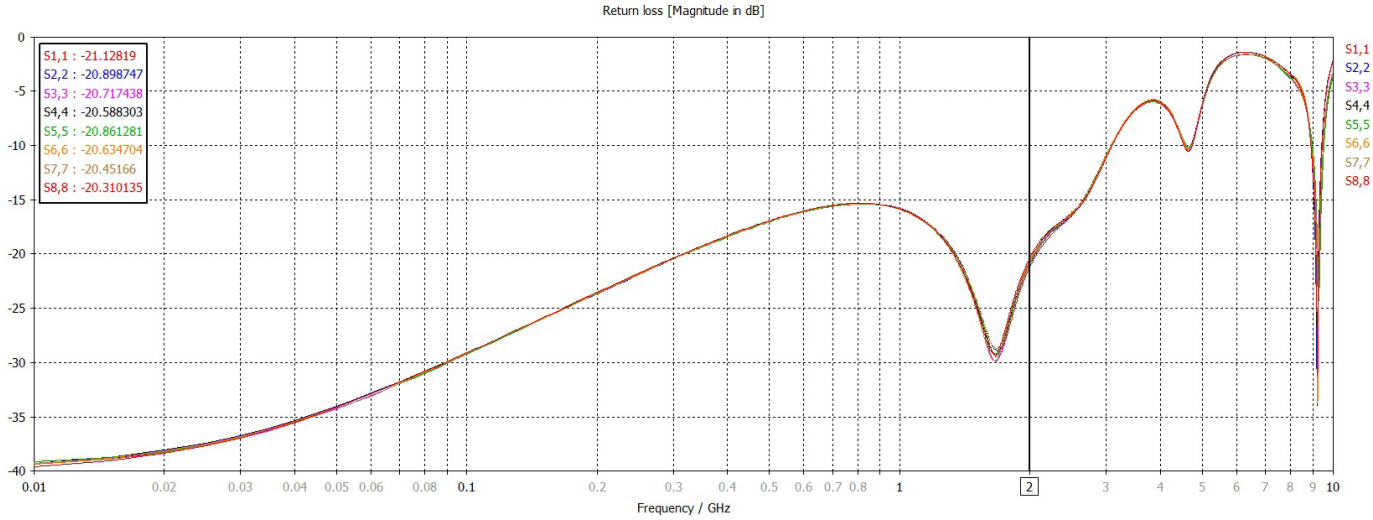
Signal Integrity Contact Data

Insertion and Return Loss

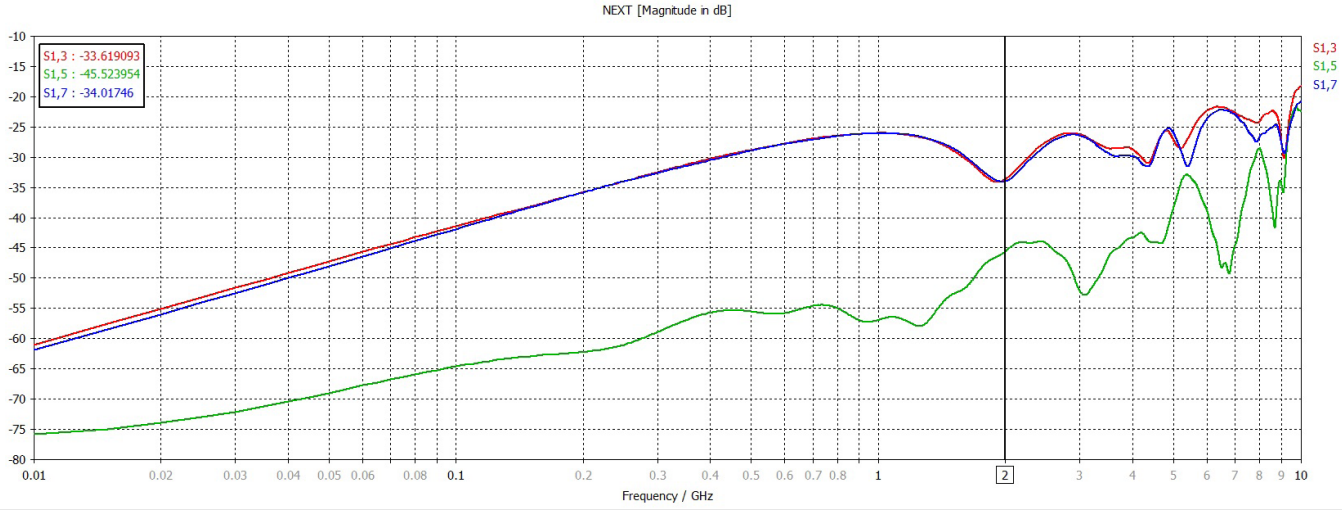
CONTACT DIFFERENTIAL INSERTION LOSS



CONTACT DIFFERENTIAL RETURN LOSS



CONTACT DIFFERENTIAL REAR-END CROSSTALK



Tri-Start, Series III Fiber Optic Connectors

38999 Style



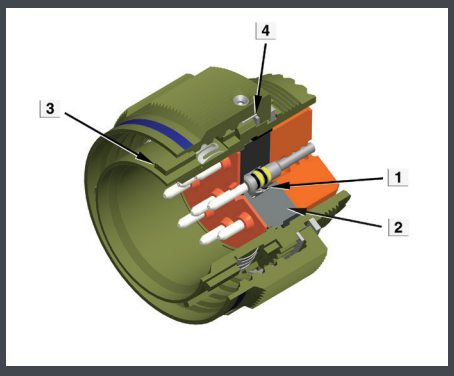
Our 38999 Fiber Optic connectors meets or exceeds MIL-DTL-38999 Series III requirements EMI Shielding-solid metal to metal coupling, grounding fingers, electroless nickel plating, and thicker wall sections provide superior EMI shielding capability of 65dB min. at 10 GHz. Termini Protection-recessed pins in this 100% scoop-proof connector minimize potential termini damage. Corrosion Resistance-shells of stainless steel or cadmium over nickel plating withstand 500 hr. salt spray exposure. Vibration/Shock-operates under severe high temperature vibration. Threaded coupling quickly and completely mates in one 360° turn of the coupling nut Amphenol.

Mechanical/Environmental:

Parameter	Performance
Maintenance Aging	MIL-STD-1344 Method 2002
Mating Durability	500 mating cycles
Insert Retention	100 PSI/25 lbs minimum
Sine Vibration	60 G (140-2000 Hz), 4 hours each at ambient, -55 deg C, and +175 deg C
Standard Shock	300 G half-sine, 3 ms duration
High Impact Shock	MIL-S-901 grade A with lightweight fixture
Temperature Life	1000 hours @ high temp rating
Thermal Shock	-55° C to +165° C - 5 cycles

This illustration shows the key features of the MIL-DTL-38999 CF-50- The highest optical performance connector.

1. Beryllium-copper retention clip for improved termini stability
2. Precision-aligned inserts
3. Modified master key
4. Integrated wave washer for improved performance in high vibration environments



Multi Channel Fiber Optic Tri-Start

How to Order

Amphenol® Multi-Channel fiber optic connectors for use with multi-mode and single mode termini can be ordered by coded part number. Ordering procedure is illustrated by part number CF-509017-8P as shown below:

1. Connector Type	2. Series	3. Finish	4. Shell Style	5. Shell Size and Insert Arrangement	6. Contact Type and Key/Keyway Position
CF	50	9	0	17-8	p

1. CONNECTOR TYPE

CF-	Multi-channel fiber optic

2. SERIES

50	Aluminum, tight tolerance
60	Aluminum, tight tolerance
80	Stainless steel shell, tight tolerance

3. FINISH

4	Electroless nickel plated aluminum, 48 hour salt spray resistance, 200°C
5	Unplated composite
6	Corrosion resistant stainless steel, 500 hour salt spray resistance, 200°C
9	Corrosion resistant olive drab cadmium
D	DurmalonTM (NIckel-PTFE)

4. SHELL STYLE

0	Wall mount receptacle
1	Line receptacle
2	Box mount receptacle
6	Straight plug
7	Jam nut receptacle

5. SHELL SIZE/ ARRANGEMENT

09-94
09-98
11-2
11-5
11-98
11-99
13-4
13-8
13-13
13-98
15-5
15-15
15-18
15-19
15-97
17-8
17-26
17-99
19-11
19-28
19-32
21-16
21-29
21-39
21-41
23-21
23-53
23-54
23-55
25-4
25-11***
25-20***
25-24
25-26
25-29
25-37
25-41
25-43
25-46
25-61
25-90
25-F4

Fiber optic termini can be accommodated in any size 16 or size 20 contact cavity of MIL-DTL-38999 Series III type connector insert patterns, as listed in the following chart.
See pages 84-92 for more information.

6. CONTACT TYPE AND KEY/KEYWAY POSITION

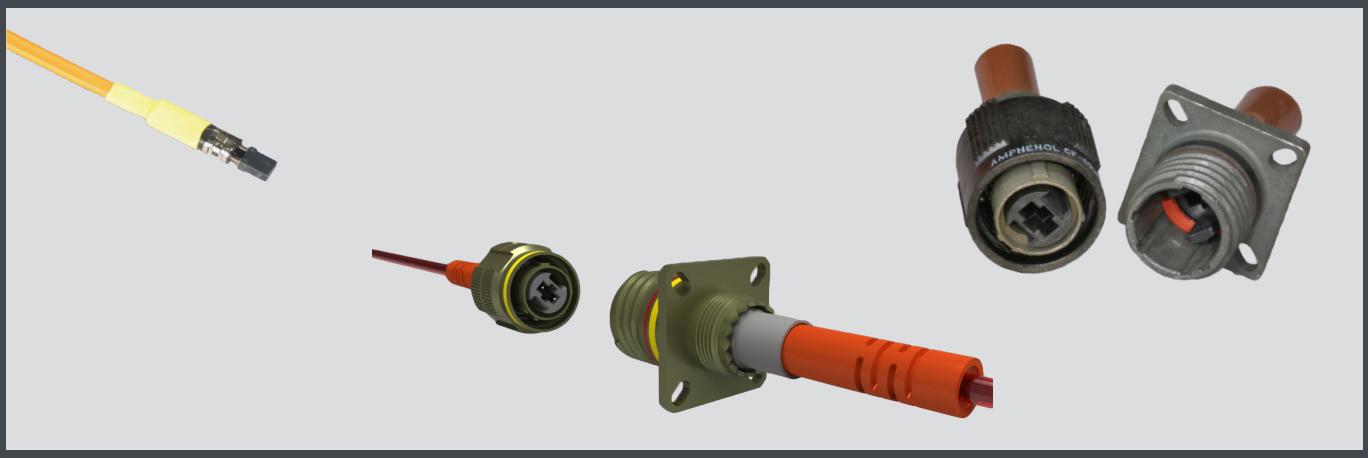
P	Pin contacts
S	Socket contacts

For more information on key/keyway rotation, see page 84, MIL-DTL-38999 Series III section.

For key/keyway positioning, choose the alternate rotation suffix letter from the chart below.

Alternate Position	Suffix Letter	
	Pins	Sockets
Normal	P	S
A	G	H
B	I	J
C	K	L
D	M	N
E	R	T

MT38999 Connectors and Fiber Optic Cable Assemblies



MT38999 Connectors

Amphenol MT 38999 Connectors are designed for high density fiber optic interconnect solutions.

Features:

- High fiber density in a relatively small circular connector package with all the advantages of the MIL-DTL-38999 series III connector
- Three levels of alignment provide for precision fiber to fiber interface:
  - Shell to shell with keying to allow for alternate positions
  - Insert plug to insert receptacle
  - MT contact guide pins
- Compatible with 12-fiber, 24-fiber, or 48-fiber MT ferrules in multi-mode PC single mode PC, and single mode APC configurations
- Two arrangements are available, shell size 11 with one ferrule, and shell size 21 with four ferrules
- Up to 48 fiber channels in a size 11 shell
- Up to 192 fiber channels in a size 11 shell

MT38999 Connectors

How to Order

1. Connector Type	2. Connector Class	3. Terminus Style	4. Shell Finish	5. Shell Style	6. Shell Size- Insert Arrangement	7. Insert Type & Key/ Keyway Position
CF-	6	9	9	0	11-01	P

1. CONNECTOR TYPE

CF-	Multi-channel fiber optic connector

2. CONNECTOR CLASS

5	Aluminum
6	Composite
8	Stainless steel

3. TERMINUS STYLE

9	MT terminus - Flat ribbon cable

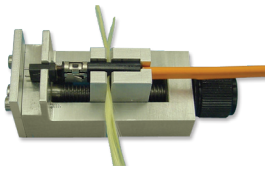
4. SHELL FINISH

4	Electroless nickel
6	Corrosion resistant stainless steel (connector class 8 only)
9	Olive drab cadmium
D	Durmalon™ (Nickel-PTFE)

Durmalon is a trademark of Amphenol Aerospace. For more information on Durmalon, go to amphenol-aerospace.com.
Other shell finishes are available. Consult Amphenol Aerospace for more information.

MT Assembly Tool

Order Number: 11-100000-000



MT Removal Tool

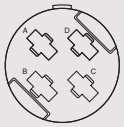
Order Number: CF-008025-000



5. SHELL TYPE

0	Wall mount receptacle
1	Line receptacle
6	Straight plug
7	Jam nut receptacle

6. SELECT A SHELL SIZE – INSERT ARRANGEMENT

	Shell Size-Insert Arrg	
Single cavity	11- 01	
Four cavity	21 - 04	

MT Insert Availability

Front face of socket inserts illustrated

7. INSERT TYPE & KEYWAY POSITION

Alternate Position	Suffix Letter	
	Pins	Sockets
Normal	P	S
A	G	H
B	I	J
C	K	L
D	M	N
E	R	T

Insert Type and Keyway Position
P -designates pin insert, S-designates socket insert

Optical / Mechanical / Environment

Parameter	Performance
Insertion Loss (850 nm)*	0.40 dB (typ)
Return Loss (850 nm)	–40.0 dB (typ)
Thermal Cycling	EIA-364-03D, test condition VII –40° to 85°C
Temperature Life	TIA/EIA-455-4; 85° for 336 hours
Vibration	MIL-STD-810F, Method 514.5
Mechanical Shock (Operational)	MIL-STD-810F, Method 516.5 75G half-sine, 10 ms duration
Mechanical Shock (Non-Operational)	MIL-STD-810F, Method 516.5 36-44G sawtooth, 10-12 ms duration
Humidity	TIA/EIA-455-5

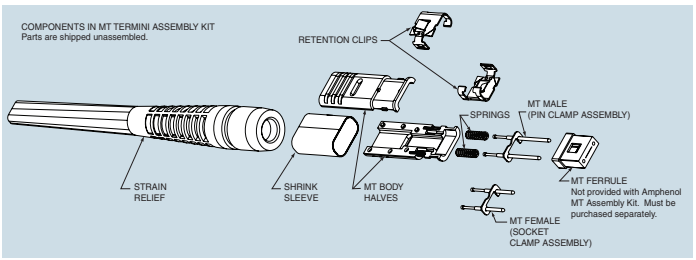
* Values shown are typical. Optical loss performance dependant on optical launch conditions, end face geometry, end face quality, and grade of MT ferrule.

MT Termini Assembly Kit

Amphenol supplies MT termini assemblies in kits, minus the MT ferrule. MT ferrules that meet the IEC1754-5 specification are recommended for use.

Kit Order Numbers

(MT Ferrules are not included with kit)
MT male assembly kit (flat ribbon): CF-198136-000
MT female assembly kit (flat ribbon): CF-198137-000



MT38999 Fiber Optic Cable Assemblies

Amphenol Aerospace

How to Order

1. Fiber Optic Connector	2. Round Cable MT	3. Shell Finish	4. Shell Style	5. Shell Size –Insert Pattern	6. Alternate Position Suffix
CF-	5R	4	7	11-2	Blank for Normal

1. FIBER OPTIC CONNECTOR

CF-	

2. ROUND CABLE MT

5R	

3. SHELL FINISH

4	Electroless Nickel
9	Olive Drab
D	Durmalon

4. SHELL STYLE

0	Wall mount receptacle
1	In line receptacle
6	Straight plug
7	Jam nut

5. SHELL SIZE - INSERT PATTERN

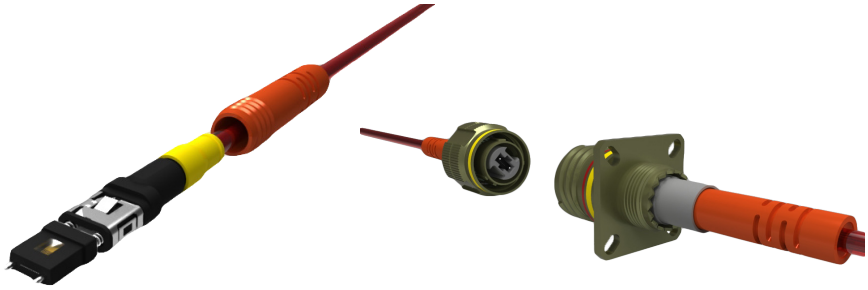
Shell Size	Insert Pattern
11-2	2 Single MT Ferrule
21-4	4 Four MT Ferrules

6. ALTERNATE POSITION SUFFIX

Alternate Position	Suffix Letter	
	Pins	Sockets
Normal	P	S
A	G	H
B	I	J
C	K	L
D	M	N
E	R	T

MT38999 Fiber Optic Cable Assemblies:

Amphenol Aerospace offers the High Performance Interconnect Solution for your High Speed Needs.



Features and Benefits:

- Maneuverability
- Very high density in cylindrical connectors:
- Up to 48 fiber channels in size 11 shell
- Up to 192 fiber channels in size 21 shell

Round MT Cable Assemblies:

- From simple to complex
- Ruggedization with full testing (temperature, shock, vibration)
- Insertion loss and return loss testing capabilities
- Industry leading polish and termination capabilities
- Using COTS cable from across the country

38999 Filter Section



Being the original inventor of filter interconnects, Amphenol manufactures MIL-DTL 38999 Series III Filter Connectors, and are available in multiple versions, including many environmental-classes, with high and medium density insert arrangements. The "Tri-Start" mating thread makes them well suited to high-vibration and high-shock applications.

Amphenol's Filter Connectors are available in several termination configurations, including PC tails, solder cups, and crimp contacts. They are also available with various plating and keying options, and are all intermateable with standard MIL-DTL-38999 Series III connectors.

Specifications
Environmental

- Temperature Range: -55°C to 125°C
- Physical Shock: Typical to EIA-364-27
- Vibration: Typical to EIA-364-28
- Fungus Resistance: Based on MIL-STD-810
- Fluid Immersion: Typically tested to EIA-364-10
- Salt Spray: Typically based on EIA/ECA-364-26
- Humidity: Typically EIA-364-31 test method IV
- Durability: 1500 cycles for Classes J and M and 500 cycles for all other connectors as per 38999 spec

Electrical

- Grounded Line Resistance (Typ.): 30 mΩ max
- Insulation Resistance (Typ.): >10 GΩ
- Dielectric Withstand Voltage (Typ): 500 VDC
- Working Voltage (Typ): 200 VDC max
- Typical Test Specifications Used:
- Mil-STD-810: Test Method Standard
- Mil-STD-202: Electrical & Electrical Components Parts
- RTCA DO-160: Test Procedures for Airborne Equipment
- EIA-364: Electrical Connector & Socket Test Procedures

Reliable

- Triple-start, self-locking threaded coupling mechanism
- 100% scoop proof design
- Shell-to-Shell Continuity (ground strap between shells)

Filtering Capabilities

- Capacitance Range: 50 pF to 1.6 µF
- Capacitance Tolerance: Typically +/-20%
- Filtering Types Available: C, PI, LC, CL, T

Features Versatility:

- Wide range of connector shell configurations
- Configurable filter topologies

Designed for Harsh Environments:

- Vibration and shock
- Temperature extremes
- High humidity
- Altitude
- Salt spray

Mating Compatibility:

- MIL-DTL-38999 Series III connectors
- DEUTSCH DTS Series connectors
- DEUTSCH ACT Series composite connectors

How to Order - Standard

Filter Connectors

1. Filter Connector Designator	2. Connector and Filter Type	3. Shell Finish	4. Shell Styles	5. Shell Size – Insert Arrg.	6. Type of Contact and Keyway Position	7. Printed Circuit Board Tail Length
21-	24	9	2	16-26	P	1

1. CONNECTOR TYPE

21-	Filter Connector

2. CONNECTOR/FILTER TYPE

50	FTV (UTS-crimp) with VHF-1 filter
51	FTV (UTS-crimp) with HF-1 filter (long shell)
52	FTV with VHF-1 filter
53	FTV with HF-1 filter (long shell)
76	FCTV with VHF-1 filter with composite shell
77	FTV with VHF-1 filter and standard series III shells
78	FCTV PCB mount with standard flange and VHF-1 filter
79	Same as 77 with no filter - Epoxy sealed
80	FTV PCB mount with standard flange, standard nut and VHF-1 filter
81	Same as 80 with no Filter - Epoxy sealed
82	FTV with ±8 volt diode/VHF-1 filter combination
84	FTV (UTS-crimp) with ±8 volt diode only
85	Same as 76 with no filter - Epoxy sealed

3. SHELL FINISH

0	Chromate
1	Bright cadmium
2	Stainless steel (electrolytic nickel plated)
4	Electroless nickel, MS (F)
7	Cadmium plate over nickel, MS(A)
8	Bright nickel
9	Cadmium plate, nickel base, OD, MS(B), (500 hr. salt spray test)
D	Durmalon™ Nickel-PTFE (cadmium alternative) - 38999 Class T refer to page 7
Z	Black Zinc

4. SHELL STYLE

0	Wall mount receptacle
2	Box mount receptacle
4	Minimum penetration jam nut receptacle
7	Jam nut receptacle

5. SHELL SIZE AND INSERT ARRANGEMENT

9 through 25	Shell sizes available for TV, Series III

Shell Size & Insert Arrangements are together in one chart. First number represents Shell Size, second number is the Insert Arrangement. See pages 84-92.

6. TYPE OF CONTACT

P	Pins in a normal rotation
S	Socket in a normal rotation

7. (Optional) This will change Connector to PCB Termination from default Solder Cup

Code	± .030	Pre-Tinned?
1	0.120	NO
2		YES
3	0.185	NO
4		YES
5	0.270	NO
6		YES

Alternate Rotation Suffix Letters

FTV FCTV		
Alternate Position	Suffix Letter	
	Pins	Sockets
Normal	P	S
A	G	H
B	I	J
C	K	L
D	M	N
E	R	T

Note:

-2XX Suffix

Any combination of filters, non-filters, grounds, and non-standard contact terminations will require -2XX suffix. Please consult Amphenol Aerospace for assistance in setting up these part numbers.

- Standard voltage for diode is ±8 volts. Any deviation requires a –2XX suffix.
- Standard voltage for a MOV is 47 volts. Any deviation requires a –2XX suffix.
- Standard diode/filter combination is ±8 volt/VHF-1 filter. Any deviation requires a –2XX suffix.
- Standard MOV/filter combination is 47 volt/VHF-1 filter. Any deviation requires a –2XX suffix.

Federal Vendor Identification/FSCM 77820

Amphenol MILITARY & AEROSPACE

Filter Check Sheet

Requesting Company: _____

End Customer: _____

Program/Application: _____

Date:_____

Mil-Spec Series or Style:

Shell Size-Arrangement:

Customer Part ID:

Electrical Requirements

Filter Type	
☐ PI	☐ C
☐ CL	☐ T
☐ LC	☐ Casc PI

Capacitance	Nominal Capacitance (See Note 1)
Capacitance 1	
Capacitance 2	
Capacitance 3	

Working Voltage	
☐ 26 VDC	☐ 115VAC (RMS), 60 Hz
☐ 50 VDC	☐ 115VAC (RMS), 400 Hz
☐ 100 VDC	☐ Other
☐ 200 VDC	☐

Insulation Resistance (Check the least)	
☐ >1 M-ohm	☐ >1 G-ohm
☐ >10 M-ohm	☐ >10 G-ohm
☐ >100 M-ohm	☐ Other:_____

Dielectric Withstanding Voltage	
☐ 100 VDC	☐ 500 VDC
☐ 200 VDC	☐ Other:_____

Transient Requirements	Transient Parameters
RTCA-DO-160	
MIL-STD-461	

Required Insertion Loss

Frequency (MHz)	Enter Insertion Loss in db and either "min" or "max"
0.3	
1	
3	
10	
30	
100	
300	
1000	

Mechanical Requirements

Shell Style	
☐ Box Mount	☐ Adapter
☐ Jam Nut	☐ Plug
☐ Dual Flange	☐ Bulkhead Feedthrough
☐ Solder Mount	

Contact Termination	Stick out Dim. (From End of Shell)	Pre-tin (Y/N)
☐ PCB Tail		
☐ Solder Cup		
☐ Crimp Contacts		

Connector Mating Interface	Adapter Mating Interface
☐ Pins	☐ PS (Pin receptacle, socket plug)
☐ Sockets	☐ SP (Socket receptacle, pin plug)

Shell Finish	
☐ Durmalon (Nickel-PTFE, Cadmium alt.)	☐ Bright Nickel
☐ Cadmium Plate over Nickel (OD)	☐ Bright Cadmium
☐ Stainless Steel (Electrolytic nickel)	☐ Black Zinc
☐ Electroless Nickel	☐ Chromate
☐ Gold Plate over Nickel	☐

Note 1: Capacitance can range from 50 pFd to 1.6 uFd, with a tolerance of +/-20%. Typical max capacitance spread within one connector is 10:1. Consult Amphenol with capacitance parameters outside of the specifications above.

Additional Comments:

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Specific Requirements per Contact

If necessary, please indicate your individual pin filter requirements against the relevant contact number (or letter) below.

Contact Ref (s)	Filter Value Requirements: Feedthrough locations, Grounds, etc.	Contact Ref (s)	Filter Value Requirements: Feedthrough locations, Grounds, etc.	Contact Ref (s)	Filter Value Requirements: Feedthrough locations, Grounds, etc.	Contact Ref (s)	Filter Value Requirements: Feedthrough locations, Grounds, etc.
1 / A		48 / v		95		142	
2 / B		49 / w		96		143	
3 / C		50 / x		97		144	
4 / D		51 / y		98		145	
5 / E		52 / z		99		146	
6 / F		53 / AA		100		147	
7 / G		54 / BB		101		148	
8 / H		55 / CC		102		149	
9 / I		56 / DD		103		150	
10 / J		57 / EE		104		151	
11 / K		58 / FF		105		152	
12 / L		59 / GG		106		153	
13 / M		60 / HH		107		154	
14 / N		61 / I I		108		155	
15 / O		62 / JJ		109		156	
16 / P		63 / KK		110		157	
17 / Q		64 / LL		111		158	
18 / R		65 / MM		112		159	
19 / S		66 / NN		113		160	
20 / T		67 / PP		114		161	
21 / U		68		115		162	
22 / V		69		116		163	
23 / W		70		117		164	
24 / X		71		118		165	
25 / Y		72		119		166	
26 / Z		73		120		167	
27 / a		74		121		168	
28 / b		75		122		169	
29 / c		76		123		170	
30 / d		77		124		171	
31 / e		78		125		172	
32 / f		79		126		173	
33 / g		80		127		174	
34 / h		81		128		175	
35 / i		82		129		176	
36 / j		83		130		177	
37 / k		84		131		178	
38 / l		85		132		179	
39 / m		86		133		180	
40 / n		87		134		181	
41 / o		88		135		182	
42 / p		89		136		183	
43 / q		90		137		184	
44 / r		91		138		185	
45 / s		92		139		186	
46 / t		93		140		187	
47 / u		94		141			

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Connector Accessories



Amphenol offers a full range of accessories that are designed to enhance the performance of Amphenol 38999 connectors, both military and non-military.

Backshells are an integral part of any circular connector when it comes to reliable cable connections. Amphenol divisions team up globally to provide a very large assortment of backshells for use with 38999 Series of connectors, as well as other circular series.

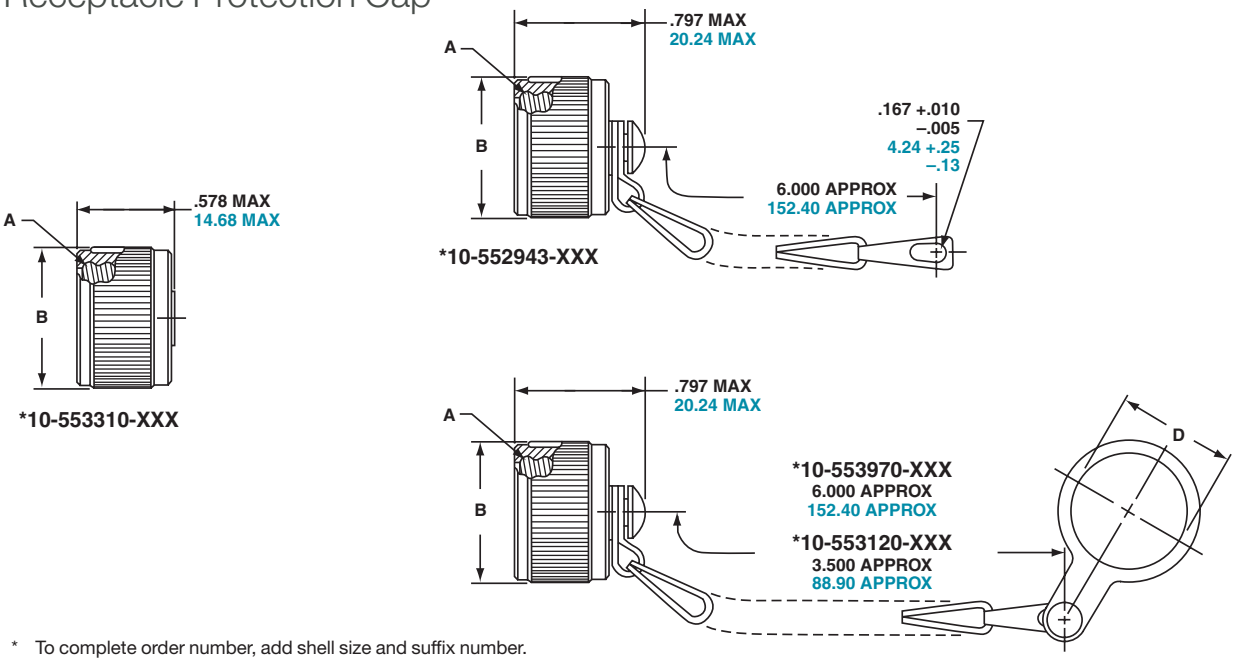
The variety of types of backshells and adapters covered in the Backshells section of this catalog include:

- Non-environmental backshells
- Environmental backshells
- Non-environmental EMI/RFI backshells
- Environmental EMI/RFI backshells
- Shrink boot adapters
- Crimp ring adapters
- Band lock adapters
- Pre-shield adapters

MIL-DTL-38999, Series III TV

Amphenol Aerospace

Receptacle Protection Cap



* To complete order number, add shell size and suffix number. For example, shell size 11 with olive drab cadmium nickel base, 10-552943-119

Inches

Shell Size	A Thread Class 2B 0.1P-0.3L-TS	B Dia. Max.	D Dia. +.010 –.000
9	.6250	.875	.703
11	.7500	1.000	.844
13	.8750	1.125	1.016
15	1.0000	1.250	1.141
17	1.1875	1.438	1.266
19	1.2500	1.500	1.391
21	1.3750	1.625	1.516
23	1.5000	1.750	1.641
25	1.6250	1.875	1.766

Millimeters

Shell Size	MS Shell Size Code	B Dia. Max.	D Dia. +.25 –.00
9	A	22.23	17.86
11	B	25.40	21.44
13	C	28.58	25.81
15	D	31.75	28.98
17	E	36.53	32.16
19	F	38.10	35.33
21	G	41.28	38.51
23	H	44.45	41.68
25	J	47.63	44.86

All dimensions for reference only.

TV Series III MS Metal Protection Caps

Shell Size	MS Shell Size Code	MS Receptacle Protection Cap
9	A	D38999/33W9X*
11	B	D38999/33W11X*
13	C	D38999/33W13X*
15	D	D38999/33W15X*
17	E	D38999/33W17X*
19	F	D38999/33W19X*
21	G	D38999/33W21X*
23	H	D38999/33W23X*
25	J	D38999/33W25X*

* To complete order number, replace X with applicable letter as follows:

R - designates eyelet type

N - designates washer type

MS metal protection caps are supplied with service class W which designates corrosion resistant olive drab cadmium plate aluminum.

Consult Amphenol Aerospace for more detailed information on ordering MS Metal protection caps.

Finish	10-No Suffix
Olive Drab, Cadmium, Nickel base	-XX9
Electroless Nickel	-XXG

Consult Amphenol Aerospace for availability of stainless steel protection caps, black zinc nickel, Durmalon, and other plating options.

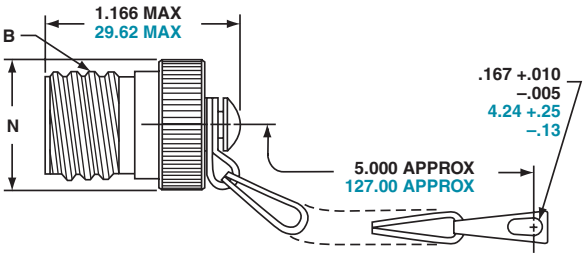
TV Series III Plastic Protection Caps

Shell Size	Receptacle
9	10-70500-10
11	10-70500-12
13	10-70500-14
15	10-70500-16
17	10-70500-19
19	10-70500-20
21	10-70500-22
23	10-70500-24
25	10-70524-1

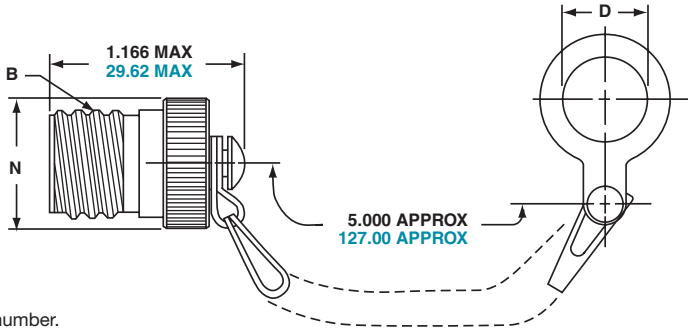
MIL-DTL-38999, Series III TV

Plug Protection Cap

*10-552944-XXX



*10-553998-XXX



* To complete order number, add shell size and suffix number. For example, shell size 11 with olive drab cadmium nickel base, 10-552944-119

Inches

Shell Size	A Thread Class 2B 0.1P-0.3L-TS	D Dia. +.010 –.000	N Dia. Max.
9	.6250	.516	.895
11	.7500	.641	1.000
13	.8750	.766	1.171
15	1.0000	.891	1.299
17	1.1875	1.016	1.436
19	1.2500	1.141	1.543
21	1.3750	1.266	1.670
23	1.5000	1.343	1.787
25	1.6250	1.516	1.914

Millimeters

Shell Size	MS Shell Size Code	D Dia. +.25 –.00	N Dia. Max.
9	A	13.11	22.73
11	B	16.28	25.40
13	C	19.46	29.74
15	D	22.63	32.99
17	E	25.81	36.47
19	F	28.98	39.19
21	G	32.16	42.42
23	H	34.11	45.39
25	J	38.51	48.62

All dimensions for reference only.

TV Series III MS Metal Protection Caps

Shell Size	MS Shell Size Code	MS Plug Protection Cap
9	A	D38999/32W9X*
11	B	D38999/32W11X*
13	C	D38999/32W13X*
15	D	D38999/32W15X*
17	E	D38999/32W17X*
19	F	D38999/32W19X*
21	G	D38999/32W21X*
23	H	D38999/32W23X*
25	J	D38999/32W25X*

* To complete order number, replace X with applicable letter as follows:
R - designates eyelet type
N - designates washer type

MS metal protection caps are supplied with service class W which designates corrosion resistant olive drab cadmium plate aluminum.

Consult Amphenol Aerospace for more detailed information on ordering MS Metal protection caps.

Finish	10-No Suffix
Olive Drab, Cadmium, Nickel base	-XX9
Electroless Nickel	-XXG

Consult Amphenol Aerospace for availability of stainless steel protection caps, black zinc nickel, Durmalon, and other plating options.

TV Series III Plastic Protection Caps

Shell Size	Plug
9	10-70506-14
11	10-70506-16
13	10-70500-18
15	10-70500-20
17	10-70500-22
19	10-70500-24
21	10-70524-1
23	10-70506-28
25	10-70500-28

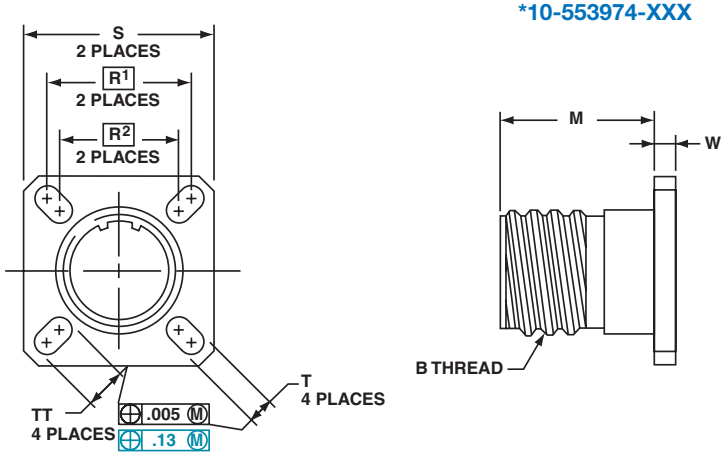
MIL-DTL-38999, Series III TV

Wall Mount Dummy Receptacle

Amphenol Aerospace

PART NUMBER REFERENCE.
SEE NOTE BELOW TO COMPLETE.

***10-553974-XXX**



* To complete order number, add shell size and suffix number. For example, shell size 11 with olive drab cadmium nickel base, 10-553974-119

Inches

Shell Size	MS Shell Size Coded	B Thread 0.1P-0.3L-TS (Plated)	M +.020 –.000	R1	R2	S ±.010	T ±.008 –.006	W ±.010	TT ±.008 –.006
9	A	.6250	.822	.719	.594	.938	.128	.098	.216
11	B	.7500	.822	.812	.719	1.031	.128	.098	.194
13	C	.8750	.822	.906	.812	1.125	.128	.098	.194
15	D	1.0000	.822	.969	.906	1.219	.128	.098	.173
17	E	1.1875	.822	1.062	.969	1.312	.128	.098	.194
19	F	1.2500	.822	1.156	1.062	1.438	.128	.098	.194
21	G	1.3750	.791	1.250	1.156	1.562	.128	.125	.194
23	H	1.5000	.791	1.375	1.250	1.688	.154	.125	.242
25	J	1.6250	.791	1.500	1.375	1.812	.154	.125	.242

Finish	10-No Suffix
Olive Drab, Cadmium, Nickel Base	-XX9
Electroless Nickel	-XXG

Consult Amphenol Aerospace for availability of stainless steel protection caps, black zinc nickel, Durmalon, and other plating options.

Millimeters

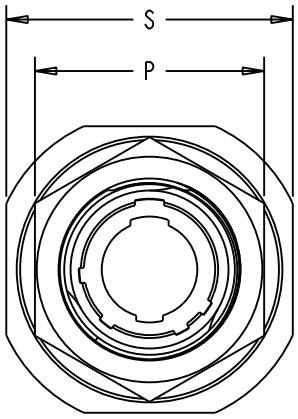
Shell Size	MS Shell Size Coded	M +.51 –.00	R1	R2	S ±.25	T +.20 –.15	W ±.25	TT +.20 –.15
9	A	20.88	18.26	15.09	23.83	3.25	2.49	5.49
11	B	20.88	20.62	18.26	26.19	3.25	2.49	4.93
13	C	20.88	23.01	20.62	28.58	3.25	2.49	4.93
15	D	20.88	24.61	23.01	30.96	3.25	2.49	4.93
17	E	20.88	26.97	24.61	33.32	3.25	2.49	4.93
19	F	20.88	29.36	26.97	36.53	3.25	2.49	4.93
21	G	20.09	31.75	29.36	39.67	3.25	3.18	4.93
23	H	20.09	34.93	31.75	42.88	3.91	3.18	6.15
25	J	20.09	38.10	34.93	46.02	3.91	3.18	6.15

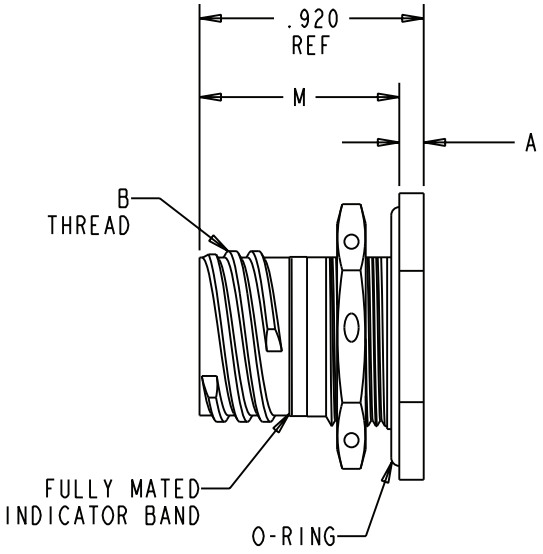
All dimensions for reference only.

Designates true position dimensioning.

MIL-DTL-38999, Series III TV

Jam Nut Dummy Receptacle





Inches

Shell Size	MS Shell Size Coded	A +.010 -.005	B Thread 0.1P-0.3L-TS (Plated)	M +.020 –.000	P Hex +.017 -.016	S +.011 -.010	RR Thread Plated 9-7543
9	A	.104	.6250	.871	.875	1.062	M17X1-6g 0.100R
11	B	.104	.7500	.871	1.000	1.250	M20XI-6g 0.100R
13	C	.104	.8750	.878	1.188	1.375	M25XI-6g 0.100R
15	D	.104	1.0000	.878	1.312	1.500	M28XI-6g 0.100R
17	E	.104	1.1875	.878	1.438	1.625	M32XI-6g 0.100R
19	F	.135	1.2500	.878	1.562	1.812	M35XI-6g 0.100R
21	G	.135	1.3750	.878	1.688	1.938	M38XI-6g 0.100R
23	H	.135	1.5000	.878	1.812	2.062	M41XI-6g 0.100R
25	J	.135	1.6250	.878	2.000	2.188	M44XI-6g 0.100R

MIL-DTL-38999, Series III TV

Universal “Header Assembly” for Flex Print or PC Board

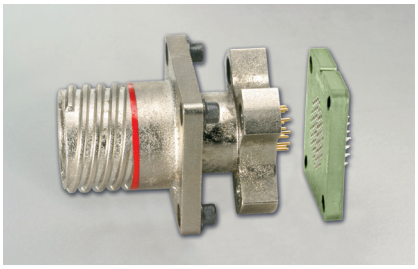
Amphenol Aerospace

Mounts to all MIL-DTL-38999

The universal header assembly from Amphenol provides for easy separation of the connector from the board.

The header assembly is comprised of a short pin/socket contact. The tail end of the contact is soldered to the through hole of the flex or printed circuit board. The socket is embedded in the insulator, making electrical contact with the printed circuit tail of the connector.





Headers provide easy separation of the connector from the PC board.

Features and Benefits:

- Circular and square header assemblies available
- Cost and time savings in the manufacturing process
- Assemblies can be vapor phase or wave soldered to flex/printed circuit board
- Allows electrical testing when installed properly.
- Connector assemblies can be easily removed from and reattached to the header assembly.

Mounting Applications

- Amphenol **square** universal headers are slotted to allow mounting to all series of MIL-DTL-38999 connectors without special alterations.
- Amphenol **circular** universal headers are designed to accommodate the rear flange of PCB Board Mount shells, series MIL-DTL-38999 connectors without special alterations.
- The header assembly can be attached to connectors with standard flange placement or directly to the circuit board.
- Connectors with dual flange mounting hardware can be provided to allow easy mounting to the panel or the header assembly.
  - Forward flange would mount the connector to the panel
  - Rear flange would be used to mount to the header assembly.
- Various types of captivated or loose attaching screws can be utilized for unique applications.

Mounting to Rectangular ARINC Connectors

- Headers for ARINC connector arrangements accommodate up to 150 pins
- Consult Amphenol Canada, Ontario for ARINC configurations.

Materials

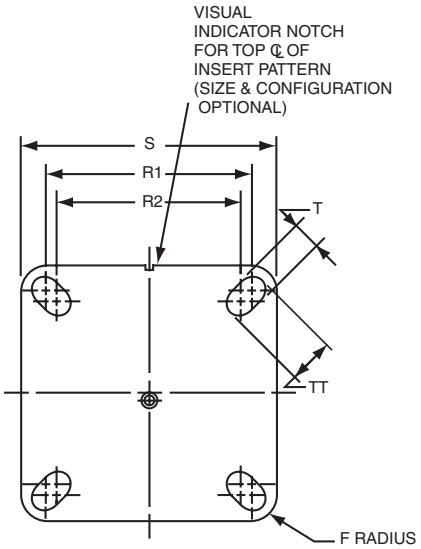
- Body is molded or machined from FR-4.
- Electrical engagement areas of the header contact are plated with .00003 inches minimum of gold over .00005 inches minimum of nickel.

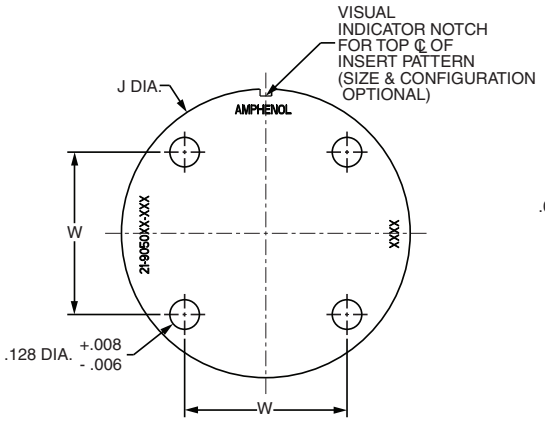
See drawing of standard header on next page.

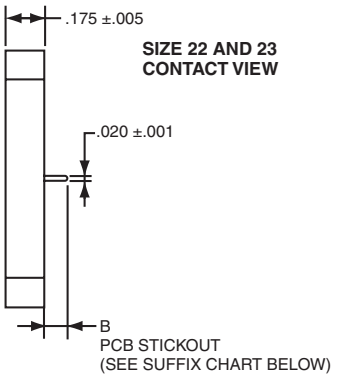
MIL-DTL-38999, Series III TV

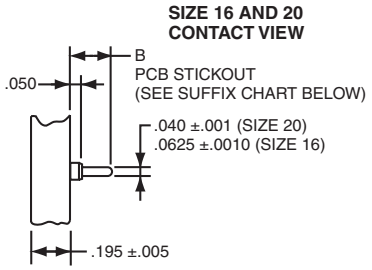
Universal "Header Assembly" for Flex Print or PC Board

The drawing below shows the standard header assembly for use with MIL-DTL-38999 connectors.









NOTE:
Size 16 accepts .048 to .064 dia. PCB tails.
Size 20 accepts .037 to .043 dia. PCB tails.
Size 22 & 23 accepts .018 to .022 dia. PCB tails

Square Assembly Part Number	Shell Size	F Radius	S ± .005	T + .008 – .006	R1 TP†	R2 TP†	TT + .008 – .006
21-904008-XX( )	9	.094	.938	.128	.719	.594	.216
21-904010-XX( )	111	.094	1.031	.128	.812	.719	.194
21-904012-XX( )	113	.094	1.125	.128	.906	.812	.194
21-904014-XX( )	15	.125	1.219	.128	.969	.906	.173
21-904016-XX( )	17	.125	1.312	.128	1.062	.969	.194
21-904018-XX( )	19	.125	1.438	.128	1.156	1.062	.194
21-904020-XX( )	21	.125	1.562	.128	1.250	1.156	.194
21-904022-XX( )	23	.125	1.688	.154	1.375	1.250	.242
21-904024-XX( )	25	.125	1.812	.154	1.500	1.375	.242

† TP designates true position dimensioning.

Circular Assembly Part Number	Shell Size	J Dia. ± .005	W
21-905008-XX( )	9	1.016	.532
21-905010-XX( )	11	1.062	.601
21-905012-XX( )	13	1.250	.703
21-905014-XX( )	15	1.375	.791
21-905016-XX( )	17	1.500	.875
21-905018-XX( )	19	1.625	.975
21-905020-XX( )	21	1.750	1.053
21-905022-XX( )	23	1.875	1.145
21-905024-XX( )	25	2.000	1.233

How to Order Information
For Header Assembly with MIL-DTL-38999 Connectors

1. Series	2. Type	3. Shell Size & Insert Arrg.	4. PCB Suffix
21-	9040	8-3	1

1. SERIES

21-	Header Assembly

2. TYPE

9040	Square
9050	Circular

3. SHELL SIZE AND INSERT ARRANGEMENT

See insert arrangements available with Quadrax contacts on pages 75-83. First number represents shell size, second number is the insert arrangement. See MIL-STD-1560 document for coordinates of inserts.

* Shell size designation for MIL-DTL-38999

4. CONTACT PCB STICKOUT

Suffix	Shell Size*	Contact PCB Stickout Length B ± .015 Stickout
1	08	.120
1	09	.120
2	10	.185
3	12	.270
NA	14	
NA	15	
2	16	.185
3	16	.270
	18	
2	20	.185
3	20	.270
1	22	.120
2	22	.185
3	22	.270
1	23	.120
	24	
	25	

MIL-DTL-38999, Series III TV, HD

Insert Availability and Identification Chart

Amphenol Aerospace

TV III	III	Crimp	Hermetic TV*	Service Rating	Total Contacts	Contact Size: 23 HD	22D	22M	22	20	16	16 CX	12	12 TX	12 CX	10 P	8 P	8 CX	8†† TX	4
7-D2				M	2		2													
9-5★■				G	1														1	
9-9■		X		N	9	9														
9-12■		◆		M	1								1							
9-35	A35	X	P	M	6		6													
9-94■		◆		M	2					2										
9-98	A98	X	P	I	3					3										
11-1■		◆		I	1														1	
11-2★	B2	X		I	2						2									
11-4	B4	2		I	4					4										
11-5	B5	X	P	I	5					5										
11-12■		◆		II	1								1							
11-19■		X		N	19	19														
11-35	B35	X	P	M	13		13													
11-54■		X		II	4		4													
11-98	B98	X	P	I	6					6										
11-99	B99	X	P	I	7					7										
13-4★	C4	X	P	I	4						4									
13-8	C8	X	P	I	8					8										
13-13■«				I, Fiber Optic	4						2**		2							
13-26■		◆		M	8		6						2							
13-32■		◆		N	32	32														
13-35	C35	X	P	M	22		22													
13-63■		◆		I	4						2		2							
13-98	C98	X	P	I	10					10										
13-CB■		S		M			4						2							
15-AC■		◆		M	26		24				2									
15-AT■		X		I	13		10						3							
15-BA■		◆		M	25		22				3									
15-4■		2		I	4								4							
15-5★	D5	X	P	II	5						5									
15-15	D15	X	P	I	15					14	1									
15-18	D18	X	P	I	18					18										
15-19	D19	X	P	I	19					19										
15-35	D35	X	P	M	37		37													
15-55■		X		N	55	55														
15-68■		X		1	8						8									
15-97	D97	X	P	I	12					8	4									
17-2	E2	X		M	39		38												1	
17-3≈	E3≈	X		M	39		38												1	
17-EA■		◆		M	19		10			3	2		4							
17-EC■		◆		M	41		32			9										
17-EG■		◆		M			16						4							
17-EL■		◆		M	19		16						2						1	
17-6	E6	X	P	I	6								6							
17-8★	E8	X	P	II	8						8									
17-11	E11	X		N	11					8				2	1					
17-13■		2		I	13						13									
17-22★■		◆		Coax	4										2			2		
17-25■		2		M	24		22											2		
17-26	E26	X	P	I	26					26										
17-35	E35	X	P	M	55		55													
17-52■		X		M	2														2	
17-60■		X		I/Coax	10		8											2		
17-73■		X		N	73	73														
17-99	E99	X		I	23					21	2									
19-AD		X		Inst.	17					16									1	
19-A4■		◆		M	4														4	
19-FA■		◆		M	23		6			8	7		2							
19-11★	F11	X	P	II	11						11									
19-17■		◆		M	17		10			1	4								2	
19-18	F18	2		M	18		14												4	
19-19≈	F19≈	2		M	18		14												4	
19-28	F28	P		I	28					26	2									
19-30■		P		I	30					29	1									
19-31■		X		M	15		12						1					2		
19-32	F32	X	P	I	32					32										
19-35	F35	X	P	M	66		66													
19-68■		3		I	18						18									

MIL-DTL-38999, Series III TV, HD

Insert Availability and Identification Chart

TV III	III	Crimp	Hermetic TV*	Service Rating	Total Contacts	Contact Size: 23 HD	22D	22M	22	20	16	16 CX	12	12 TX	12 CX	10 P	8 P	8 CX	8†† TX	4
19-88■		X		N	88	88														
21-AJ■		◆		M	20					18									2	
21-AZ■		X		II	22		19										3			
21-11★	G11	X		I	11								11							
21-16★	G16	X	P	II	16						16									
21-21 ■				M	41		32						9							
21-29	G29	X		I	27					19	4		4							
21-35	G35	X	P	M	79		79													
21-39	G39	X	P	I	39					37	2									
21-41	G41	X	P	I	41					41										
21-42■		◆		I																2
21-A48■				N	4												`4			
21-B48■				N	4												`4			
21-C48■				N	4												`4			
21-72■		◆		I							6									2
21-75★✧	G75	2		N	4													4	(4)	
21-76★✧≈	G76^	2		N	4													4	(4)	
21-79■		2		II	19		17											2	(2)	
21-121■		X		N	121	121														
23-6★■		P		M	6														6	
23-14■		2 ◆		I	14								14							
23-21★	H21	X	P	II	21						21									
23-35	H35	X	P	M	100		100													
23-53	H53	X	P	I	53					53										
23-54 ■		X		M	53		40				9		4							
23-55	H55	X	P	I	55					55										
23-63 ■		◆		M	57		49					4			4					
23-151 ■		X		N	151	151														
25-4	J4	X	P	I	56					48	8									
25-7	J7	X		M	99		97												2	
25-9≈	J9≈	X		M	99		97												2	
25-8★	J8	◆		Twinax	8														8	
25-10★≈	J10≈	◆		Twinax	8														8	
25-11***	J11	2		N	11					2						9				
25-16■		◆		M	8					6										2
25-17■		◆		M	42		36												6	
25-19★	J19	X	P	I	19								19							
25-20***	J20	2 ◆		N	30					10	13				4				3	
25-21***≈	J21≈	2 ◆		N	30					10	13				4				3	
25-24★	J24	X		I	24						12		12							
25-26■★		✦		I	25					16			5					4		
25-29★	J29	X		I	29						29									
25-35	J35	X	P	M	128		128													
25-37★	J37	X		I	37						37									
25-41■		◆		N	41		22			3	11				2				3	
25-43	J43	2 ◆		I	43					23	20									
25-46	J46	2 ◆		I	46					40	4							2		
25-47≈	J47≈	2 ◆		I	46					40	4							2		
25-61	J61	X	P	I	61			61												
25-88		◆		Coax	8													8		
25-90	J90	◆		I	46					40	4								2	
25-91≈	J91≈	◆		I	46					40	4								2	
25-187 ■		X		N	187	187														
25-1A ■		◆		N	8						4									4
25-AK■		◆		M	42		36											6		
25-AT ■		X		M	60		31			12	13				2				2	
25-F4 ■		X		M/I	66		49				13		4							

X Completely tooled.
◆ Not tooled for 02-R.
P Available with Pin contacts only
S Available with Socket contacts only
P/S Available with Pin contacts or Socket contacts
★ Ground plane proprietary option available. Arrg. 9-5 is exclusively ground plane type.
■ Not Mil-Qualified.
✧ 21-75 is Mil-Qualified with twinax contacts only.
Note: MS connector 21-75 is supplied with size 8 twinax.
Commercial connector 21-75 is supplied with size 8 coax.

HD designates High Density 38999 Series III insert patterns which use size 23 contacts only. Not rated over 175°C.
* Hermetic inserts - solder termination standard. (Contact Amphenol Aerospace for optional PCB or eyelet termination).
** Two size 16 contacts dedicated to fiber optics. See the Fiber Optic section for more information.
*** For use in MIL-STD-1760 applications (see pages 75 and 76).
† For RG 180/U and RG 195/U cables only.
†† Size 8 Coax and Twinax are interchangeable.
(2) Not Tooled for RP or 02RE
(3) Pin inserts only, not tooled for RP or 02RE (Consult Amphenol Aerospace)
(5) MS Connector 21-79 has provision for two size 8 coax contacts. Coax contacts are not supplied unless specified by customer.

MIL-DTL-38999, Series III TV, HD

Amphenol Aerospace

Insert Availability and Identification Chart

Select Shell Size - Special Insert Arrangement

(Not Mil-Spec Qualified)

Shell Size-Insert Arrg.	Crimp	Hermetics*	Service Rating	Total Contacts	Comments	Contact Size			
						22D	20	16	12
9-2	X		I	2	Formerly Pyle		2		
15-4	X		II	4	Formerly Pyle			4	
15-25	X		M	25	Formerly Pyle	22		3	
17-20	X		M	20	Formerly Pyle	16			4
21-12	X		I	12	Formerly Pyle		3		9
21-21	X		M/Inst.	41	Improved sealing	32			9
21-99	X		M	16	Formerly Pyle	5			11
25-92	X		M	101	Formerly Pyle	92		9	
25-97	X		M	42	Formerly Pyle	26		3	13

Shell Size-Insert Arrg.	Crimp	Service Rating	Total Contacts	Contact Size				
				22D	20	8	4	0
25L-3	X	II	3			1	2	
25L-7	X	II	7			7		
33-3	X	II	3				1	2
33-5	X	II	5				5	
33-6	X	II	6			2	4	
37-5	X	II	4					4

Select Non-Standard Shell Size

- Special Insert Arrangement, contact Amphenol Aerospace for connector dimensional information

Modification Description	Mod Code	Plug	Jam Nut	Wall Mount
Power contacts to replace coax/ twinax	(PWR)	√	√	√
Deep Reach Version	(DP3) (DR5) (DR7)		√	√
Radsok Contacts	(RDS)	√	√	√
Temper Grip Contacts	(B65)	√	√	√
Outgassing (Space Grade)	(453)	√	√	√
5-Web Grommet Enhanced Sealing	(539)	√	√	√
AmpheSeal	(737)	√	√	√
High Vibration Plug - "RotoLok"	(474)	√		
Wing Nut Plug for Gloved Applications	(734)	√		
Spanner Nut in place of Hex Nut	(730)		√	
Jet Fuel Resistance	(481)	√	√	√
EMI Conductive O-Ring	(735)		√	
Compliant Pins/Press Fit Contacts	See AAO for details		√	√
First Mate Last Break Contacts	See AAO for details	√	√	√
Thermocouple Contacts	See AAO for details	√	√	√
Solder Cup Contacts	See AAO for details	√	√	√
Right Angle PCB Contacts	See AAO for details		√	√

Common Modification Options

(Contact Amphenol for more options)

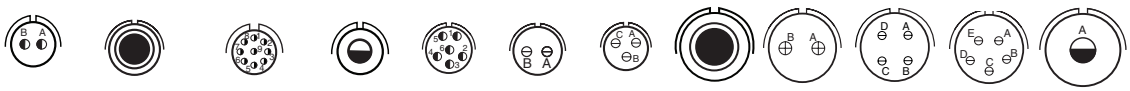
MIL-DTL-38999, Series III TV, HD

Insert Arrangements

Front face of pin inserts illustrated

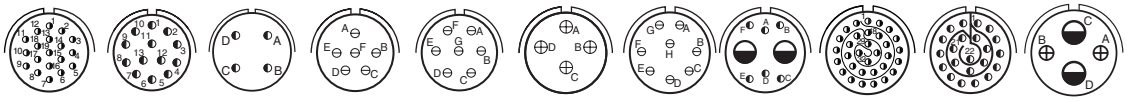
CX=Coax , TX=Twinax, P= Power

Shell Size & Insert Arrg. for:



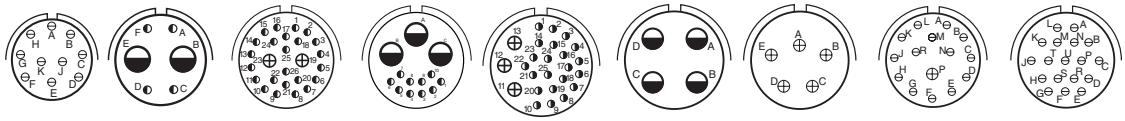
Series III TV	7-D2	9-5	9-9 HD	9-12	9-35	9-94	9-98	11-1	11-2	11-4	11-5	11-12
Service Rating	M	Grounded	N	M	M	M	I	I	I	I	I	II
Number of Contacts	2	1	9	1	6	2	3	1	2	4	5	1
Contact Size	22D	8 (TX)	23	12	22D	20	20	8 (TX)	16	20	20	12

Shell Size & Insert Arrg. for:



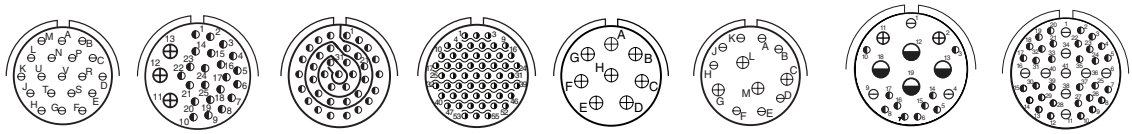
Series III TV	11-19 HD	11-35	11-54	11-98	11-99	13-4	13-8	13-26	13-32 HD	13-35	13-63
Service Rating	N	M	II	I	I	I	I	M	N	M	I
Number of Contacts	19	13	4	6	7	4	8	6 2	32	22	2 2
Contact Size	23	22D	22D	20	20	16	20	22D 12	23	22D	16 12

Shell Size & Insert Arrg. for:



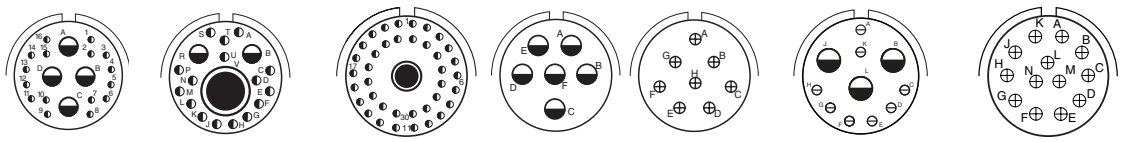
Series III TV	13-98	13-CB	15-AC	15-AT	15-BA	15-4	15-5	15-15	15-18
Service Rating	I	M	M	I	M	I	II	I	I
Number of Contacts	10	4 2	24 2	10 3	22 3	4	5	14 1	18
Contact Size	20	22D 12	22D 16	22D 12	22D 16	12	16	20 16	20

Shell Size & Insert Arrg. for:



Series III TV	15-19	15-25	15-35	15-55 HD	15-68	15-97	17-EA	17-EC
Service Rating	I	M	M	N	I	I	M	M
Number of Contacts	19	22 3	37	55	8	8 4	10 3 2 4	32 9
Contact Size	20	22D 16	22D	23	16	20 16	22D 20 16 12	22D 20

Shell Size & Insert Arrg. for:



Series III TV	17-EG	17-EL	17-2 | 17-3^	17-6	17-8	17-11	17-13
Service Rating	M	M	M	I	II	N	I
Number of Contacts	16 4	16 2 1	38 1	6	8	1 2 8	13
Contact Size	22D 12	22D 12 8 (TX)	22D 8 (TX)	12	16	12 (CX) 12 (TX) 20	16

HD: High Density HD38999
(use size 23 contacts only)



CONTACT LEGEND 8 10 12 16 20 22 22M 22D 23

MIL-DTL-38999, Series III TV, HD

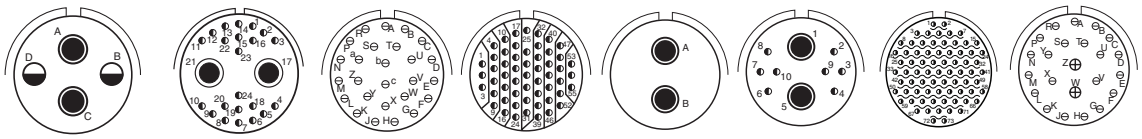
Insert Arrangements

Amphenol Aerospace

Front face of pin inserts illustrated

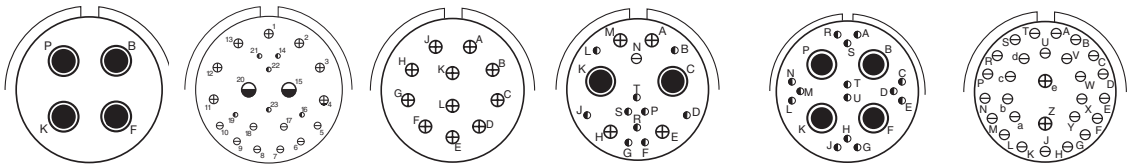
CX=Coax , TX=Twinax, P= Power

Shell Size & Insert Arrg. for:



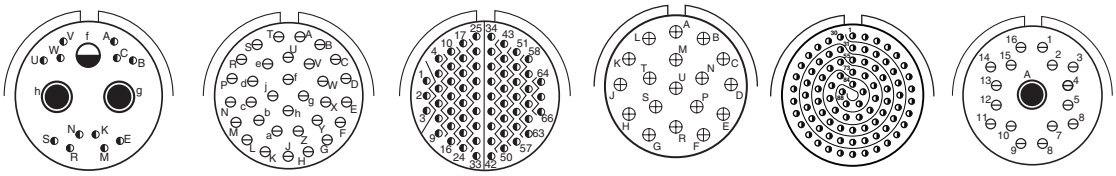
Series III TV	17-22		17-25		17-26	17-35	17-52	17-60		17-73 HD	17-99	
Service Rating	Coax		M		I	M	M	I/Coax		N	I	
Number of Contacts	2	2	22	2	26	55	2	8	2	73	21	2
Contact Size	12 (CX)	8 (CX)	22D	8 (CX)	20	22D	8 (TX)	22D	8 (CX)	23	20	16

Shell Size & Insert Arrg. for:



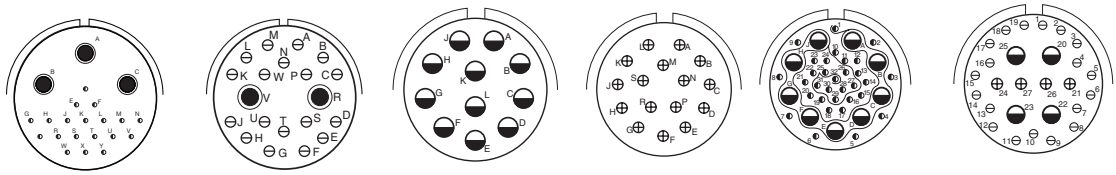
Series III TV	19-A4	19-FA				19-11	19-17				19-18 | 19-19^		19-28	
Service Rating	M	M				II	M				M		M	
Number of Contacts	4	6	8	7	2	11	10	1	4	2	14	4	26	2
Contact Size	8 (TX)	22D	20	16	12	16	22D	20	16	8 (TX)	22D	8 (TX)	20	16

Shell Size & Insert Arrg. for:



Series III TV	19-31			19-32	19-35	19-68	19-88 HD	19-AD	
Service Rating	M			1	M	I	N	Inst.	
Number of Contacts	12	1	2	32	66	18	88	16	1
Contact Size	22D	12	8 (CX)	20	22D	16	23	20	8 (TX)

Shell Size & Insert Arrg. for:



Series III TV	21-AZ		21-AJ		21-11	21-16	21-21		21-29		
Service Rating	II		M		I	II	M		I		
Number of Contacts	3	19	18	2	11	16	9	32	19	4	4
Contact Size	8 (P)	22D	20	8 (TX)	12	16	12	22D	20	16	12

CONTACT LEGEND 8 · 10 · 12 · 16 · 20 · 22 · 22M · 22D · 23

HD: High Density HD38999 (use size 23 contacts only)

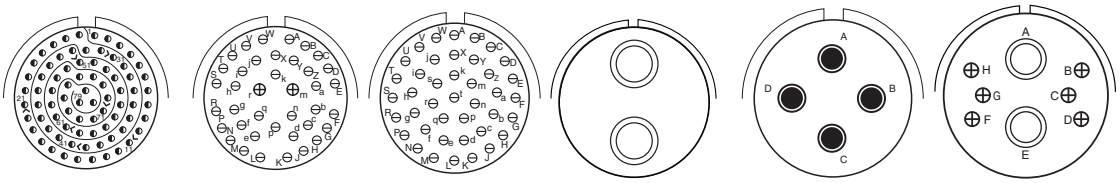
MIL-DTL-38999, Series III TV, HD

Insert Arrangements

Front face of pin inserts illustrated

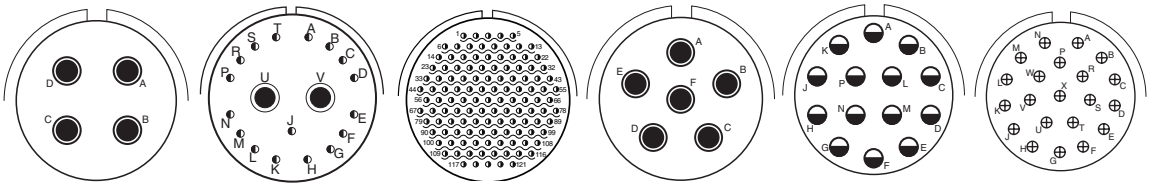
CX=Coax , TX=Twinax, P= Power

Shell Size &
Insert Arrg. for:



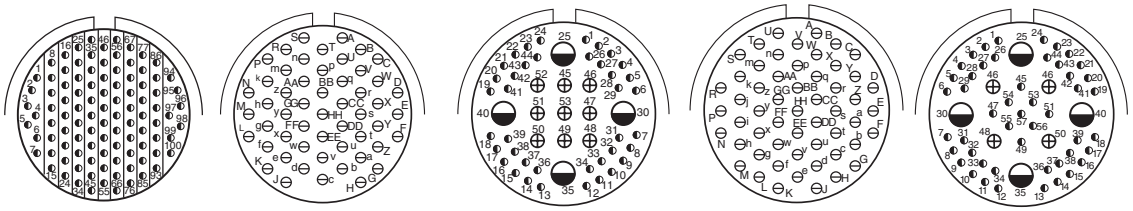
Series III TV	21-35	21-39		21-41	21-42	21-A48	21-72	
Service Rating	M	I		I	I	M	I	
Number of Contacts	79	37	2	41	2	4	6	2
Contact Size	22D	20	16	20	4	8 (P)	16	4

Shell Size &
Insert Arrg. for:



Series III TV	21-75 | 21-76^	21-79	21-121 HD	23-6	23-14	23-21
Service Rating	N	II	N	M	I	II
Number of Contacts	4	17 (See Note)	121	6	14	21
Contact Size	(See Note)	22D	23	8 (TX)	12	16

Shell Size &
Insert Arrg. for:



Series III TV	23-35	23-53	23-54			23-55	23-63		
Service Rating	M	I	M			I	M		
Number of Contacts	100	53	40	9	4	55	49	4	4
Contact Size	22D	20	22D	16	12	20	22D	16 (CX)	12 (CX)

HD: High Density HD38999 (use size 23 contacts only)
Note: MS connector 21-75 is supplied with four size 8 twinax contacts.
Commercial connector 21-75 is supplied with four size 8 coax contacts.
MS connector 21-79 has provision for two size 8 coax contacts.
Coax contacts are not supplied unless specified by customers.



MIL-DTL-38999, Series III TV

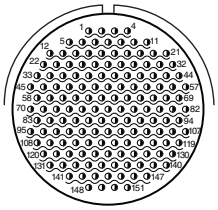
Amphenol Aerospace

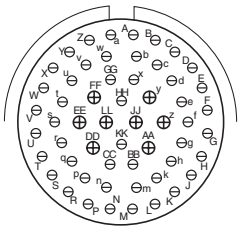
Insert Arrangements

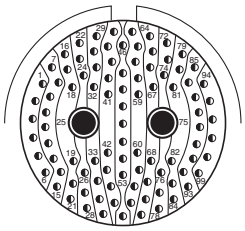
Front face of pin inserts illustrated

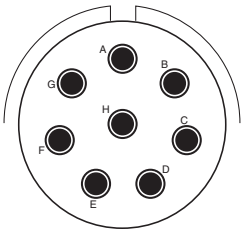
CX=Coax , TX=Twinax, P= Power

Shell Size & Insert Arrg. for:



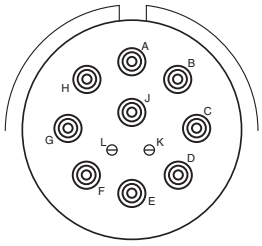


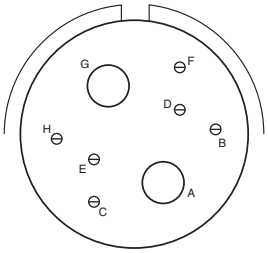


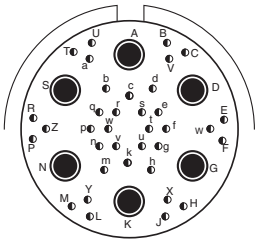


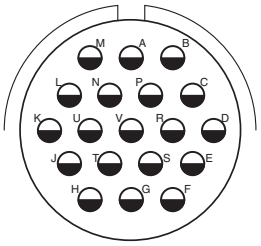
Series III TV	23-151 HD	25-4		25-7 | 25-9^		25-8 | 25-10^ | 25-88
Service Rating	N	I		M		Twinax / Coax
Number of Contacts	151	48	8	97	2	8
Contact Size	23	20	16	22D	8 TX	8 (TX) | 8 (CX) | (88)

Shell Size & Insert Arrg. for:



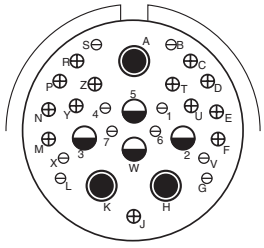


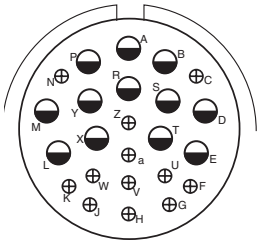


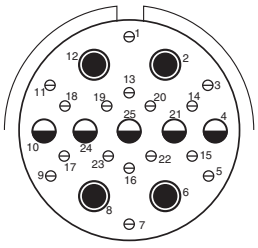


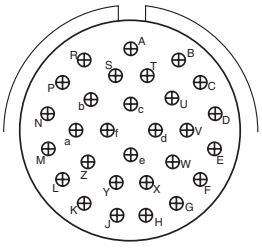
Series III TV	25-11***		25-16		25-17 | 25-AK		25-19
Service Rating	N		M		M		I
Number of Contacts	2	9	6	2	36	6	19
Contact Size	20	10	20	4	22D	8 (TX) | 8 (CX)	12

Shell Size & Insert Arrg. for:









Series III TV	*** 25-20 | 25-21^				25-24		25-26			25-29
Service Rating	N				I		I			I
Number of Contacts	10	13	3	4	12	12	16	5	4	29
Contact Size	20	16	8 (TX)	12 (CX)	16	12	20	12	8 (CX)	16
	(With Matched Impedance)									

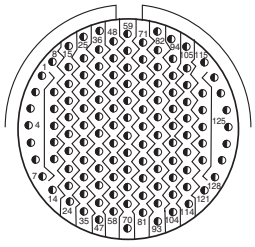
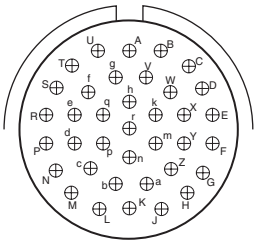
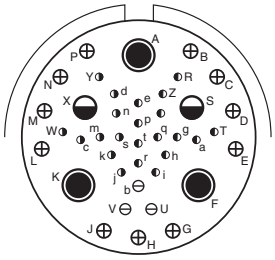
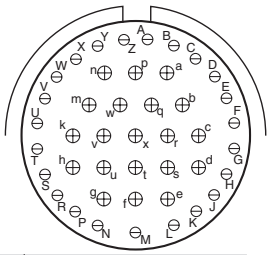
CONTACT LEGEND 8 10 12 16 20 22 22M 22D 23

MIL-DTL-38999, Series III TV, HD

Insert Arrangements

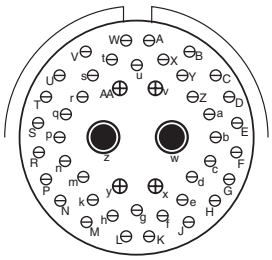
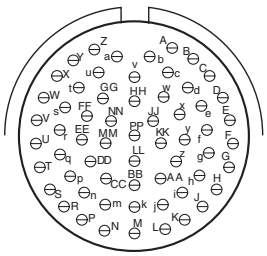
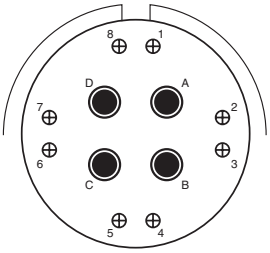
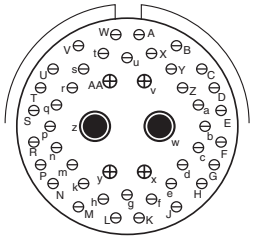
Front face of pin inserts illustrated

Shell Size & Insert Arrg. for:

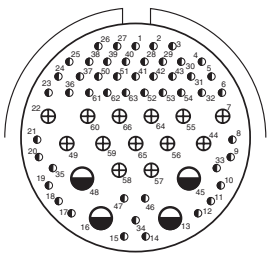
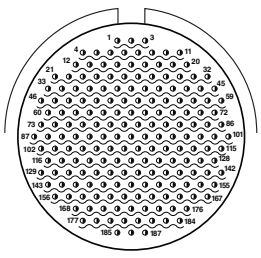
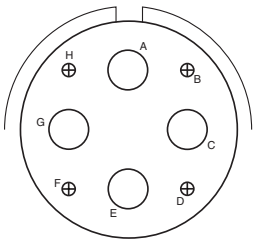
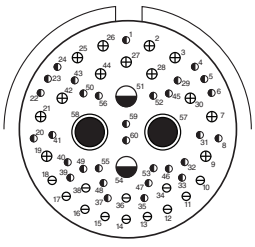
Series III TV	25-35	25-37	25-41					25-43	
Service Rating	M	I	N/Inst.					I	
Number of Contacts	128	37	22	3	11	2	3	23	20
Contact Size	22D	16	22D	20	16	12 (CX)	8 (TX)	20	16

Shell Size & Insert Arrg. for:

Series III TV	25-46 | 25-47^			25-61	25-62		25-90 | 25-91^		
Service Rating	I			I	I		I		
Number of Contacts	40	4	2	61	8	4	40	4	2
Contact Size	20	16	8 (CX) †	20	16	8	20	16	8 (TX)
					Ground Plane Only				

Shell Size & Insert Arrg. for:

Series III TV	25-F4			25-187 HD	25-1A		25-AT				
Service Rating	Size 22D=M, Balance =I			N	N		N				
Number of Contacts	49	13	4	187	4	4	31	12	13	2	2
Contact Size	22D	16	12	23	16	4	22D	20	16	12	10

NOTE: Some specials shown here were formerly known as Pyle arrangements.
Consult Amphenol for how to order information for connectors with these inserts.
For further information on special arrangements consult Amphenol Aerospace, Sidney NY.
* Pyle 15-4 does not mate with Amphenol Tri-Start 15-4 insert.

† Coax contacts for RG180/U or RG195/U cable.

CONTACT LEGEND 8 10 12 16 20 22 22M 22D 23

HD: High Density HD38999 (use size 23 contacts only)

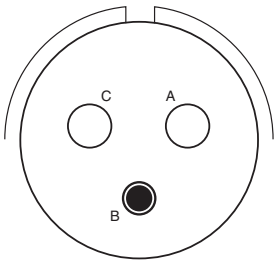
MIL-DTL-38999, Series III TV

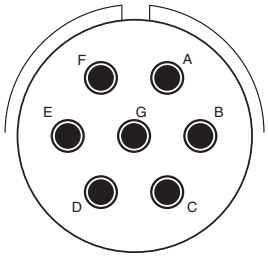
Amphenol Aerospace

Special Insert Arrangements - Non-Standard Shells or Large Contacts

Non-Standard Shells or Large Contacts

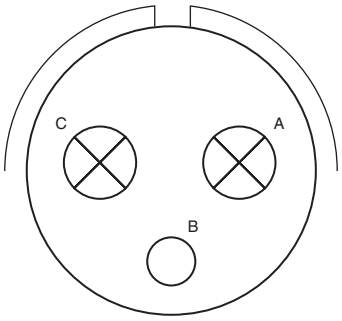
Front face of pin inserts illustrated

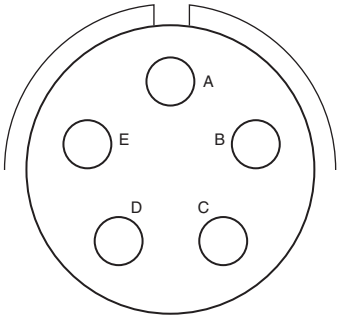


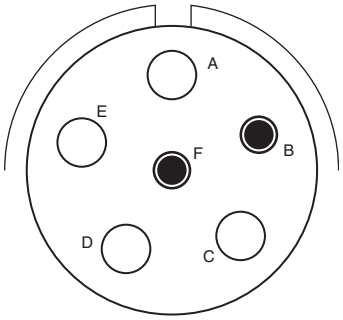


Shell Size & Insert Arrg. for:

Series III TV	25L-3		25L-7
Service Rating	II		II
Number of Contacts	1	2	7
Contact Size	8	4	8

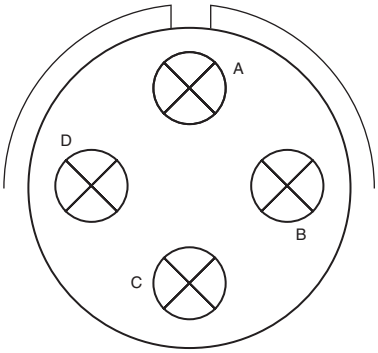






Shell Size & Insert Arrg. for:

Series III TV	33-3		33-5	33-6	
Service Rating	II		II	II	
Number of Contacts	1	2	5	2	4
Contact Size	4	0	4	8	4

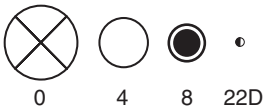


Shell Size & Insert Arrg. for:

Series III TV	37-5
Service Rating	II
Number of Contacts	4
Contact Size	0

NOTE: Some specials shown here were formerly known as Pyle arrangements. Consult Amphenol for how to order information for connectors with these inserts.
Consult Amphenol Aerospace for longer shell drawings.

CONTACT LEGEND



Alternate Keying Information

6. Select a Alternate Keying

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

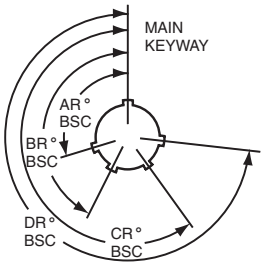
Shell Size	Key & Keyway Arrangement Identification Letter	AR° or AP° BSC	BR° or BP° BSC	CR° or CP° BSC	DR° or DP° BSC
7, 7H	N*	120	240	NA	NA
	A	132	248		
	B	80	230		
	C	140	275		
	D	155	234		
	E	131	197		
9	N*	105	140	215	265
	A	102	132	248	320
	B	80	118	230	312
	C	35	140	205	275
	D	64	155	234	304
	E	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
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
	E	79	153	188	272

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

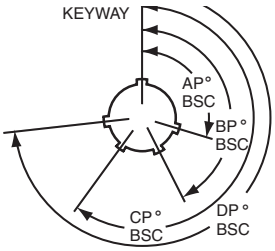
Key/Keyway Position

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.

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.

MIL-DTL-38999, Series III TV, HD

Amphenol Aerospace

Contact Ratings/ Service Ratings

CONTACT RATING FOR TV III, HD

Contact Size	Test Current (Amps)		Maximum Millivolt Drop Crimp*	Maximum Millivolt Drop
	Crimp	Hermetic		Hermetic*
23	5	3	73	85
22M	3	2	45	60
22D	5	3	73	85
22	5	3	73	85
20	7.5	5	55	60
16	13	10	49	85
12	23	17	42	85
10 (Power)	33	NA	33	NA
8 (Power)	46	NA	26	NA
4	80	NA	23	NA
0	150	NA	21	NA

*When tested using silver plated wire.

Contact Size	Crimp Well Data		Solder Well Data	
	Well Diameter	Normal Well Depth	Well Diameter	Nominal Well Depth
23	.0345 ± .0010	.141	.0345 ± .0010	.130
22M	.028 ± .001	.141	.029 +.004 – .000	
22D	.0345 ± .0010	.141	.036 +.004 -.000	.094
22	.0365 ± .0010	.141	.036 +.004 -.000	.094
20	.047 ± .001	.209	.044 +.004 -.004	.125
16	.067 ± .001	.209	.078 +.000 -.004	.141
12	.100 ± .002	.209	.116 +.004 -.002	.141
10 (Power)	.137 ± .002	.355	NA	NA
8	.181 ± .002	.490	NA	NA
4	.281 ± .002	.490	NA	NA
0	.453 ± .002	.585	NA	NA

MIL-DTL-38999 SERIES III STANDARD 500 CYCLE CONTACTS FOR TV AND CTV, P & S

Contact Size	TV/CTV Pins		TV/CTV Sockets	
	Military No.	Supersedes	Military No.	Supersedes
8 (Coax)*	M39029/60-367	MS27536	M39029/59-366	MS27535
8 (Power)	Contact Factory	"	"	"
8 (Twinax)	M39029/90-529**	N/A	M39029/91-530	N/A
10 (Power)	M39029/58-528	N/A	M39029/56-527	N/A
12	M39029/58-365	MS27493-12	M39029/56-353	MS27490-12
16	M39029/58-364	MS27493-16	M39029/56-352	MS27490-16
20	M39029/58-363	MS27493-20	M39029/56-351	MS27490-20
22D	M39029/58-360	MS27493-22D	M39029/56-348	MS27490-22D
4	N/A	N/A	N/A	N/A
0	N/A	N/A	N/A	N/A

Above part numbers include standard 500 cycle finish designation - gold plating over suitable underplate in accordance with SAE AS39029. For other finish variations, consult Amphenol Aerospace.

*For use with RG180B/U and RG195A/U cable. For other size 8 coax or optional sizes 12 and 16 coax contacts available for use in Tri-Start connectors, see High Speed catalog or consult Amphenol Aerospace.

MIL-DTL-38999 SERIES III 1500 CYCLE CONTACTS, CLASSES H & J

Contact Size	CTV Pins			CTV Sockets		
	Commercial No.	Military No.	Supersedes	Commercial No.	Military No.	Supersedes
12	10-597072-2X	M39029/107-623	–	10-597073-2X	M39029/106-617	–
16	10-597068-2X	M39029/107-622	–	10-597069-2X	M39029/106-616	–
20	10-597064-2X	M39029/107-621	–	10-597065-2X	M39029/106-615	–
22D	10-597058-3X	M39029/107-620	–	10-597061-2X	M39029/106-614	–

MIL-DTL-38999, Series III TV

Service Rating/Sealing Plugs

SERVICE RATING**

Service Rating	Suggested Oper. Voltage (Sea Level)		Test Voltage (Sea Level)	Test Voltage 50,000 Ft.	Test Voltage 70,000 Ft	Test Voltage 110,000 Ft.
	AC (RMS)	DC				
M	400	500	1300 VRMS	550 VRMS	350 VRMS	200 VRMS
N	300	450	1000 VRMS	400 VRMS	260 VRMS	200 VRMS
I	600	850	1800 VRMS	600 VRMS	400 VRMS	200 VRMS
II	900	1250	2300 VRMS	800 VRMS	500 VRMS	200 VRMS

** Please note that the establishment of electrical safety factors is left entirely in the designer's hands, since they are in the best position to know what peak voltage, switching surges, transients, etc. can be expected in a particular circuit.

MIL-DTL-38999 SERIES III
SEALING PLUGS

Contact Size	Commercial No.	Military No.
8 (Coax)	10-482099-8	N/A
8 (Twinax)	T3-4008-59P	N/A
8 (Power)	10-405996-83	MS27488-8-3
10 (Power)	T3-4010-59P	M85049/81-10
12	10-405996-122	MS27488-12-2
16	10-405996-162	MS27488-16-2
20	10-405996-202	MS27488-20-2
22D	10-405996-222	MS27488-22-2
4	10-405996-43	MS27488-4-3
0	10-405996-03	MS27488-0-3

Standard Amphenol Contact AWG Ranges		
Contact Size	Max	Min
23-22	22	28
22D	22	28
22M	24	28
22	22	26
20	20	24
16	16	20
12 (Power)	12	14
10 (Power)	10	12*
8 (Power)	8	10*
4 (Power)	4	6*
0 (Power)	0	2*

*with crimp reducing adapter/bushing AS39029/112

** For use with M17/M176-00002 cable.
† Optional design - see slash sheet MS39029.
For other contact options available for use in Tri-Start connectors (wire wrap, thermocouple, fiber optic), consult Amphenol.