

# P3D – D38999 SERIES III

## 3D PRINTED INSERTS AND RAPID PROTOTYPING

Amphenol Aerospace is leading the charge on 3D printed inserts. Utilizing ground breaking in-house capability and industry leading partners, Amphenol can design and manufacture a custom insert assembly in days, not weeks.

### INTRODUCING P3D-D38999 SERIES III:

- Performance comparable to D38999 (see table on page 2)
- No tooling required for new insert patterns
- Perfect for new design prototyping
- Low Risk – Easy to change designs if needed
- Currently available as a prototype unit only, production-certified units coming soon

### AVAILABILITY:

- D38999 Series III available now with standard aluminum shells
- Ability to migrate design to other connector series
- Custom shells available, contact factory for availability
- Non-conductive composite shells available



### PROTOTYPING:

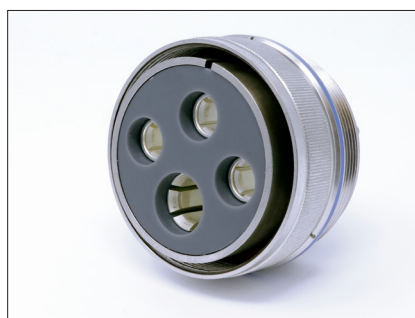
From new design development to small quantities of engineering-built prototypes, PoC is enabling Amphenol to further assist our customers.

- Simple machining
- Part modification
- Assembly
- 3D printed fit-check parts
- Quick turn component sourcing
- Engineering design consulting
- Prototypes ranging from semi to fully functional parts



# PERFORMANCE CHART

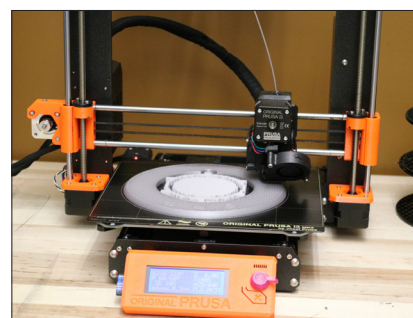
Test Requirement	Connector	
	D38999	P3D (Metal Shells)
Maintenance Aging	10 Cycles	5 Cycles
Temperature Cycling	-65C to 175C	-55C to 125C
Coupling and Uncoupling Torque	Equivalent	Equivalent
Durability	Equivalent	Equivalent
Altitude Immersion	Per D38999	N/A
Insert Retention	Equivalent	Equivalent
Shell To Shell Conductivity	Equivalent	Equivalent
Salt Spray	Equivalent	Equivalent
Electrical Engagement	Equivalent	Equivalent
External Bending Moment	Equivalent	Equivalent
Contact Retention	Equivalent	Equivalent
Insulation Resistance	Per D38999	Equivalent, up to 125C
Dielectric Withstanding Voltage	Per D38999	Equivalent, Sea Level Only
Accessory Thread Strength	Equivalent	Equivalent
Vibration	Per D38999	Per D38999, Ambient Temperature
Shock	Per D38999	Per D38999, Ambient Temperature
High Temperature Exposure	Per D38999	Up To 125C
Shell Spring Finger Forces	Equivalent	Equivalent
EMI Shielding	Equivalent	Equivalent
Pin Contact Stability	Equivalent	Equivalent
Contact Walkout	Equivalent	Equivalent
High Temperature Exposure w/ Loading	Per D38999	Up To 100C



P3D Matrix 5015








P3D MGT- 5015



**FOR INFORMATION ON OTHER 3D PRINTED CONNECTOR LINES CONTACT AMPHENOL**

## CLASS DESCRIPTION

Military	Finish	RoHS	Material/Description	Typical Lead Time
RF	Electroless Nickel		Aluminum, 48 hrs. salt spray, 200°C	2-3 Weeks
RKN	Passivated Stainless Steel		Non-firewall capability, plus 500 hrs. salt spray resistance, 200°C	3-6 Weeks
RL	Stainless Steel with Nickel Plate		Corrosion resistant steel, 500 hrs. salt spray, 200°C	3-6 Weeks
RW	Olive Drab Cadmium		Aluminum, 500 hrs. extended salt spray, 175°C	2-3 Weeks
DT	Durmalon Plating		Nickel-PTFE alternative to Cadmium, 500 hrs. extended salt spray, 175°C	3-6 Weeks
DZ	Zinc-Nickel Plated		Zinc-Nickel Alternative to Cadmium, 500 hrs. salt spray, 175°C	3-6 Weeks

## DESIGN YOUR OWN ARRANGEMENT

Contact Size	Test Current (AMPS)	
	Crimp	# Requested
22D	5	
20	7.5	
16	13	
12	23	
8	60	

Amphenol is pleased to offer an all new service, the ability for customers to design their own insert arrangement. Specify the number of conductors needed for each contact size, as well as the desired Service Rating (Default is M). Amphenol will get back to you with the shell size required to fit the contacts at your requested service rating, as well as a contact pattern designed with proper spacing and best engineering practices.

You can also receive a quote for the same custom arrangement in a standard D38999 molded insert, standard leadtime applies + additional lead-time for mold tooling design and manufacture

### SERVICE RATING\*\*

Service Rating	Suggested Oper. Voltage (Sea Level)		Test Voltage (Sea Level)
	AC (RMS)	DC	
M	400	500	1300 VRMS
N	300	450	1000 VRMS
I	600	850	1800 VRMS
II	900	1250	2300 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.

### STANDARD INSERT ARRANGEMENTS:

Please see Amphenol's D38999 Standard Catalog for available arrangements.

<http://www.amphenol-aerospace.com/pdf/catalogs/Amphenol-38999.pdf>

In most cases MIL-DTL-D38999 qualified connectors with standard arrangements can be purchased direct or through one of Amphenol's Distribution Partners (list below), however P3D is an excellent option for less common arrangements that may not be as readily available.

<http://www.amphenol-aerospace.com/distributors.html>

# HOW TO ORDER- FOR AVAILABILITY REFERENCE ONLY

## P3D D38999

Contact Product Manager with reference part number for a prototype, not available for standard quoting/purchasing process

1.	2.	3.	4.	5.	6.
Connector Type	Shell Style	Finish	Shell Size-Insert Arrangement	Contacts-Pin or Socket	Alternate Positions
XP3D	00	RF	25-35	P	**






### 1. Connector Type

**XP3D** D38999 with 3D Printed Inserts

### 2. Shell Style

<b>00</b>	Wall mount receptacle
<b>02</b>	Box mount receptacle
<b>06</b>	Straight plug
<b>07</b>	Jam Nut Receptacle
<b>XX</b>	Other shell styles may be available, contact Amphenol for availability and lead time

### 3. Finish

<b>DT</b>	Durmalon (PTFE): plated alternative to cadmium. Corrosion resistant, 500 hrs. extended salt spray, 175°C	
<b>DZ</b>	Black Zinc-Nickel: alternative to cadmium. 500 hrs. salt spray, conductive, 175°C	
<b>RF</b>	Electroless nickel plated aluminum: 48 hrs salt spray, 200°C	
<b>RW</b>	Corrosion resistant olive drab cadmium: plated aluminum, 500 hrs. extended salt spray, 175°C	
<b>RL</b>	Corrosion resistant steel: electro deposited nickel, 500 hrs. salt spray, non firewall, 200°C	
<b>RKN</b>	Corrosion resistant stainless steel: Non-firewall capability, plus 500 hrs. salt spray resistance, 200°C	

\*Contact factory for custom plating options

### 4. Shell Size & Insert Arrangement

All Mil-spec arrangements available. For custom arrangements contact Amphenol Aerospace

### 5. Contacts

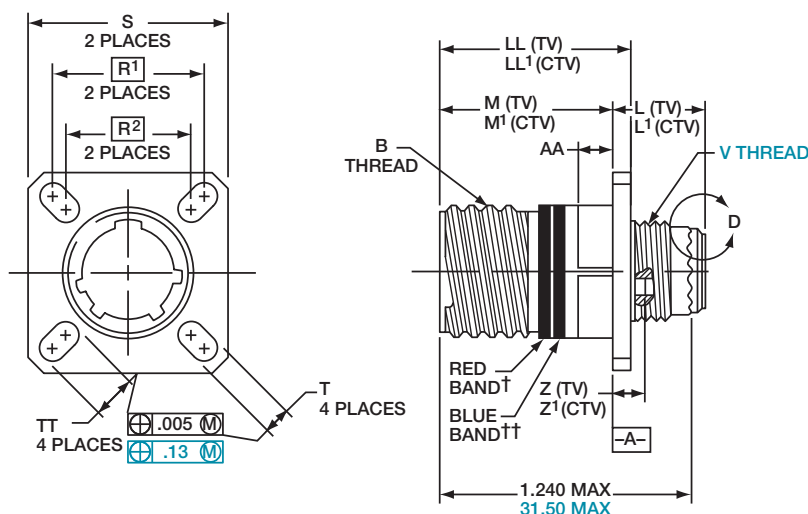
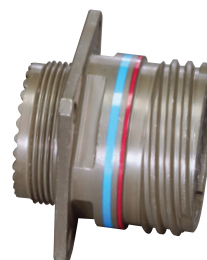
<b>S</b>	Socket
<b>P</b>	Pin

### 6. Alternate Positions

"A, B, C, D, E" Keying may be available for extended lead times, contact Amphenol Aerospace for availability

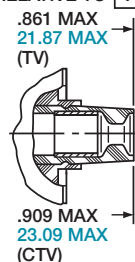
# WALL MOUNTING RECEPTACLE

XP3D-00

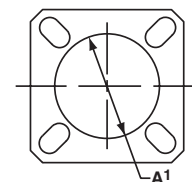


† Red band indicates fully mated  
†† Blue band indicates rear release contact retention system

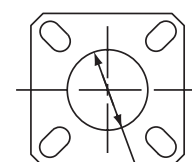
VIEW D  
FOR SIZE 8 COAXIAL ONLY,  
RELATIVE TO -A-



PANEL HOLE DIMENSIONS

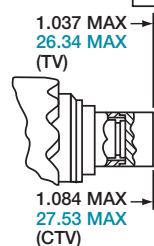


BACK PANEL MOUNTING



FRONT PANEL MOUNTING

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



INCHES

Shell Size	MS Shell Size Code	B Thread Class 2A 0.1P=0.3L-TS (Plated)	L Max. (TV)	L' Max. (CTV)	M +.000 - .005 (TV)	M' +.000 - .005 (CTV)	R1	R2	S Max.	T ±.008	Z Max. (TV)	Z' Max. (CTV)	A1 Back Panel Mount	A2 Front Panel Mount	AA Max. Panel Thickness	LL +.006 - .000 (TV)	LL1 ±.005 (CTV)	TT ±.008
9	A	.6250	.469	.514	.820	.773	.719	.594	.948	.128	.153	.198	.655	.516	.234	.905	.908	.216
11	B	.7500	.469	.514	.820	.773	.812	.719	1.043	.128	.153	.198	.796	.625	.234	.905	.908	.194
13	C	.8750	.469	.514	.820	.773	.906	.812	1.137	.128	.153	.198	.922	.750	.234	.905	.908	.194
15	D	1.0000	.469	.514	.820	.773	.969	.906	1.232	.128	.153	.198	1.047	.906	.234	.905	.908	.173
17	E	1.1875	.469	.514	.820	.773	1.062	.969	1.323	.128	.153	.198	1.219	1.016	.234	.905	.908	.194
19	F	1.2500	.469	.514	.820	.773	1.156	1.062	1.449	.128	.153	.198	1.297	1.141	.234	.905	.908	.194
21	G	1.3750	.500	.545	.790	.741	1.250	1.156	1.575	.128	.183	.228	1.442	1.266	.204	.905	.904	.194
23	H	1.5000	.500	.545	.790	.741	1.375	1.250	1.701	.154	.183	.228	1.547	1.375	.204	.905	.904	.242
25	J	1.6250	.500	.545	.790	.741	1.500	1.375	1.823	.154	.183	.228	1.672	1.484	.204	.905	.904	.242

MILLIMETERS

Shell Size	MS Shell Size Code	L Max. (TV)	L' Max. (CTV)	M +.00 - .13 (TV)	M' +.00 - .13 (CTV)	R1	R2	S Max.	T ±.20	V Thread Metric	Z Max. (TV)	Z' Max. (CTV)	A1 Back Panel Mount	A2 Front Panel Mount	AA Max.	LL +.15 - .00 (TV)	LL1 ±.13 (CTV)	TT ±.20
9	A	11.91	13.06	20.83	19.63	18.26	15.09	24.1	3.25	M12X1-6g	3.89	5.03	16.66	13.11	5.94	22.99	23.06	5.49
11	B	11.91	13.06	20.83	19.63	20.62	18.26	26.5	3.25	M15X1-6g	3.89	5.03	20.22	15.88	5.94	22.99	23.06	4.93
13	C	11.91	13.06	20.83	19.63	23.01	20.62	28.9	3.25	M18X1-6g	3.89	5.03	23.42	19.05	5.94	22.99	23.06	4.93
15	D	11.91	13.06	20.83	19.63	24.61	23.01	31.3	3.25	M22X1-6g	3.89	5.03	26.59	23.01	5.94	22.99	23.06	4.39
17	E	11.91	13.06	20.83	19.63	26.97	24.61	33.7	3.25	M25X1-6g	3.89	5.03	30.96	25.81	5.94	22.99	23.06	4.93
19	F	11.91	13.06	20.83	19.63	29.36	26.97	36.9	3.25	M28X1-6g	3.89	5.03	32.94	28.98	5.94	22.99	23.06	4.93
21	G	12.70	13.84	20.07	18.82	31.75	29.36	40.1	3.25	M31X1-6g	4.65	5.79	36.12	32.16	5.18	22.99	22.96	4.93
23	H	12.70	13.84	20.07	18.82	34.93	31.75	43.3	3.91	M34X1-6g	4.65	5.79	39.29	34.93	5.18	22.99	22.96	6.15
25	J	12.70	13.84	20.07	18.82	38.10	34.93	46.4	3.91	M37X1-6g	4.65	5.79	42.47	37.69	5.18	22.99	22.96	6.15

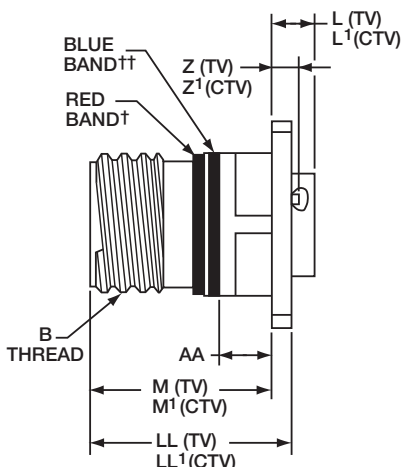
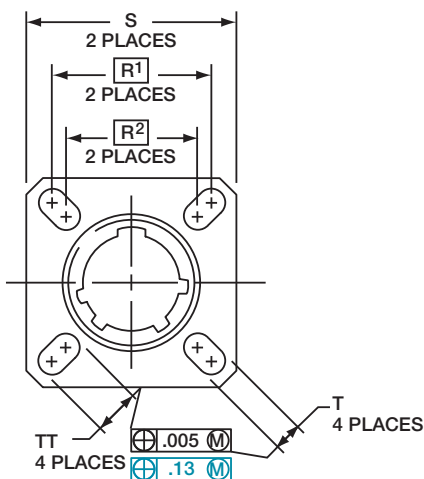
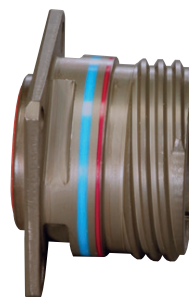
All dimensions for reference only

□ Designates true position dimensioning

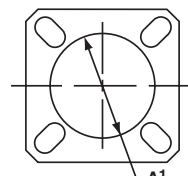
For more information and a quote,  
Contact Joe Ryder • Office: +1 (607) 563-5001 • Email: jryder@amphenol-aao.com

# BOX MOUNTING RECEPTACLE

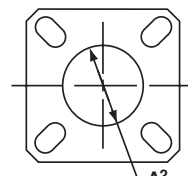
XP3D-02



## PANEL HOLE DIMENSIONS



## BACK PANEL MOUNTING



## FRONT PANEL MOUNTING

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

Consult Amphenol Aerospace for availability of composite box mount receptacles.

INCHES

Shell Size	MS Shell Size Code	B Thread Class 2A 0.1P=0.3L-TS (Plated)	L Max. (TV)	L1 Max. (CTV)	M +.000 - .005 (TV)	M1 +.000 - .005 (CTV)	R1	R2	S Max.	T ±.008	Z Max. (TV)	Z1 Max. (CTV)	A1 Back Panel Mount	A2 Front Panel Mount	AA Max. Panel Thickness	LL +.006 - .000 (TV)	LL1 ±.005 (CTV)	TT ±.008
9	A	.6250	.205	.250	.820	.773	.719	.594	.948	.128	.153	.198	.650	.510	.234	.905	.908	.216
11	B	.7500	.205	.250	.820	.773	.812	.719	1.043	.128	.153	.198	.800	.620	.234	.905	.908	.194
13	C	.8750	.205	.250	.820	.773	.906	.812	1.137	.128	.153	.198	.910	.740	.234	.905	.908	.194
15	D	1.0000	.205	.250	.820	.773	.969	.906	1.232	.128	.153	.198	1.040	.900	.234	.905	.908	.173
17	E	1.1875	.205	.250	.820	.773	1.062	.969	1.323	.128	.153	.198	1.210	1.010	.234	.905	.908	.194
19	F	1.2500	.205	.250	.820	.773	1.156	1.062	1.449	.128	.153	.198	1.280	1.130	.234	.905	.908	.194
21	G	1.3750	.235	.280	.790	.741	1.250	1.156	1.575	.128	.183	.228	1.410	1.250	.204	.905	.904	.194
23	H	1.5000	.235	.280	.790	.741	1.375	1.250	1.701	.154	.183	.228	1.530	1.360	.204	.905	.904	.242
25	J	1.6250	.235	.280	.790	.741	1.500	1.375	1.823	.154	.183	.228	1.660	1.470	.204	.905	.904	.242

MILLIMETERS

Shell Size	MS Shell Size Code	L Max. (TV)	L1 Max. (CTV)	M +.00 - .13 (TV)	M1 +.00 - .13 (CTV)	R1	R2	S Max.	T ±.20	Z Max. (TV)	Z1 Max. (CTV)	A1 Back Panel Mount	A2 Front Panel Mount	AA Max.	LL +.15 - .00 (TV)	LL1 ±.13 (CTV)	TT ±.20
9	A	5.21	6.35	20.83	19.63	18.26	15.09	24.1	3.25	3.89	5.03	16.66	13.11	5.94	22.99	23.06	5.49
11	B	5.21	6.35	20.83	19.63	20.62	18.26	26.5	3.25	3.89	5.03	20.22	15.88	5.94	22.99	23.06	4.93
13	C	5.21	6.35	20.83	19.63	23.01	20.62	28.9	3.25	3.89	5.03	23.42	19.05	5.94	22.99	23.06	4.93
15	D	5.21	6.35	20.83	19.63	24.61	23.01	31.3	3.25	3.89	5.03	26.59	23.01	5.94	22.99	23.06	4.39
17	E	5.21	6.35	20.83	19.63	26.97	24.61	33.7	3.25	3.89	5.03	30.96	25.81	5.94	22.99	23.06	4.93
19	F	5.21	6.35	20.83	19.63	29.36	26.97	36.9	3.25	3.89	5.03	32.94	28.98	5.94	22.99	23.06	4.93
21	G	5.97	7.11	20.07	18.82	31.75	29.36	40.1	3.25	4.65	5.79	36.12	32.16	5.18	22.99	22.96	4.93
23	H	5.97	7.11	20.07	18.82	34.92	31.75	43.3	3.91	4.65	5.79	39.29	34.93	5.18	22.99	22.96	6.15
25	J	5.97	7.11	20.07	18.82	38.10	34.92	46.4	3.91	4.65	5.79	42.47	37.69	5.18	22.99	22.96	6.15

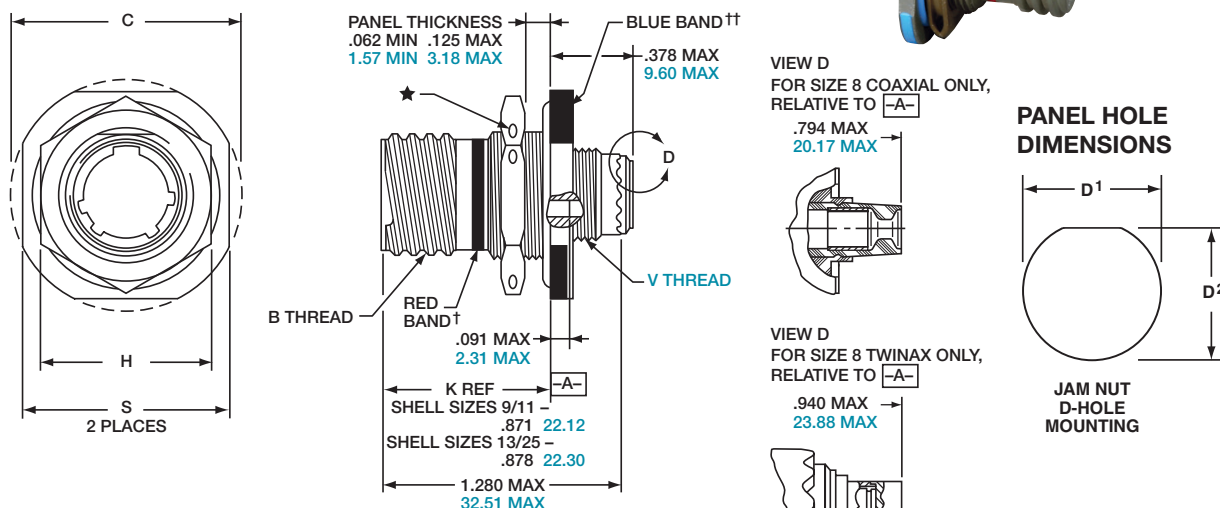
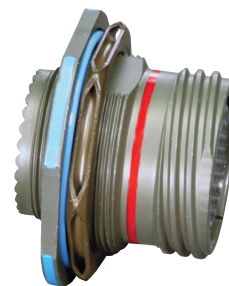
All dimensions for reference only

Designates true position dimensioning

**For more information and a quote,**  
Contact Joe Ryder • Office: +1 (607) 563-5001 • Email: jryder@amphenol-aao.com

# JAM NUT RECEPTACLE

XP3D-07



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

MILLIMETERS

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

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

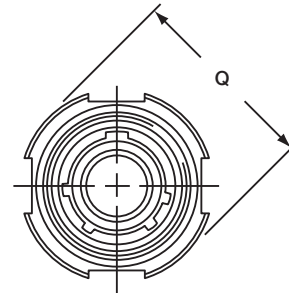
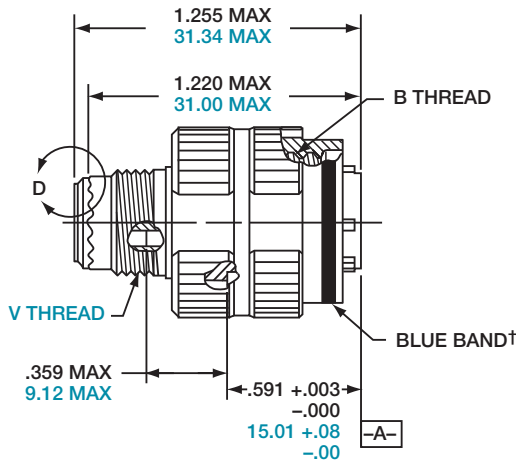
**For more information and a quote,**  
 Contact Joe Ryder • Office: +1 (607) 563-5001 • Email: jryder@amphenol-aao.com

# STRAIGHT PLUG

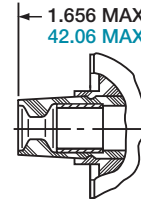
XP3D-06



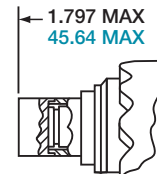
## METAL



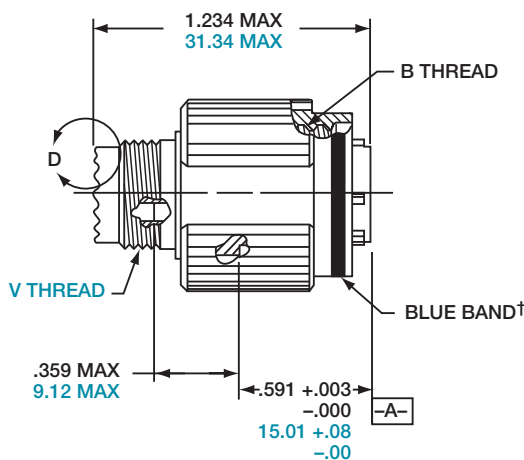
VIEW D  
FOR SIZE 8 COAXIAL ONLY,  
RELATIVE TO -A-



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



## COMPOSITE



† Blue band indicates rear release contact retention system

### INCHES

Shell Size	MS Shell Size Code	B Thread 0.1P-0.3L-TS-2B (Plated)	Q Dia. Max.
9	A	.6250	.858
11	B	.7500	.984
13	C	.8750	1.157
15	D	1.0000	1.280
17	E	1.1875	1.406
19	F	1.2500	1.516
21	G	1.3750	1.642
23	H	1.5000	1.768
25	J	1.6250	1.890

### MILLIMETERS

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

All dimensions for reference only.