

Amphenol

Subminiature
Cylindrical Connectors

Amphenol

MIL-DTL-38999, Series III

- Aluminum
- Stainless Steel/Firewall



Amphenol

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Amphenol is a Certified ISO 9001 Manufacturer

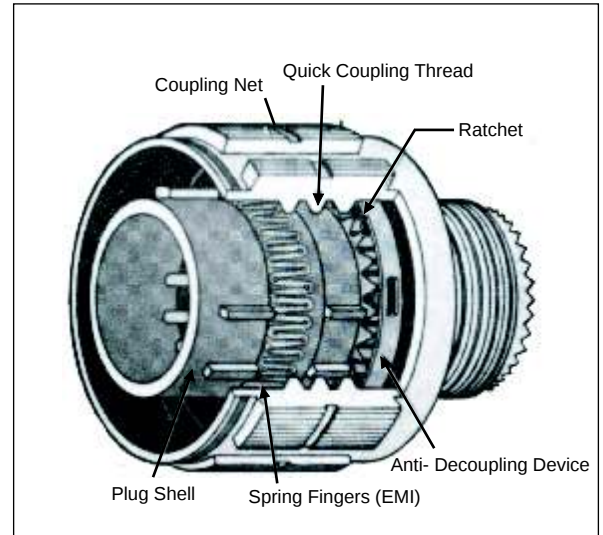
Amphenol Tri-Start

Series III - the highest performance

MIL - DTL - 38999* connector

Amphenol Tri-Start MIL-DTL -38999 Series III Connectors offer the highest performance capabilities for both general duty and severe environment applications. Meeting or exceeding MIL-DTL-38999 Series III requirements, the Tri-Start connector with standard metal shells (aluminium or stainless steel with several finish options) offers these features:

- **EMI Shielding** - Solid metal to metal coupling, grounding fingers, electroless nickel plating and thicker wall sections provide superior EMI shielding capability of 65dB minimum at 10 GHz
- **Contact Protection** - Recessed pins in this 100% scoop-proof connector minimize potential contact damage
- **Moisture Resistance** - Improved interfacial seal design helps prevent electrolytic erosion of contacts
- **Corrosion Resistance** - Shells of stainless steel or cadmium over nickel plating withstand a 500 hour salt spray exposure
- **Vibration /Shock** - Operates under severe high temperature vibration, through 200°C
- **Firewall Capability** - Available in a stainless steel shell, class RK, RS
- **Lockwiring Eliminated** - Unique, self - locking, quick coupling connector eliminates lockwiring
- **Quick Coupling** - Completely mates and self-locks in a 360° turn of the coupling nut
- **Inventory Support Commonality**- Uses standard MIL-DTL-38999 contacts, application tools and insert arrangements
- **Electrostatic Discharge Protection (ESD)** - Protection for sensitive circuitry without diodes, varistors, etc., with the use of the Faraday Cage principal which shunts high voltage, high current discharge events



MIL- Qualified to MIL-DTL-38999, Rev. K, the Amphenol Composite Tri-Start Connector offers a lightweight, corrosion resistant connector with the same high performance features as its metal counterpart. The Composite Tri-Start Connector also includes the following features:

- **Lightweight** - 17% - 70% weight savings (17-40% weight savings vs. aluminum) (60-70% weight savings vs. stainless steel) See Composite weight comparison chart, pg. 23
- **Corrosion Resistance** - Available in standard MIL-DTL-38999 olive drab cadmium (175°C) and electroless nickel plating (200°C), both withstanding 2000 hours of salt spray exposure. The base material is able to withstand an indefinite exposure to salt spray
- **Durability** - 1500 couplings minimum (in reference to connector couplings, not contacts)
- **Extended Life Contact** - MIL - approved plating process which provides 1500 couplings minimum

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Amphenol Tri-Start

The ultimate subminiature cylindrical



Wall Mount Receptacle



Straight Plug



Jam Nut Receptacle

Designed for performance

Numerous advantages in performance capability are designed into the Amphenol Tri-Start Connector. A positive metal to metal coupling design, grounding fingers and electroless nickel plating provide superior EMI shielding capability of 65 dB minimum at 10 GHz.

Acme threads provide coupling durability. Thicker wall sections and a greater coupling surface area improve strength and shock resistance. Blunting of the thread on both the coupling nut and receptacle eliminates cross coupling. The connector quickly mates and self locks in a 360° turn of the coupling nut.

Elongated mounting holes permit the Tri-Start Connector to intermount with various existing MIL-spec box or wall mount receptacles, giving it a design replacement advantage.

Shells of stainless steel, or cadmium over nickel plating prevent severe corrosion. Resistance is tested through exposure to a 500 hour salt spray. Composite versions provide protection from salt spray exposure for 2000 hours. Other finish options are available.

Recessed pins minimize potential contact damage in this 100% scoop-proof connector. In a blind mating application, mating shells cannot "scoop" the pins and cause a shorting or bending of contacts.

The design of the Amphenol Tri-Start interfacial seal meets the MIL-DTL-38999 Series III requirements for electrolytic erosion resistance.

A rigid dielectric insert with excellent electrical characteristics provides durable protection to the contacts. The socket contacts are probe proof and all contacts are rear removable.

Available in sizes 10 power, 12, 16, 20 and 22D contacts are plated in the standard 50 micro inches minimum gold, with 100 micro inches as an option. Fiber optics, extended life and shielded coaxial contacts are also available in a wide selection of standard MIL-DTL-38999 insert patterns.

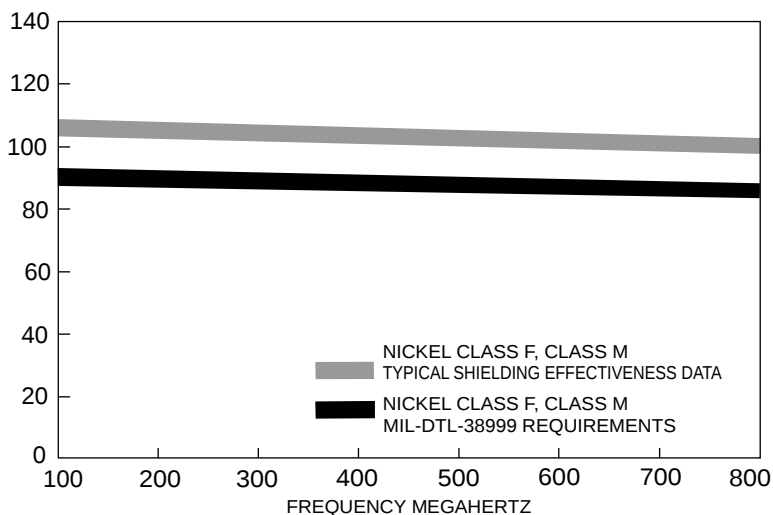
Optional Features

Options include hermetic seals, nickel plated stainless steel shells and a fail-safe lanyard release design, providing a quick breakaway connector with Tri-Start dependability. Circuit protection with filter contacts or surge arresting devices are also available. Lightweight, composite shells with conductive plating are available. Ground plane connectors for use with coaxial and triaxial contacts can also be specified.

Tri-Start

Test data

TRI-START, SERIES III TYPICAL SHIELDING EFFECTIVENESS TEST DATA EMI/EMP/ SHIELDING EFFECTIVENESS dB TESTING BY TRIAXIAL METHOD



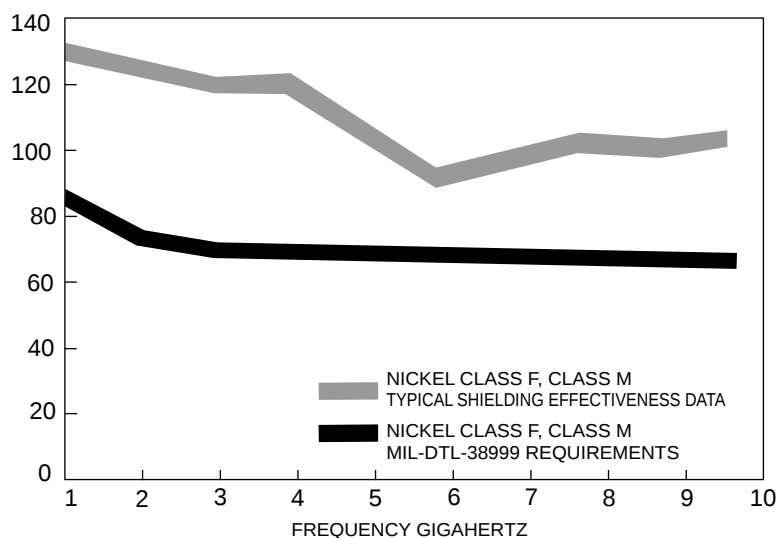
Amphenol Tri -Start connectors provide EMI/EMP shielding capability which exceeds MIL-DTL-38999 Series III requirements.

The TV Series III connector with standard solid metal to metal coupling, EMI grounding fingers and conductive finishes has proven to be the ultimate in EMI/EMP shielding effectiveness. The charts illustrate shielding effectiveness data which is typical of Tri-Start connectors tested with the nickel finish (Class F-metal, Class M-composite) over a wide frequency range.

The vibration capability of the Tri-Start Series is shown in the chart below. This illustrates the most severe vibration envelope of any qualified connector available today.

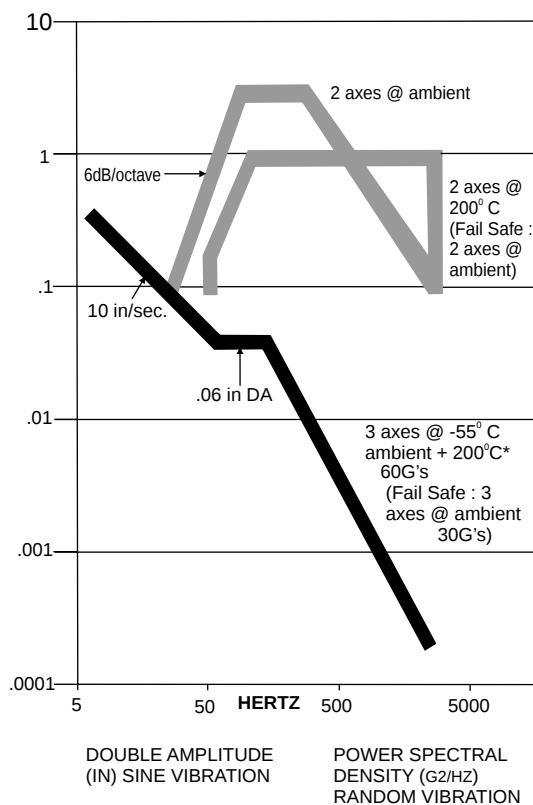
These capabilities along with a 200°C temperature rating and superior moisture sealing protection provide the user with a connector that can withstand the most rigorous application.

TRI-START, SERIES III TYPICAL SHIELDING EFFECTIVENESS TEST DATA EMI/EMP SHIELDING EFFECTIVENESS dB TESTING BY MODE STIRRING METHOD



Test data beyond 2GHz is subject to equipment variation.

TRI-START VIBRATION CRITERIA



* Dependant on shell finish

Tri-Start
Specifications

CONTACT RATING

Contact	Test Current		Maximum Millivolt Drop Crimp*	Maximum Millivolt Drop Hermetic*
	Crimp	Hermetic		
22D	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

Contact	Test Current		Hermetic Data	
	Well Diameter	Nominal Well Dept.	Well Diameter	Min. Well Depth
22D	.0345 ±.0010	.141	.036 ^{+.004} _{-.000}	.094
20	.047 ±.001	.209	.044 ^{+.004} _{-.000}	.125
16	.067 ±.001	.209	.078 ^{+.004} _{-.002}	.141
12	.100 ±.002	.209	.116 ^{+.004} _{-.002}	.141
10(Power)	.137 ±.002	.355	NA	NA

* When using silver plated wire.

SERVICE RATING

Service Rating	Suggested Operating 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	550	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 designers hands, since he is in the best position to know what peak voltage, switching surges, transients, etc. can be expected in a particular circuit.

FINISH DATA

Non-Hermetic Shell Components		
		Service Class
Finish		
Anodic Coating (Non - Conductive)	Military	Proprietary
	C	RX**
Electroless Nickel	F (Metal)	RF
Electroless Nickel	M (Composite)	
	W (Metal)	RW
	J (Composite)	
	S	RS
	K	RK

*** Add suffix (005) to part number.

Hermetic Connectors		
		Service Class
Material/Finish	Military	Proprietary
	Y	Y
	N	YN

Tri-Start

Test data

Shell Size	Military Shell Size	Crimp	Hermetics* Class Y	Service Rating	Total Contacts	Contact Size							
						22D	20	16	12	12 (Coax)	10 (Power)	8 (Coax)	8†† (Twinax)
9-5H	A			Grounded	1								
9-35	A	X	P	M	6	6							
9-94	A	♦		M	2		2						
9-98	A	X	P	I	3		3						
11-2*	B	♦		I	2			2					
11-5	B	♦		I	5		5						
11-35	B	X	P	M	13	13							
11-98	B	X	P	I	6		6						
11-99	B	X		I	7		7						
13-4*	C	X		I	4			4					
13-8	C	X	P	I	8		8						
13-35	C	X	P	M	22	22							
13-98	C	X	P	I	10		10						
15-5*	D	X	P	II	5			5					
15-15	D	X	P	I	15		14	1					
15-18	D	X	P	I	18		18						
15-19	D	♦		I	19		19						
15-35	D	X	•	M	37	37							
15-97	D	X	•	I	12		8	4					
17-2	E	X		M	39	38							1
17-6	E	X		I	6				6				
17-8*	E	X	P	II	8			8					
17-22*	E	♦		Coax	4					2		2	
17-26	E	X	•	I	26		26						
17-35	E	X	P	M	55	55							
17-99	E	X		I	23		21	2					
19-11*	F	X	P	II	11			11					
19-31	F	♦		M	15	12			1			2	
19-32	F	X	P	I	32		32						
19-35	F	X	P	M	66	66							
21-11*	G	X		II	11				11				
21-16*	G	X	P	II	16			16					
21-35	G	X	P	M	79	79							
21-39	G	X		I	39		37	2					
21-41	G	X	P	I	41		41						
21-75*	G	X		M	4								(See Note)
23-6*	H	P		M	6								6
23-21*	H	X	P	II	21			21					
23-35	H	X	P	M	100	100							
23-53	H	X	P	I	53		53						
23-54	H	♦		M	53	40		9	4				
23-55	H	♦		I	55		55						
25-4	J	X	P	I	56		48	8					2
25-7	J	♦		Twinax	99	97							8
25-8*	J	♦		Twinax	8								
25-11***	J	♦		N	11		2				9		6
25-17	J	♦		M	42	36							
25-19*	J	X		I	19				19				3
25-20***	J	♦		N	30		10	13**		4			
25-24*	J	X	•	I	24			12	12				
25-26	J	♦		I	25		16		5			4	
25-2	J	X		I	29			29					
25-35	J	X	P	M	128	128							
25-37	J	♦		I	37			37					
25-43	J	X		I	43		23	20					
25-46	J	X		I	46		40	4				2 †	
25-61	J	X	P	I	61		61						

X Completely tooled.

♦ Majority of tooling is completed (contact Amphenol).

♦ Not tooled for 02-R.

P Pin inserts only (contact Amphenol, for socket availability).

• Optional solder or eyelet termination, hermetic inserts only.

* Ground plane proprietary option available. Arrg. 9-5 is exclusively ground plane type.

** Two size 16 contacts dedicated to fiber optics. Consult Amphenol.

*** For use in MIL-STD-1760 applications.

† For RG180/U and RG195/U cables only.

(Contact Amphenol, for other cable application).

†† Size 8 Coax and Twinax are interchangeable.

Note: MS Connector 21-75 is supplied with size 8 twinax.

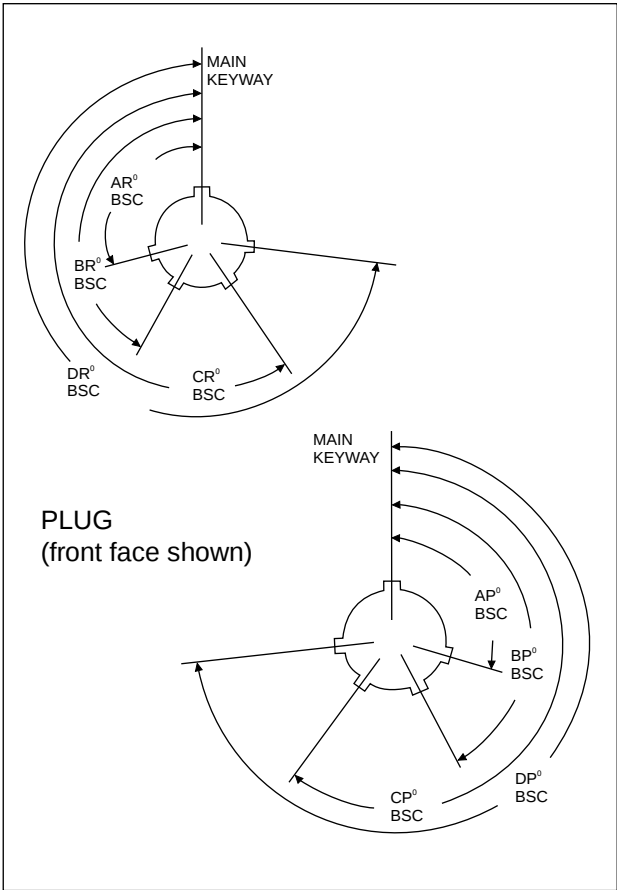
Proprietary connector 21-75 is supplied with size 8 coax.

Tri-Start
Alternate positioning

Master Key/Keyway Position

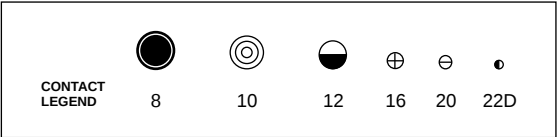
Shell Size	Key & keyway arrangement identification letter	AR° or AP° BSC	BR° or BP° BSC	CR° or CP° BSC	DR° or DP° BSC
9	N	105	140	215	265
	A	102	132	248	320
	B	80	118	230	312
	C	35	140	205	275
	D	64	155	234	304
	E	91	131	197	240
11, 13, and 15	N	95	141	208	236
	A	113	156	182	292
	B	90	145	195	252
	C	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

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.



Tri-Start

Insert arrangements



front face of pin insert illustrated

Insert Arrangement	9-5	9-35	9-94	9-98	11-2	11-5	11-35	11-98
Service Rating	Grounded	M	M	I	I	I	I	I
Number of Contacts	1	6	2	3	2	5	13	6
Contact Size	8 Twinax	22D	20	20	16	20	22D	20

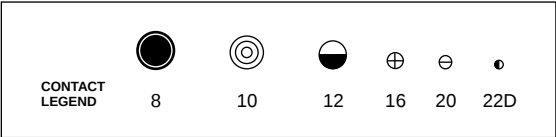
Insert Arrangement	11-99	13-4	13-8	13-35	13-98	15-5	15-15
Service Rating	I	I	I	M	I	II	I
Number of Contacts	7	4	8	22	10	5	14 1
Contact Size	20	16	20	22D	20	16	20 16

Insert Arrangement	15-18	15-19	15-35	15-97	17-2	176
Service Rating	I	I	M	I	M	I
Number of Contacts	18	19	37	8 4	38 1	6
Contact Size	20	20	22D	20 16	22D 8 Twinax	12

Insert Arrangement	17-8	17-22	17-26	17-35	17-99
Service Rating	II	Coax	I	M	I
Number of Contacts	8	2 2	26	55	21 2
Contact Size	16	12Coax 8Coax	20	22D	20 16

Tri-Start

Insert arrangements



front face of pin inserts illustrated

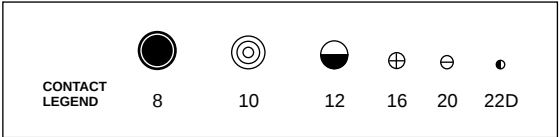
Insert Arrangement	19-11	19-31	19-32	19-35	21-11
Service Rating	II	M	I	M	I
Number of Contacts	11	2 1 12	32	66	11
Contact Size	16	8Coax 12 22D	20	22D	12

Insert Arrangement	21-16	21-35	21-39	21-41
Service Rating	II	M	I	I
Number of Contacts	16	79	37 2	41
Contact Size	16	22D	20 16	20

Insert Arrangement	21-75	23-6	23-21	23-25
Service Rating	M	M	II	M
Number of Contacts	4	6	21	100
Contact Size	(See Note)	8 Twinax	16	22D

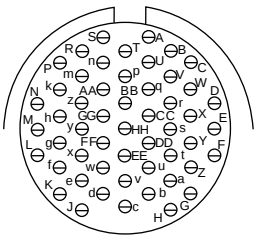
Note: MS connector 21-75 is supplied with size 8 twinax.
 Proprietary connector 21-75 is supplied with size 8 coax.

Tri-Start
Insert arrangements



front face of pin insert illustrated

Insert Arrangement
Service Rating
Number of Contacts
Contact Size

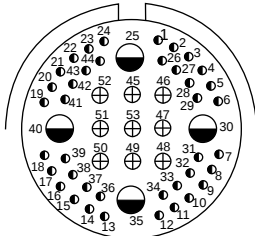


23-53

I

53

20

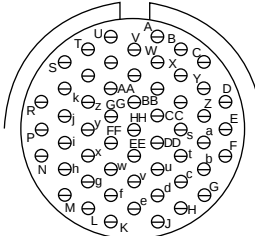


23-54

M

40 9 4

22D 16 12

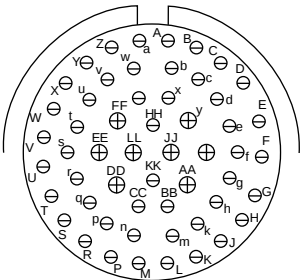


23-55

I

55

20

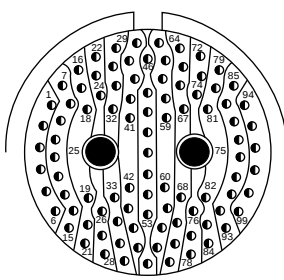


25-4

I

48 8

20 16

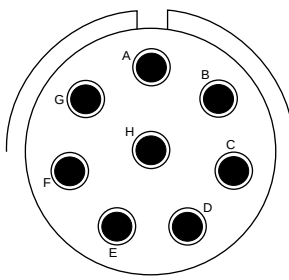


25-7

Twinax

97 2

22D 8 Twinax

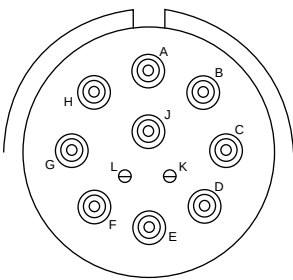


25-8

Twinax

8

8
Twinax

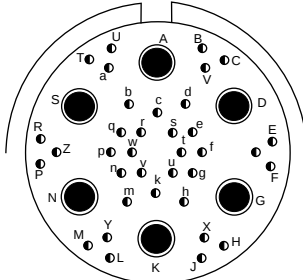


25-11***

N

2 9

20 10 Power

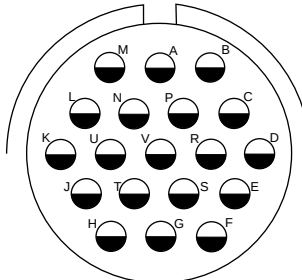


25-17

M

36 6

22D 8 Twinax



25-19

I

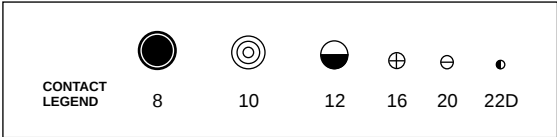
19

12

***For use in MIL-STD-1760 applications (see page 16)

Tri-Start

Insert arrangements



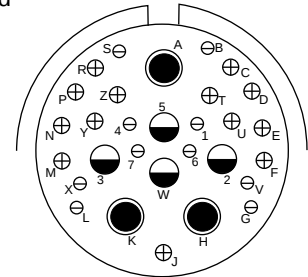
front face of pin insert illustrated

Insert Arrangement

Service Rating

Number of Contacts

Contact Size



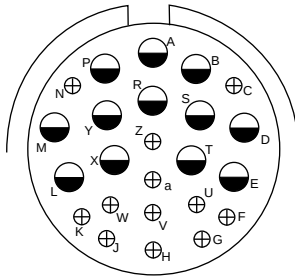
25-20***

N

10 13 3 4

20 16 8 Twinax 12 Coax

(Locations U and Y - Dedicated to Fiber Optics)

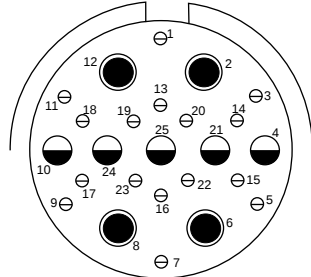


25-24

I

12 12

16 12

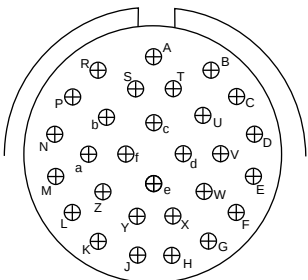


25-26

I

16 5 4

20 12 8 Coax

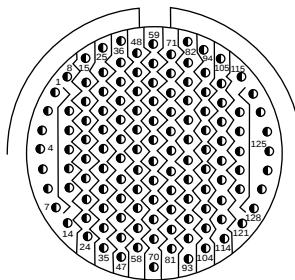


25-29

I

29

16

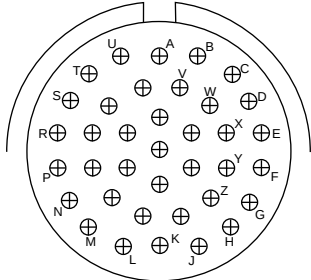


25-35

M

128

22D



25-37

I

37

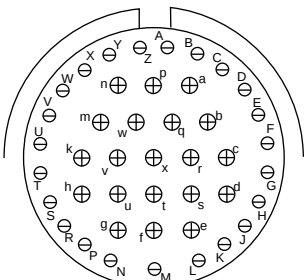
16

Insert Arrangement

Service Rating

Number of Contacts

Contact Size

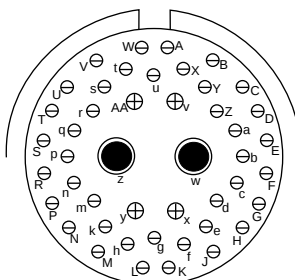


25-43

I

23 20

20 16

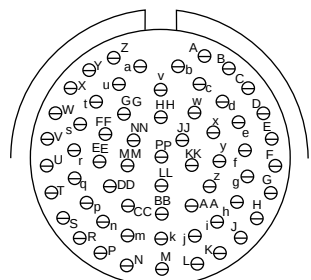


25-46

I

40 4 2

20 16 8 Coax†



25-61

I

61

20

Insert Arrangement

Service Rating

Number of Contacts

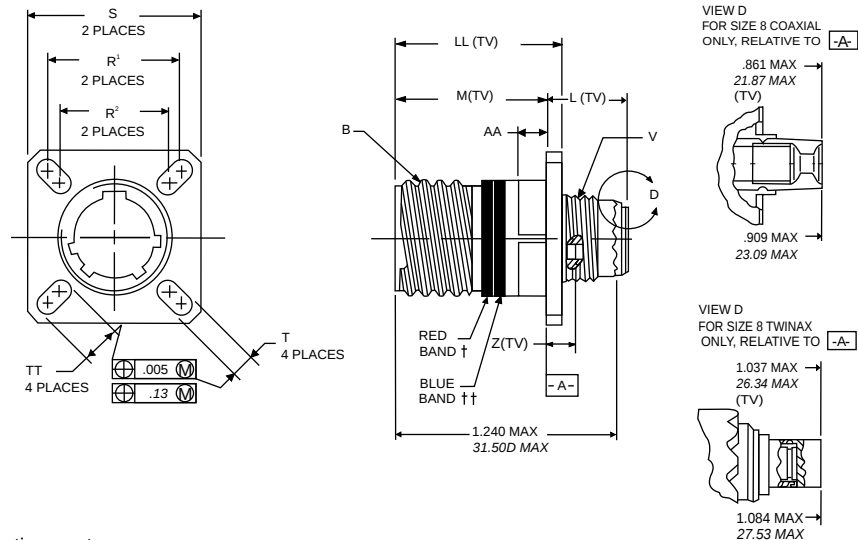
Contact Size

***For use in MIL-STD-1760 applications (see page 16)

†Coax contacts for RG 180 or RG 195 cable

Wall mounting receptacle

D38999/20



- † Red band indicates fully mated.
- †† Blue band indicates rear release contact retention system.
- To complete order number for TV metal connectors.

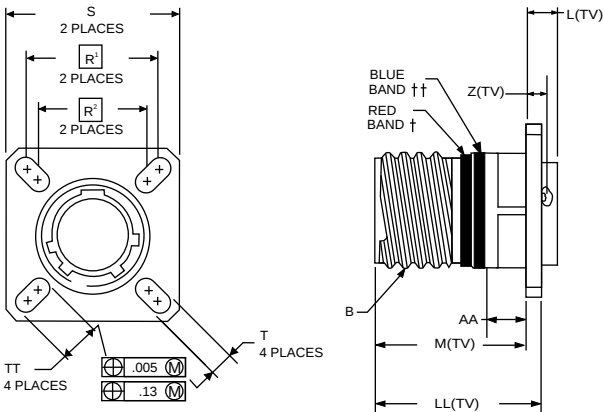
Inches												
Shell Size	MS Shell Size Code	B Thread Class 2A 0.1P-0.3L-TS (Plated)	L Max. (TV)	M +0.000 -0.005 (TV)	R ¹	R ²	S Max.	T +0.008 -0.006	Z Max. (TV)	AA Max. Panel Thickness	LL +0.006 -0.006 (TV)	TT +0.008 -0.006
9	A	.6250	.469	.820	.719	.594	.948	.128	.153	.234	.905	.216
11	B	.7500	.469	.820	.812	.719	1.043	.128	.153	.234	.905	.194
13	C	.8750	.469	.820	.906	.812	1.137	.128	.153	.234	.905	.194
15	D	1.0000	.469	.820	.969	.906	1.232	.128	.153	.234	.905	.173
17	E	1.1875	.469	.820	1.062	.969	1.323	.128	.153	.234	.905	.194
19	F	1.2500	.469	.820	1.156	1.062	1.449	.128	.153	.234	.905	.194
21	G	1.3750	.500	.790	1.250	1.156	1.575	.128	.183	.204	.905	.194
23	H	1.5000	.500	.790	1.375	1.250	1.701	.154	.183	.204	.905	.242
25	J	1.6250	.500	.790	1.500	1.375	1.823	.154	.183	.204	.905	.242

Millimeters												
Shell Size	MS Shell Size Code	L Max. (TV)	M +0.00 -0.13 (TV)	R ¹	R ²	S Max	T +0.20 -0.13	V Thread Metric	Z Max. (TV)	AA Max.	LL +0.15 -0.00 (TV)	TT +0.20 -0.13
9	A	11.91	20.83	18.26	15.09	24.1	3.25	M12X1-6g	3.89	5.94	22.99	5.49
11	B	11.91	20.83	20.62	18.26	26.5	3.25	M15X1-6g	3.89	5.94	22.99	4.93
13	C	11.91	20.83	23.01	20.62	28.9	3.25	M18X1-6g	3.89	5.94	22.99	4.93
15	D	11.91	20.83	24.61	23.01	31.3	3.25	M22X1-6g	3.89	5.94	22.99	4.93
17	E	11.91	20.83	26.97	24.61	33.7	3.25	M25X1-6g	3.89	5.94	22.99	4.93
19	F	11.91	20.83	29.36	26.97	36.9	3.25	M28X1-6g	3.89	5.94	22.99	4.93
21	G	12.70	20.07	31.75	29.36	40.1	3.25	M31X1-6g	4.65	5.18	22.99	4.93
23	H	12.70	20.07	34.93	31.75	43.3	3.91	M34X1-6g	4.65	5.18	22.99	6.15
25	J	12.70	20.07	38.10	34.93	46.4	3.91	M37X1-6g	4.65	5.18	22.99	6.15

All dimensions for reference only. Designates true position dimensioning.

Box mounting receptacle

D38999/21



†Red band indicates fully mated.
††Blue band indicates rear release contact retention system.
• To complete order number for TV metal connectors.

Inches												
Shell Size	MS Shell Size Code	B Thread Class 2A 0.1P-0.3L-TS (Plated)	L Max. (TV)	M +0.000 -0.005 (TV)	R¹	R²	S Max.	T +0.008 -0.006	Z Max. (TV)	AA Max. Panel Thickness	LL +0.006 -0.000 (TV)	TT +0.008 -0.006
9	A	.6250	.205	.820	.719	.594	.948	.128	.153	.234	.905	.216
11	B	.7500	.205	.820	.812	.719	1.043	.128	.153	.234	.905	.194
13	C	.8750	.205	.820	.906	.812	1.137	.128	.153	.234	.905	.194
15	D	1.0000	.205	.820	.969	.906	1.232	.128	.153	.234	.905	.173
17	E	1.1875	.205	.820	1.062	.969	1.323	.128	.153	.234	.905	.194
19	F	1.2500	.205	.820	1.156	1.062	1.449	.128	.153	.234	.905	.194
21	G	1.3750	.235	.790	1.250	1.156	1.575	.128	.183	.204	.905	.194
23	H	1.5000	.235	.790	1.375	1.250	1.701	.154	.183	.204	.905	.242
25	J	1.6250	.235	.790	1.500	1.375	1.823	.154	.183	.204	.905	.242

Millimeters											
Shell Size	MS Shell Size Code	L Max. (TV)	M +0.00 -0.13 (TV)	R¹	R²	S Max.	T +0.20 -0.13	Z Max. (TV)	AA Max.	LL +0.15 -0.00 (TV)	TT +0.20 -0.13
9	A	5.21	20.83	18.26	15.09	24.1	3.25	3.89	5.94	22.99	5.49
11	B	5.21	20.83	20.62	18.26	26.5	3.25	3.89	5.94	22.99	4.93
13	C	5.21	20.83	23.01	20.62	28.9	3.25	3.89	5.94	22.99	4.93
15	D	5.21	20.83	24.61	23.01	31.3	3.25	3.89	5.94	22.99	4.93
17	E	5.21	20.83	26.97	24.61	33.7	3.25	3.89	5.94	22.99	4.93
19	F	5.21	20.83	29.36	26.97	36.9	3.25	3.89	5.94	22.99	4.93
21	G	5.97	20.07	31.75	29.36	40.1	3.25	4.65	5.18	22.99	4.93
23	H	5.97	20.07	34.93	31.75	43.3	3.91	4.65	5.18	22.99	6.15
25	J	5.97	20.07	38.10	34.92	46.4	3.91	4.65	5.18	22.99	6.15

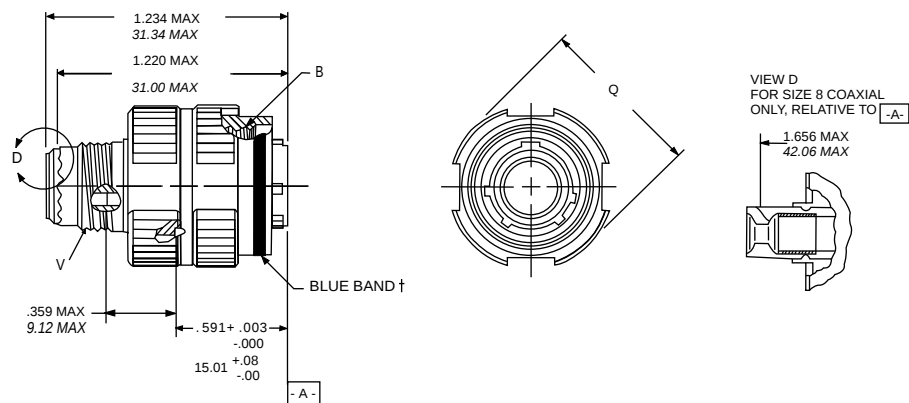
All dimensions for reference only.

□

 Designates true position dimensioning.

Straight plug

D38999/26



- † Blue band indicates rear release contact retention system.
- To complete order number for TV metal connectors.

Inches

Shell Size	MS Shell Size Code	B Thread Class 2A 0.1P-0.3L-TS (Plated)	Q Dia. Max.
9	A	.6250	.859
11	B	.7500	.969
13	C	.8750	1.141
15	D	1.0000	1.266
17	E	1.1875	1.391
19	F	1.2500	1.500
21	G	1.3750	1.625
23	H	1.5000	1.750
25	J	1.6250	1.875

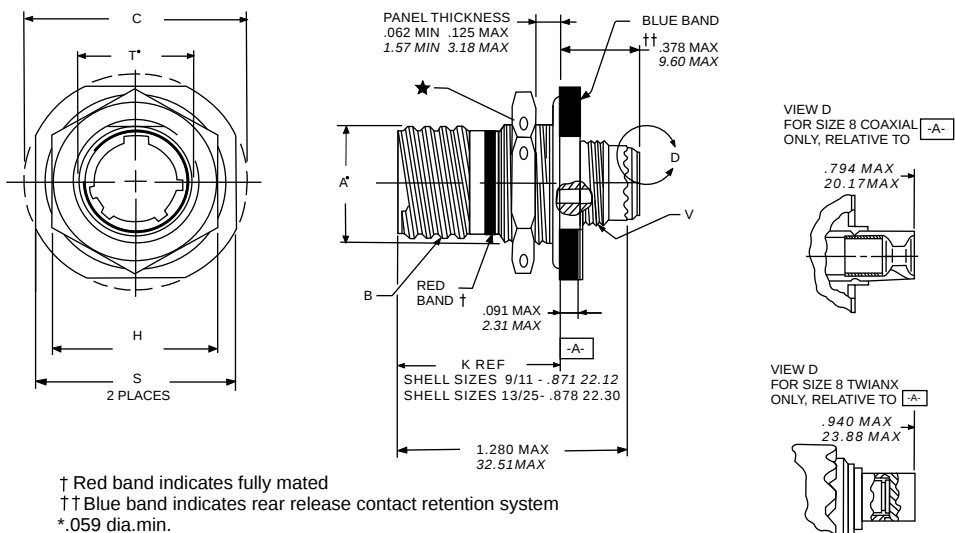
Millimeters

Shell Size	MS Shell Size Code	Q Max.	O Dia. Max.
9	A	21.82	M12X1-6g
11	B	24.62	M15X1-6g
13	C	28.98	M18X1-6g
15	D	32.16	M22X1-6g
17	E	35.33	M25X1-6g
19	F	38.10	M28X1-6g
21	G	41.28	M31X1-6g
23	H	44.45	M34X1-6g
25	J	47.63	M37X1-6g

All dimensions for reference only

Jam nut receptacle

D38999/24



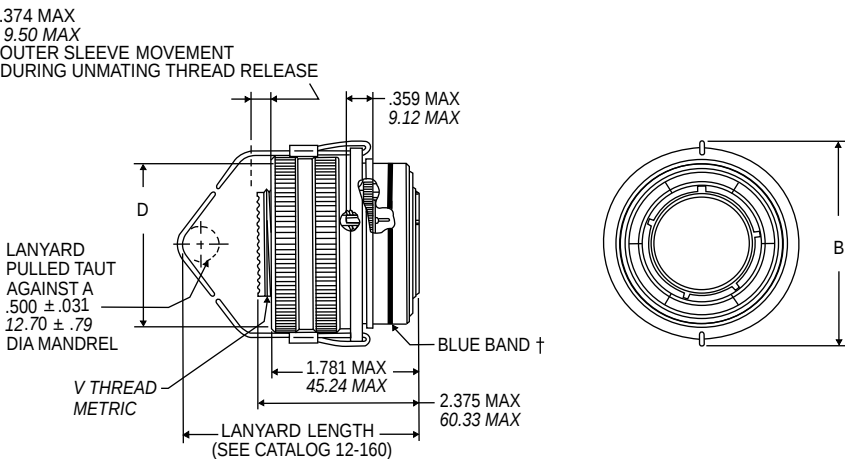
Inches							
Shell Size	MS Shell Size Code	A• +.000 -.010	B Thread Class 2A 0.1P-0.3L-TS (Plated)	C Max.	H Hex +.017 -.016	S ±.010	T• +.010 -.000
9	A	.669	.6250	1.199	.875	1.062	.697
11	B	.769	.7500	1.386	1.000	1.250	.822
13	C	.955	.8750	1.511	1.188	1.375	1.007
15	D	1.084	1.0000	1.636	1.312	1.500	1.134
17	E	1.208	1.1875	1.761	1.438	1.625	1.259
19	F	1.333	1.2500	1.949	1.562	1.812	1.384
21	G	1.459	1.3750	2.073	1.688	1.938	1.507
23	H	1.575	1.5000	2.199	1.812	2.062	1.634
25	J	1.709	1.6250	2.323	2.000	2.188	1.759

Millimeters							
Shell Size	MS Shell Size Code	A• +.00 -.25	C Max.	H Hex +.43 -.41	S ±.25	T• +.25 -.00	V Thread Metric
9	A	16.99	30.45	22.23	26.97	17.70	M12X1-6g
11	B	19.53	35.20	25.40	31.75	20.88	M15X1-6g
13	C	24.26	38.38	30.18	34.93	25.58	M18X1-6g
15	D	27.53	41.55	33.32	38.10	28.80	M22X1-6g
17	E	30.68	44.73	36.53	41.28	31.98	M25X1-6g
19	F	33.86	49.50	39.67	46.02	35.15	M28X1-6g
21	G	37.06	52.65	42.80	49.23	38.28	M31X1-6g
23	H	40.01	55.85	46.02	52.37	41.50	M34X1-6g
25	J	43.41	59.00	50.80	55.58	44.68	M37X1-6g

All dimensions for reference only •D shaped panel cut-out dimensions

Lanyard release plug

*D38999/29 (Pins only)
*D38999/30 (Sockets only)



† Blue band indicates rear release contact retention system
• To complete order number, see page 22 and Amphenol catalogue 12-160

Inches			
Shell Size	MS Shell Size Code	B Max.	D Hex +.43 -.41
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

Millimeters				
Shell Size	MS Shell Size Code	B Max.	D Hex +.43 -.41	V Thread Metric
11	B	46.89	28.17	M15X1-6g
13	C	50.09	31.75	M18X1-6g
15	D	52.81	34.93	M22X1-6g
17	E	56.01	38.10	M25X1-6g
19	F	58.45	41.28	M28X1-6g
21	G	62.79	44.45	M31X1-6g
23	H	65.89	47.63	M34X1-6g
25	J	68.71	50.08	M37X1-6g

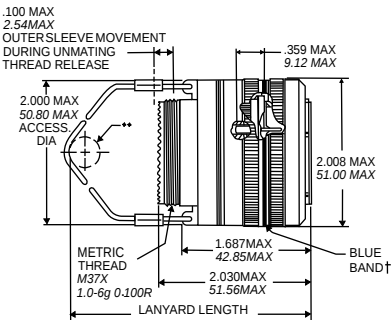
All dimensions for reference only

TV Fail Safe for MIL-STD-1760-crimp, metal lanyard release plug

CONTACT
LEGEND

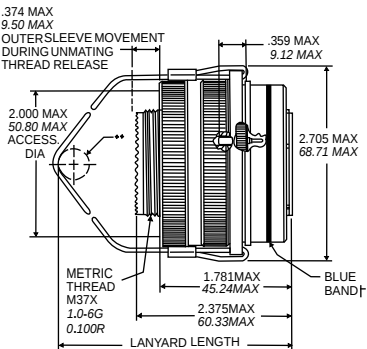
8(twinax) 10(power) 12(coax) 16 20

*D38999/31



STYLE 1

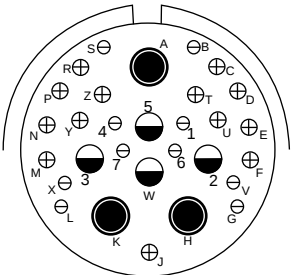
SHELL SIZE 25 ONLY



STYLE 2

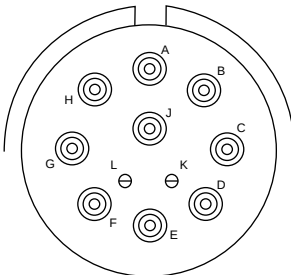
† Blue band indicates rear release contact retention system
* To complete order number, see page 22 and Amphenol catalogue 12-160
**Lanyard pulled taut against a .500± 0.31 dia. mandrel
*** Consult Amphenol for how to order proprietary part numbers.

All dimensions for reference only.



25-20

Primary Interface Signal Set



25-11

Auxiliary Power Signal Set

Front face of pin insert illustrated

1760 Fail Safe Features :

- Incorporates all MIL-DTL-38999 Series III features
- Intermateable with D38999/20 and /24
- Available with pin contacts only for MIL-STD-1760 applications
- Insert arrangements totally compatible with MIL-STD-1553B Aircraft Multiplex Data Bus
- 25-20 arrangement available only in “N” normal rotation
- 25-11 arrangement available only in “A” rotation
- O.D. Cadmium corrosion resistant finish
- Accepts MIL-C-85049 backshell hardware
- Fiber optics

Pin Contact Data for MIL-STD-1760

Insert Arrangement	Service Rating	Total Contacts	Contact Size			
			20	16*	12 (coax)	8 (twinax)
25-20	N	30	10	13*	4	3

*Two size 16 contacts dedicated to fiber optics. Consult Amphenol or catalogue section 12-352 for fiber optic contact information.

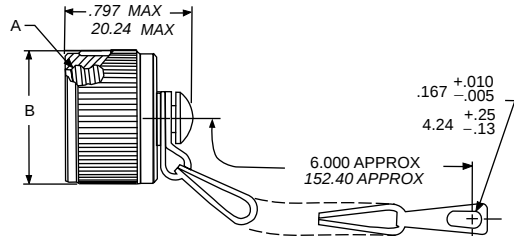
Insert Arrangement	Service Rating	Total Contacts	Contact Size	
			20	10 (power)
25-11††	N	11	11	9

Contact Size	Proprietary No.	MS No.
8(twinax)	21-33190-529	M39029/90-529
10 (power)	10-251415-105	M39029/58-528
12 (coax)	21-33122-546	M39029/28-211
16	†	†
20	†	†

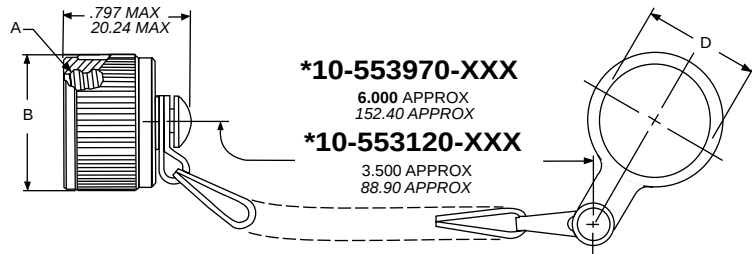
† Standard Subminiature Connector contacts-see page 20 for part numbers.
†† Currently available under proprietary part number only.

Tri-Start-accessories
Receptacle protection cap

D38999/33-X-XX-R



D38999/33-X-XX-N



* To complete order number, add shell size and suffix number.
For example, shell size 11 with olive drab cadmium nickel base
chain assembly with small link D38999/33-W-11-R.

Inches			
Shell Size	A Thread Class 2B 0.1P-0.3L-TS	B Dia. Max.	D Dia. +.25 -.00
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

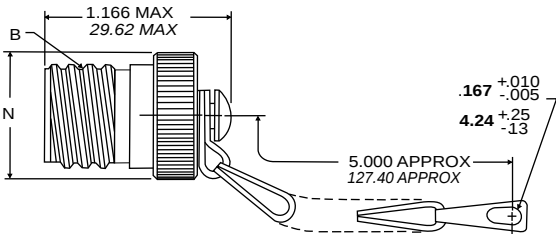
Finish	Suffix
Olive drab, cadmium, nickel base	W
Electroless nickel	N

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

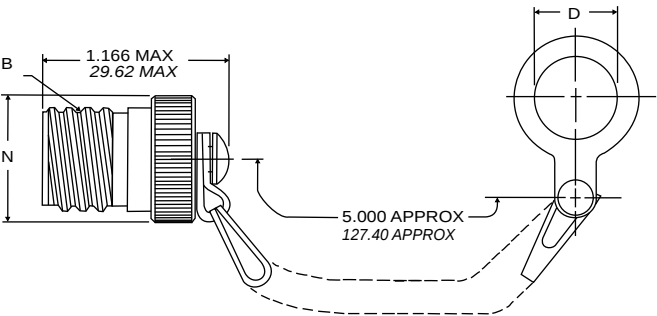
All dimensions for reference only.

Tri-Start-accessories
Plug protection cap

D38999/32-X-XX-R



D38999/32-X-XX-N



* To complete order number, add shell size and suffix number.
For example, shell size 11 with olive drab cadmium nickel base
chain assembly with small link D38999/32-W-11-R.

Inches			
Shell Size	A Thread Class 2A 0.1P-0.3L-TS	D +.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

Finish	Suffix
Olive drab, cadmium, nickel base	W
Electroless nickel	N

Millimeters			
Shell Size	MS Shell Size Code	D +.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.

Tri-Start

Contacts, sealing plugs, protection caps

STANDARD 500 CYCLE CONTACTS FOR TV, P & S

Contact Size	TV Pins			TV/ Sockets		
	Proprietary No.	Military No.	Supersedes	Proprietary No.	Military No.	Supersedes
8 (Coax)*	21-33102-21	M39029/60-367	MS27536	21-33101-21	M39029/59-366	MS27535
8 (Twinax)	21-33190-529	M39029/90-529**	NA	21-33191-530	M39029/91-530	NA
10 (Power)	10-251415-105	M39029/58-528	NA	10-407035-105	M39029/56-527	NA
12	10-251415-12H	M39029/58-365	MS27493-12	10-597261-121	M39029/56-353	MS27490-12
16	10-251415-165	M39029/58-364	MS27493-16	10-597261-161	M39029/56-352	MS27490-16
20	LP-251415-205	M39029/58-363	MS27493-20	10-597261-201	M39029/56-351	MS27490-20
22D	LP-251415-725	M39029/58-360	MS27493-22D	10-597261-721	M39029/56-348	MS27490-22D

Above part numbers include standard 500 cycle finish designation - gold plating over suitable underplate in accordance with MIL-C-39029.

For other finish variations, consult Amphenol

* 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, consult Amphenol.

** 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

PLASTIC PROTECTION CAPS

Shell Size	Plug	Receptacle
9	10-70506-14	10-70500-10
11	10-70506-16	10-70500-12
13	10-70500-18	10-70500-14
15	10-70500-20	10-70500-16
17	10-70500-22	10-70500-19
19	10-70500-24	10-70500-20
21	10-70524-1	10-70500-22
23	10-70506-28	10-70500-24
25	10-70500-28	10-70524-1

MS METAL PROTECTION CAPS

Shell Size	MS Shell Size Code	MS Plug Protection Cap	MS Receptacle Protection Cap
9	A	D38999/32W9X*	D38999/33W9X*
11	B	D38999/32W11X*	D38999/33W11X*
13	C	D38999/32W13X*	D38999/33W13X*
15	D	D38999/32W15X*	D38999/33W15X*
17	E	D38999/32W17X*	D38999/33W17X*
19	F	D38999/32W19X*	D38999/33W19X*
21	G	D38999/32W21X*	D38999/33W21X*
23	H	D38999/32W23X*	D38999/33W23X*
25	J	D38999/32W25X*	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, for more detailed information on ordering MS Metal protection caps.

SEALING PLUGS

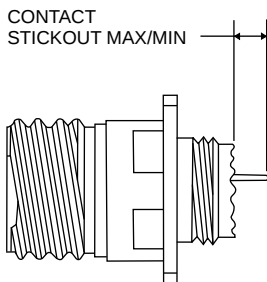
Contact Size	Proprietary No.	Military No.
8 (Coax)	10-482099-8	NA
8 (Twinax)	T3-4008-59P	NA
10 (Power)	10-576225	NA
12	10-405996-12	MS27488-12
16	10-405996-16	MS27488-16
20	10-405996-20	MS27488-20
22D	10-405996-22	MS27488-22

Tri-Start

Contacts – printed circuit board, wire wrap

SOCKETS

PCB Socket Contacts	Size	Tail Dia	Contact Stickout Max/Min (See Illustration below)			
			D38999/20 TVP00	D38999/26 TV06	D38999/24 TV07	
					Metal	Composite
10-497623-15	22D	.019	.219 .226	.316 .251	.285 .222	.242 .182
10-497623-25	22D	.019	.868 .803	.893 .828	.862 .802	.819 .759
10-497623-35	22D	.019	.348 .283	.373 .308	.342 .282	.299 .239
10-497623-45	22D	.019	.208 .143	.233 .168	.202 .142	.159 .099
10-497623-75	22D	.019	.146 .081	.171 .106	.140 .080	.097 .037
10-497623-105	22D	.019	.028 NS	.053 .000	.022 NS	.021 NS
10-497623-145	22D	.019	.609 .539	.634 .564	.603 .538	.560 .495
10-497623-155	22D	.019	.423 .358	.448 .383	.417 .357	.374 .314
10-497643-15	20	.019	.348 .294	.373 .319	.342 .293	.299 .250
10-497643-25	20	.019	.213 .159	.238 .184	.207 .158	.164 .115
10-497643-35	20	.019	.555 .501	.580 .526	.549 .500	.506 .457
10-497643-45	20	.019	.138 .084	.163 .109	.132 .083	.089 .040
10-497650-15	16	.040	.255 .201	.280 .226	.249 .200	.206 .157
Wire Wrap Contacts		Tail Square				
10-497577-15	22D	.025	.155 .090	.180 .115	.149 .089	.106 .046
10-497577-25	22D	.025	.002 NS	.027 NS	NS NS	NS NS
10-497577-35	22D	.025	.201 .136	.226 .161	.195 .135	.152 .092
10-497577-55	22D	.025	.566 .501	.591 .526	.560 .500	.517 .457
10-497621-15	20	.025	.151 .101	.176 .126	.145 .100	.102 .057
10-497621-25	20	.025	.605 .555	.630 .580	.599 .554	.556 .511
10-497621-35	20	.025	.308 .258	.333 .283	.302 .257	.259 .214



All dimensions for reference only.

Amphenol Cylindrical Connectors for PCB Applications. This catalog provides the most commonly used insert pattern pin - out drawings which have been tooled for the purpose of attaching cylindrical connectors to printed circuit boards.

PINS

PCB Pin Contacts	Size	Tail Dia	Contact Stickout Max/Min (See Illustration below)			
			D38999/20 TVP00	D38999/26 TV06	D38999/24 TV07	
					Metal	Composite
10-40552-15	22M	.019	.335 .280	.360 .305	.329 .279	.286 .236
10-407552-55	22M	.019	.224 .169	.249 .194	.218 .168	.175 .125
10-407552-85	22M	.019	.060 .010	.085 .035	.054 .009	.011 NS
10-407552-95	22M	.019	NS	NS	NS	NS
10-407552-115	22M	.019	.022 NS	.023 NS	NS	NS
10-497640-15	20	.019	.348 .298	.373 .323	.342 .297	.299 .254
10-497640-25	20	.019	.231 .163	.238 .188	.207 .162	.164 .119
10-497640-45	20	.019	NS	NS	NS	NS
10-497640-65	20	.019	.138 .088	.163 .113	.132 .087	.089 .044
10-497596-15	20	.025	.058 .012	.083 .037	.052 .011	.009 NS
10-497596-25	20	.025	.148 .102	.173 .127	.142 .101	.099 .058
10-497596-35	20	.025	.229 .183	.254 .208	.223 .182	.180 .139
10-497596-55	20	.025	.346 .300	.371 .325	.340 .299	.297 .256
10-497695-15	16	.040	.255 .205	.280 .230	.249 .204	.206 .161
10-497630-25	16	.062	.348 .298	.373 .323	.342 .297	.299 .254
10-497630-35	16	.062	.060 .010	.085 .035	.054 .009	.011 NS
10-497630-45	16	.062	.108 .062	.133 .087	.102 .061	.059 .018
10-597502-15	12	.081	.228 .178	.252 .203	.222 .177	.179 .134
Wire Wrap Contacts		Tail Square				
10-407572-15	22D	.025	.014 NS	.498 .007	.008 NS	NS NS
10-407572-35	22D	.025	.155 .105	.180 .130	.149 .104	.106 .061
10-407572-45	22D	.025	.255 .205	.280 .230	.249 .204	.206 .161
10-407572-75	22D	.025	.521 .475	.546 .500	.515 .474	.472 .431
10-407584-25	20	.025	.605 .559	.630 .584	.599 .558	.556 .515
10-407584-35	20	.025	.308 .262	.333 .287	.302 .261	.259 .218

PCB socket and pin part numbers include finish designation - gold plating over suitable underplate in accordance with MIL-C-39029. For other finish variations, consult Amphenol.

Note: 22M and 22D contacts are interchangeable.

For other contact options available for use in Tri-Start connectors (thermo-couple, fiber optic), consult Amphenol.

Tri-Start

Application tools

The following data includes information pertaining to the application tools which have been established for crimping, inserting, and removing contacts incorporated in the TV, and MIL-DTL-38999 series III connectors.

specified in the installation instructions (L-624 and L-844) covering the TV, and MS series connectors, will provide reliable crimped wire to contact terminations. There is a possibility of additional crimping tools other than those included being available at present or in the future for this specific application.

CRIMPING TOOLS

Contact Size/Type	Crimping Tool	Turret Die or Positioner
12 Pin and Socket	M22520/1-01	M22520/1-04
16 Pin and Socket	M22520/1-01 M22520/7-01	M22520/1-04 M22520/7-04
20 Pin and Socket	M22520/1-01 M22520/2-01 M22520/7-01	M22520/1-04 M22520/2-10 M22520/7-08
22D Pin	M22520/2-01 M22520/7-01	M22520/2-09 M22520/7-05
22D Socket	M22520/2-01 M22520/7-01	M22520/2-07 M22520/7-05
8 Twinax Center Outer Pin & Socket	M22520/2-01	M22520/2-37
8 Twinax Intermediate Outer Pin & Socket	M22520/5-01	M22520/5-200

Where 2 or 3 tools are listed for a contact size, only one tool and its die or positioner are required to crimp the contact.

The above crimping tools and positioners are available from the approved tool manufacturer.

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

INSERTION TOOLS

Use with Contact Size	Plastic Tools		Metal Tools			
	MS Part Number	Color	Angle Type		Straight Type Proprietary Part Number	Color
			MS Part Number	Proprietary Part Number		
10 (Power)	M81969/14-05*	Grey / (White)	M81969/8-11	†	†	Green
12	M81969/14-04*	Yellow / (White)	M81969/8-09	11-8674-12	11-8794-12	Yellow
16	M81969/14-03*	Blue / (White)	M81969/8-07	11-8674-16	11-8794-16	Blue
20	M81969/14-10*	Red / (White)	M81969/8-05	11-8674-20	11-8794-20	Red
22D	M81969/14-01*	Green / (White)	M81969/8-01	11-8674-24	11-8794-24	Black
8 Coaxial	None Required					
8 Twinax	None		M81969/46-06**	None		Red

REMOVAL TOOLS

Use with Contact Size	Plastic Tools		Metal Tools				
	MS Part Number	Color	For Unwired Contacts Proprietary Part Number	Angle Type		Straight Type Proprietary Part Number	Color
				MS Part Number	Proprietary Part Number		
10 (Power)	M81969/14-05*	(Grey) / White	†	M81969/8-12	†	†	Green / White
12	M81969/14-04*	(Yellow) / White	11-10050-11	M81969/8-10	11-8675-12	11-8795-12	Yellow / White
16	M81969/14-03*	(Blue) / White	11-10050-10	M81969/8-08	11-8675-16	11-8795-16	Blue / White
20	M81969/14-10*	Orange	11-10050-9	M81969/8-06	11-8675-20	11-8795-20	Red / White
22D	M81969/14-01*	(Green) / White	11-10050-7	M81969/8-02	11-8675-24	11-8795-24	Green / White
8 Coaxial	M81969/14-12	Green	None	None	11-9170	DRK264-8††	N/A
8 Twinax	M81969/14-12	Green	None	M81969/46-12**	11-9170	N/A	N/A

The M81969/8, 11-8675, and 11-8794 metal contact insertion and removal tools will accommodate wires having the maximum outside diameter as follows: Contact size 12– .155, 16– .109, 20– .077, 22D– .050. When wire diameters exceed those specified, the plastic tools must be used.

* Double end insertion/removal tool.

** Twinax insertion tools are available only in a straight type, metal version.

*** For size 10 power contact application tools, consult Amphenol.

† To be determined.

†† Contact Daniels Manufacturing Co. for availability.

Tri-Start
How to order – (D38999,TV military, metal)

Military Part Number

To more easily illustrate ordering procedure of Tri- Start Connectors (metal)
by military designation, part number D38999/20F A35PB is shown as follows:

	D38999	20	F	A	35	P	B
Connector Type							
Shell Style							
Service Class							
Shell Size							
Insert Arrangement							
Contact Type							
Alternate Positions							

Connector Type

D38999/designates MIL- DTL - 38999 Series III
Connector

Shell Style

- 20 designates wall mount receptacle
 - 21 designates box mount receptacle, hermetic
 - 24 designates jam nut receptacle
 - 26 designates straight plug
 - 29 designates Lanyard Release plug with pin contacts*
 - 30 designates Lanyard Release plug with socket contacts*
 - 31 designates Lanyard Release plug with socket contacts*
 - * For ordering Amphenol Lanyard Release Connectors consult Factory
 - 32 designates plug protection cap
 - 33 designates receptacle protection cap
- See page 20 for ordering information on MS protection caps.

Service Class

- C non-Conductive , Anodic Coated Aluminum, 500 hour salt spray, 200°C
- F electroless nickel plated Aluminum, Optimum EMI Shielding effectiveness – 65dB @ 10GHz specification min., 48 hour salt spray, 200°C
- K corrosion resistant stainless steel, firewall capability, Plus 500 hour salt spray resistance, EMI – 45 dB @ 10 Ghz Specification min., 200°C
- W corrosion Resistant Olive Drab Cadmium Plate Aluminum, 500 hour extended salt spray, EMI – 50 dB @ 10 Ghz specification min., 175°C

- Y hermetic seal, Passivated Stainless Steel, 200° C
- S (non-hermetic, Connectors), Nickel Plated Stainless Steel, optimum EMI shielding effectiveness – 65 dB @ 10 GHz specification min., 48 hour salt spray, 200°C
- N (hermetic connectors), Nickel Plated Stainless Steel, 200°C

Shell Size
MIL-DTL-38999, Sizes 9 – 25

A	B	C	D	E	F	G	H	J	MIL Shell size
9	11	13	15	17	19	21	23	25	Amphenol Shell Size

Insert Arrangement
MIL-DTL-38999, see insert arrangement chart, page 5

- Contact Type
- P designates pin contacts
 - S designates socket contacts
 - A designates same as “P” except supplied less pin contacts
 - B designates same as “S” except supplied less socket contacts
 - (A & B designates non -standard contacts applications)

Alternate Positions
Locksmith keying - rotation of minor keys. See page 6.
(Use N for normal)

Tri-Start Weight comparisons

Depending on the shell style, shell size and contact count, weight saving can range from 17% to 40% compared to standard aluminum product.

Tri-Start Weight in ounces (includes contacts)

Size/ Arrange- ment	Wall Mount Receptacle (00)						Jam Nut Receptacle (07)								Plug (06)			
	Stainless Steel		Aluminum		Composite		Stainless Steel		Aluminum		Composite		Stainless Steel		Aluminum		Composite	
	Pin	Socket	Pin	Socket	Pin	Socket	Pin	Socket	Pin	Socket	Pin	Socket	Pin	Socket	Pin	Socket	Pin	Socket
9-35	.7216	.7840	.3248	.3777	.2588	.3121	1.1472	1.2096	.4416	.5040	.3489	.4413	1.0736	1.1360	.4236	.4625	.2606	.2994
9-98	.7216	.7776	.2496	.3056	.1664	.2224	1.1472	1.2032	.4416	.4976	.3744	.4640	1.0736	1.1296	.3968	.4624	.2991	.2327
11-35	.9488	1.0800	.3632	.4960	.2753	.4081	1.4304	1.5632	.5936	.7264	.4679	.6007	1.2480	1.3808	.5312	.6389	.3450	.4582
11-98	.9488	1.0620	.3632	.4768	.2753	.3889	1.4304	1.5440	.5936	.7072	.4679	.5815	1.2480	1.3616	.5330	.6283	.3468	.4457
13-8	1.2096	1.3888	.4800	.6592	.3696	.5488	1.9104	2.0896	.7664	.9456	.6560	.8352	1.8048	1.9840	.7936	.9728	.5237	.5952
13-35	1.2160	1.4320	.4864	.7024	.3762	.5922	1.9168	2.1328	.7728	.9888	.6136	.8296	1.8112	2.0272	.8000	.8472	.5301	.6531
13-98	1.2160	1.4016	.4864	.6720	.3762	.5618	1.9168	2.1024	.7728	.9584	.6136	.7992	1.8112	1.9968	.7978	.9856	.5244	.7157
15-5	1.5312	1.7904	.6352	.8944	.5027	.7619	2.3792	2.6384	.9728	1.2320	.7749	1.0341	2.2704	2.5456	.9632	1.1719	.6450	.8467
15-18	1.5456	1.8416	.7760	.9456	.6432	.8128	2.3936	2.6896	.9872	1.2832	.8544	1.1504	2.2848	2.5808	.9776	1.2736	.6594	.8208
15-35	1.5424	1.8768	.6464	.9808	.5139	.8483	2.3904	2.7344	.9840	1.3280	.7861	1.1301	2.2816	2.6256	1.2179	1.3184	.8961	1.0002
17-6	2.1488	2.5904	.9360	1.3776	.7812	1.2228	2.9152	3.3568	1.2336	1.6752	.9940	1.4356	2.5008	3.1024	1.1408	1.7424	.8160	1.4176
17-26	2.1344	2.5600	.9216	1.3472	.7668	1.1924	2.9008	3.3264	1.2192	1.6448	.9796	1.4052	2.4864	2.9720	1.1264	1.3334	.8017	.8062
17-35	2.1360	2.6640	.9232	1.4512	.7684	1.2964	2.9024	3.4304	1.2208	1.7488	.9812	1.5092	2.4880	3.0160	1.1280	1.5497	.8033	1.2144
19-11	2.2592	2.6656	.9696	1.4528	.7925	1.2757	3.4352	3.9184	1.4720	1.9552	1.2033	1.6865	2.9808	3.4640	1.3472	1.8304	.9632	1.4464
19-32	2.1888	2.7264	.9760	1.5136	.7989	1.3365	3.4416	3.9792	1.4784	2.0160	1.2097	1.7473	2.9872	3.5248	1.3536	1.8912	.9696	1.5072
19-35	2.1920	2.8432	.9792	1.6304	.8021	1.4533	3.4448	3.9792	1.4816	2.1328	1.2129	1.8641	2.9904	3.6416	1.3568	2.0080	.9728	1.6240
21-11	2.7456	3.4640	1.3088	2.0272	1.1088	1.8272	3.9712	4.0960	1.8128	2.5312	1.6128	2.3312	3.4448	4.1632	1.7344	2.5312	1.3039	1.8710
21-16	2.6784	3.3168	1.2416	1.8800	1.0422	1.6806	3.9040	4.6896	1.7456	2.3840	1.4504	2.0889	3.3776	4.0160	1.6672	2.3168	1.2352	1.8736
21-35	2.6672	3.4992	1.2304	2.0624	1.0310	1.8630	3.8928	4.5424	1.7344	2.5664	1.4393	2.2713	3.3664	4.1984	1.6560	2.2309	1.2255	1.8003
21-41	2.6768	3.3600	1.2400	1.9232	1.0406	1.7238	3.9024	4.7248	1.7440	2.4272	1.4489	2.1321	3.3760	3.5792	1.6656	1.8688	1.2336	1.4368
23-21	3.0352	3.8624	1.4496	2.2768	1.2279	2.0551	4.2368	4.5856	1.9440	2.7712	1.6368	2.4640	3.7920	4.6192	1.9216	2.7488	1.4637	2.2896
23-35	3.0240	4.0448	1.4384	2.4592	1.2167	2.2375	4.2256	5.2464	1.9328	2.9536	1.6256	2.6464	3.7808	4.8016	1.9104	2.6087	1.4525	2.1507
23-53	2.8992	3.9072	1.4560	2.4816	1.2343	2.2599	4.2432	5.1088	1.9504	2.8160	1.6432	2.5088	3.7984	4.6640	1.9280	2.7936	1.4672	2.2384
25-4	3.4512	4.4800	1.7312	2.8816	1.4864	2.1904	4.8048	5.8272	2.2016	3.2480	1.9568	2.8720	4.2224	5.2496	2.2128	3.2560	1.7133	2.4163
25-19	3.5312	4.7264	1.8112	3.0064	1.5664	2.7616	4.8848	6.0816	2.2816	3.4784	2.0368	3.2336	4.3024	5.4992	2.2928	3.4896	1.7933	2.7058
25-20	3.8190	4.7150	2.0173	3.1125	1.7733	2.8512	5.1430	6.0380	2.4877	3.5421	2.1872	3.2416	4.4350	5.3300	2.2580	3.0182	1.8288	2.8928
25-35	3.4416	4.6656	1.7216	2.9456	1.4776	2.7016	4.7952	6.0192	2.1920	3.4160	1.8915	3.1155	4.2128	5.4368	2.2032	3.4272	1.7037	2.9277
25-61	3.4304	4.4848	1.7282	2.7648	1.4841	2.5208	4.7840	5.8384	2.1808	3.2352	1.8803	2.9347	4.2016	5.2560	2.1920	3.2464	1.6912	2.7456

All weight measurements are for reference only.

Notice : All information, including illustrations given herein is believed to be accurate at the time of printing. In lieu of design advances, Amphenol reserves the right to change specifications without notice. This publication MIL-DTL-38999, Series III REV 12/09 supercedes all existing Amphenol literature on Series III Connectors.

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