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Amphenol

Subminiature
Cylindrical Connectors
MIL-DTL-38999, Series III
AC38907 0317



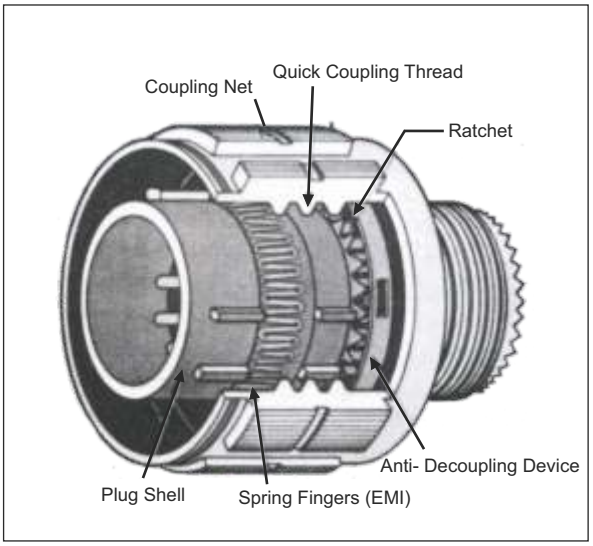
Amphenol

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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^{0}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^{0} 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^{0}C) and electroless nickel plating (200^{0}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

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 360^0 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.

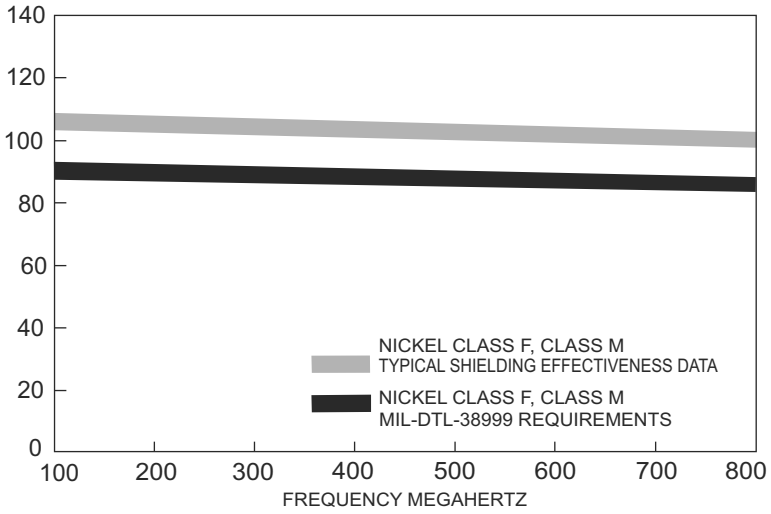
Available in sizes 10 power, 12, 16, 20 and 22D contacts are plated in the standard 50 micro inches minimum gold, with 100 micro inches as an option. Fiber optics, extended life and shielded coaxial contacts are also available in a wide selection of standard MIL-DTL-38999 insert patterns.

Optional Features

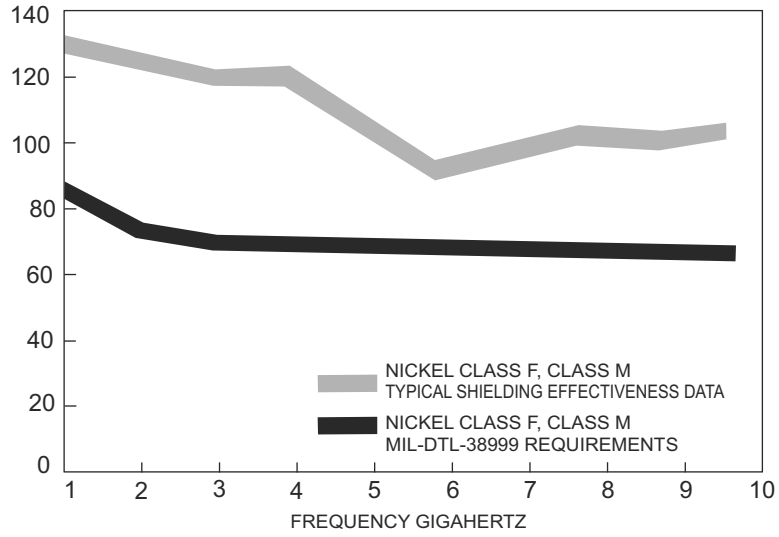
Options include hermetic seals, nickel plated stainless steel shells and a fail-safe lanyard release design, providing a quick breakaway connector with Tri-Start dependability. Circuit protection with filter contacts or surge arresting devices are also available. Lightweight, composite shells with conductive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

Test Data

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



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



Test data beyond 2GHz is subject to equipment variation.

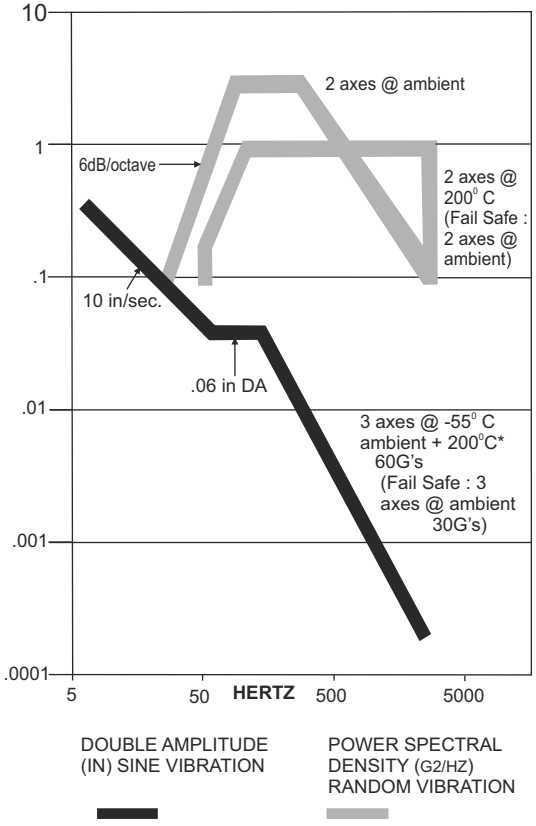
Amphenol Tri -Start connectors provide EMI/EMP shielding capability which exceeds MIL-DTL-38999 Series III requirements.

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
VIBRATION CRITERIA



* Dependant on shell finish

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	Military	Proprietary
Anodic Coating (Non - Conductive)	C	RX**
Electroless Nickel Electroless Nickel	F (Metal)	RF
	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

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, hermitic inserts only.
* Ground plane proprietary option available. Arrg. 9-5 is exclusively ground plane type.

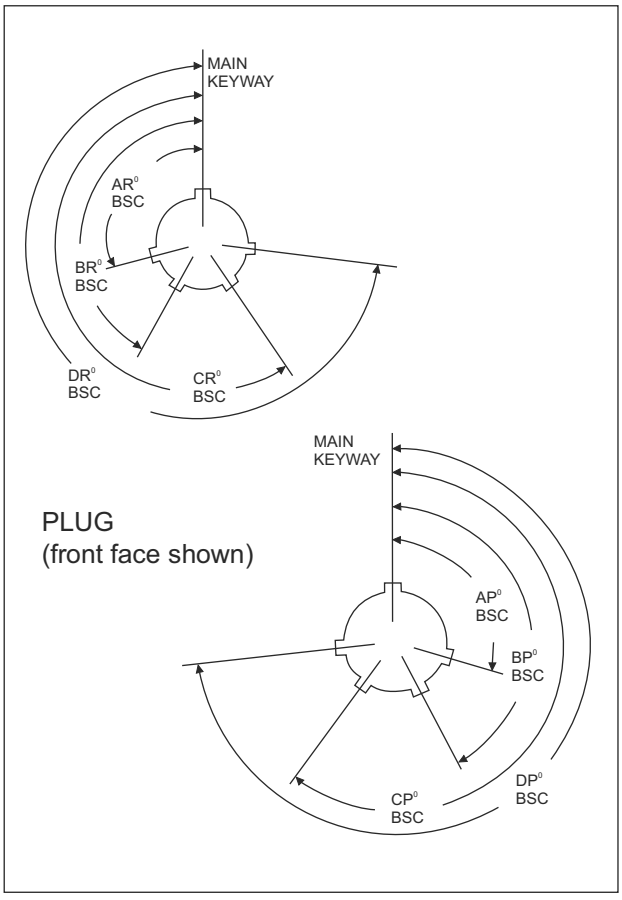
** Two size 16 contacts dedicated to fiber optics. Consult Amphenol.
*** For use in MIL-STD-1760 applications.
For RG180/U and RG195/U cables only.
(Contact Amphenol, for other cable application).
Size 8 Coax and Twinax are interchangeable.
Note: MS Connector 21-75 is supplied with size 8 twinax.
Proprietary connector 21-75 is supplied with size 8 coax.

Alternate positioning

Master Key/Keyway Position

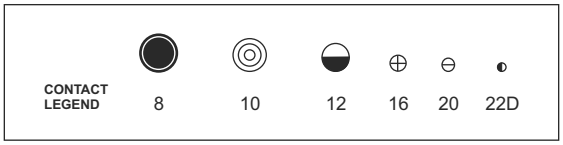
Shell Size	Key & keyway arrangement identification letter	AR° or AP° BSC	BR° or BP° BSC	CR° or CP° BSC	DR° or DP° BSC
9	N	105	140	215	265
	A	102	132	248	320
	B	80	118	230	312
	C	35	140	205	275
	D	64	155	234	304
	E	91	131	197	240
11, 13, and 15	N	95	141	208	236
	A	113	156	182	292
	B	90	145	195	252
	C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

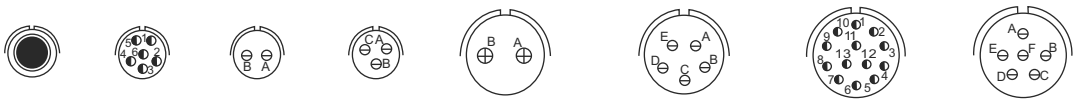
A plug with a given rotation letter will mate with a receptacle with the same rotation letter. The angles for a given connector are the same whether it contains pins or sockets. Inserts are not rotated in conjunction with the master key/keyway.



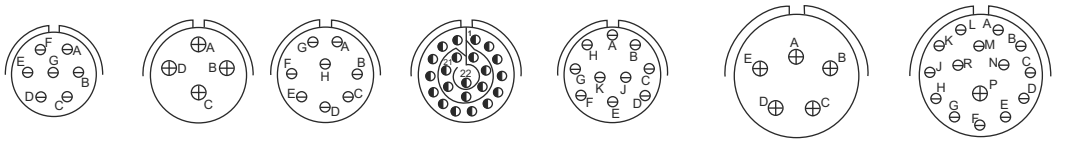
Insert Arrangements

Front face of pin insert illustrated

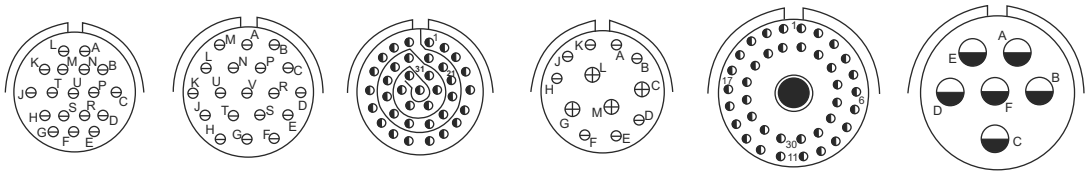




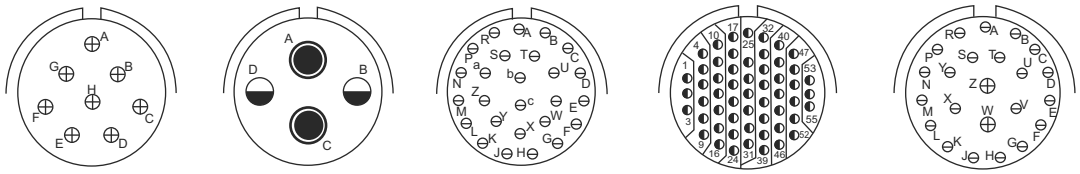
Insert Arrangement	9-5	9-35	9-94	9-98	11-2	11-5	11-35	11-98
Service Rating	Grounded	M	M	I	I	I	I	I
Number of Contacts	1	6	2	3	2	5	13	6
Contact Size	8 Twinax	22D	20	20	16	20	22D	20



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



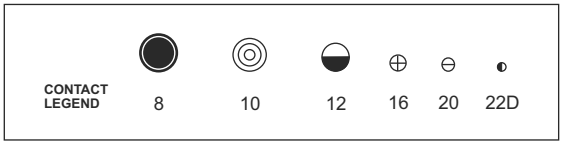
Insert Arrangement	15-18	15-19	15-35	15-97	17-2	176
Service Rating	I	I	M	I	M	I
Number of Contacts	18	19	37	8 4	38 1	6
Contact Size	20	20	22D	20 16	22D 8 Twinax	12

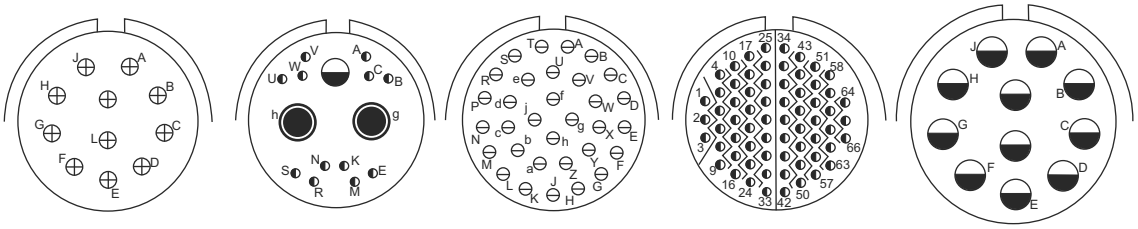


Insert Arrangement	17-8	17-22	17-26	17-35	17-99
Service Rating	II	Coax	I	M	I
Number of Contacts	8	2 2	26	55	21 2
Contact Size	16	12Coax 8Coax	20	22D	20 16

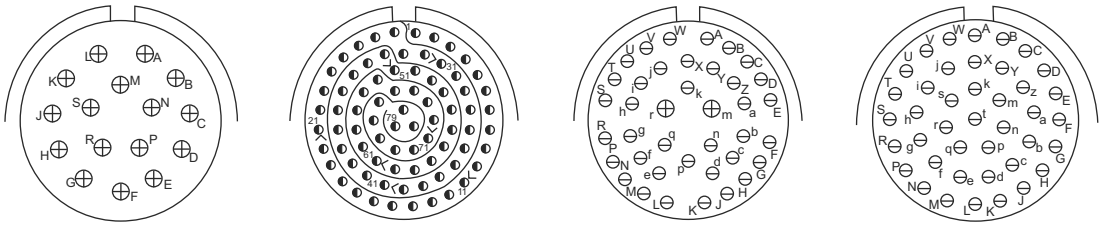
Insert Arrangements

Front face of pin inserts illustrated

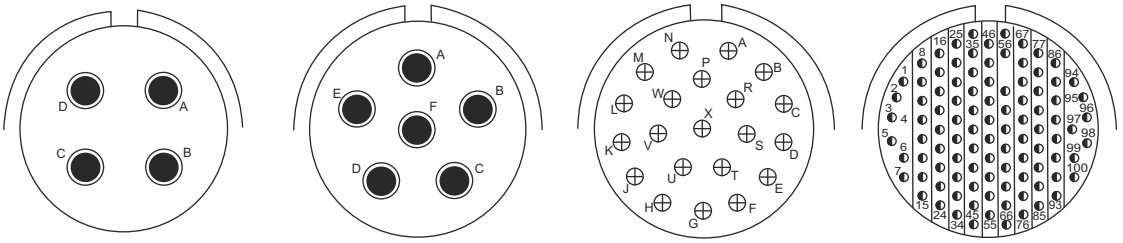




Insert Arrangement	19-11	19-31	19-32	19-35	21-11
Service Rating	II	M	I	M	I
Number of Contacts	11	2 1 12	32	66	11
Contact Size	16	8Coax 12 22D	20	22D	12



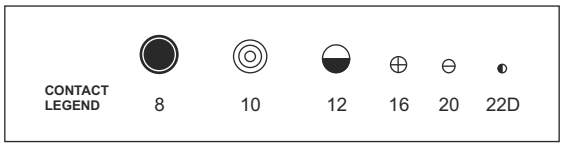
Insert Arrangement	21-16	21-35	21-39	21-41
Service Rating	II	M	I	I
Number of Contacts	16	79	37 2	41
Contact Size	16	22D	20 16	20



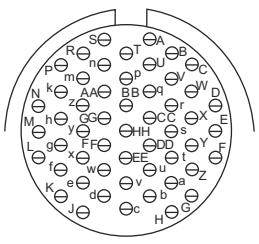
Insert Arrangement	21-75	23-6	23-21	23-35
Service Rating	M	M	II	M
Number of Contacts	4	6	21	100
Contact Size	(See Note)	8 Twinax	16	22D

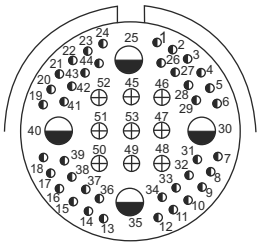
Note: MS connector 21-75 is supplied with size 8 twinax.
Proprietary connector 21-75 is supplied with size 8 coax.

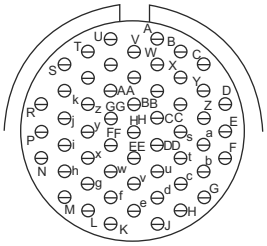
Insert Arrangements



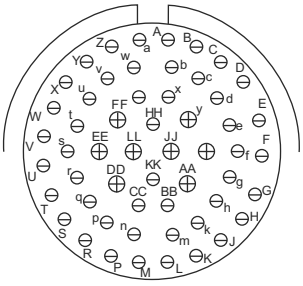
Front face of pin insert illustrated

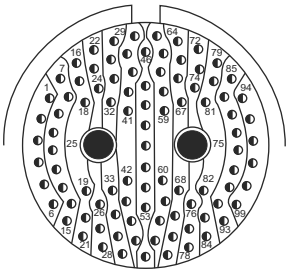


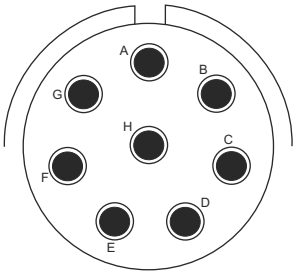




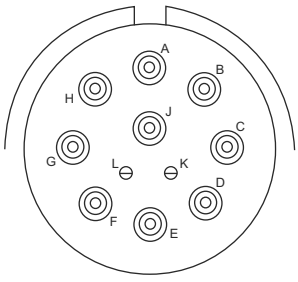
Insert Arrangement	23-53	23-54	23-55
Service Rating	I	M	I
Number of Contacts	53	40 9 4	55
Contact Size	20	22D 16 12	20

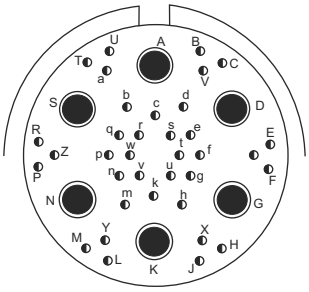


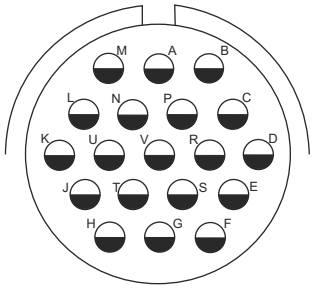




Insert Arrangement	25-4	25-7	25-8
Service Rating	I	Twinax	Twinax
Number of Contacts	48 8	97 2	8
Contact Size	20 16	22D 8 Twinax	8 Twinax



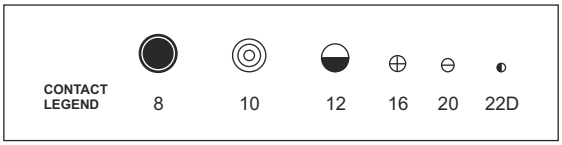




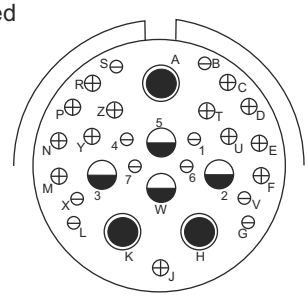
Insert Arrangement	25-11***	25-17	25-19
Service Rating	N	M	I
Number of Contacts	2 9	36 6	19
Contact Size	20 10 Power	22D 8 Twinax	12

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

Insert Arrangements

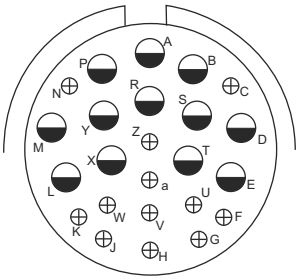


Front face of pin insert illustrated

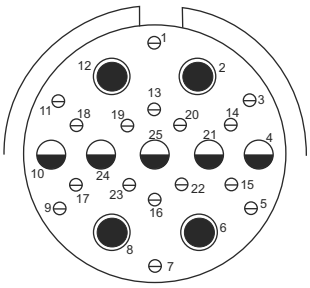


Insert Arrangement	25-20***
Service Rating	N
Number of Contacts	10 13 3 4
Contact Size	20 16 8 Twinax 12 Coax

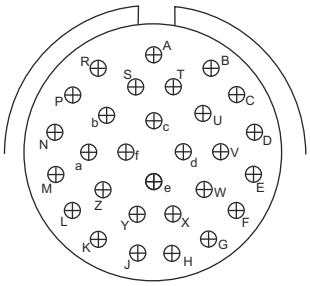
(Locations U and Y - Dedicated to Fiber Optics)



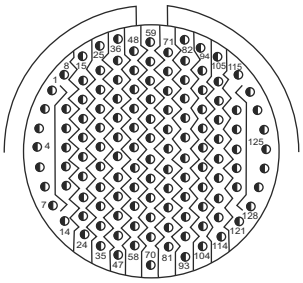
Insert Arrangement	25-24
Service Rating	I
Number of Contacts	12 12
Contact Size	16 12



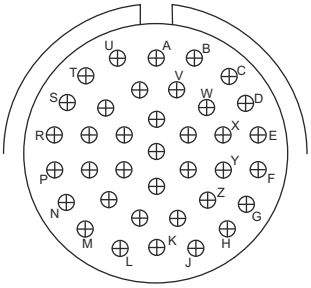
Insert Arrangement	25-26
Service Rating	I
Number of Contacts	16 5 4
Contact Size	20 12 8 Coax



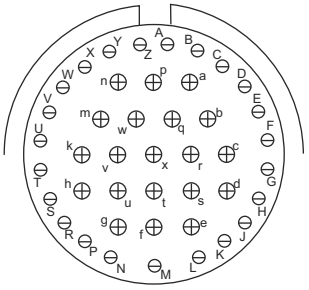
Insert Arrangement	25-29
Service Rating	I
Number of Contacts	29
Contact Size	16



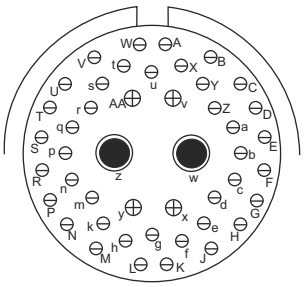
Insert Arrangement	25-35
Service Rating	M
Number of Contacts	128
Contact Size	22D



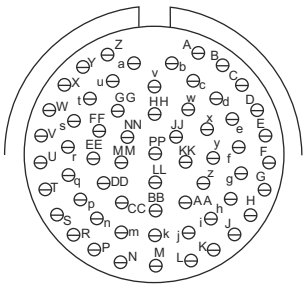
Insert Arrangement	25-37
Service Rating	I
Number of Contacts	37
Contact Size	16



Insert Arrangement	25-43
Service Rating	I
Number of Contacts	23 20
Contact Size	20 16



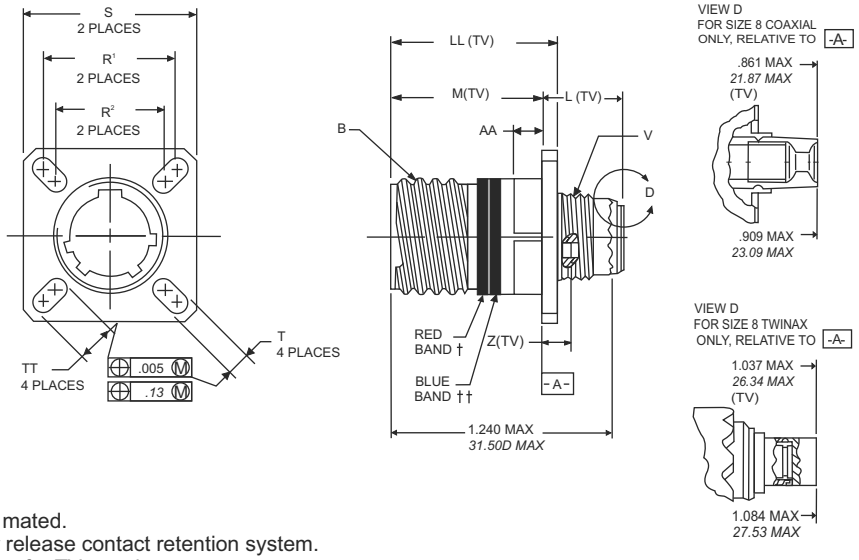
Insert Arrangement	25-46
Service Rating	I
Number of Contacts	40 4 2
Contact Size	20 16 8 Coax†



Insert Arrangement	25-61
Service Rating	I
Number of Contacts	61
Contact Size	20

***For use in MIL-STD-1760 applications (see page 16)
†Coax contacts for RG 180 or RG 195 cable

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)	R1	R2	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

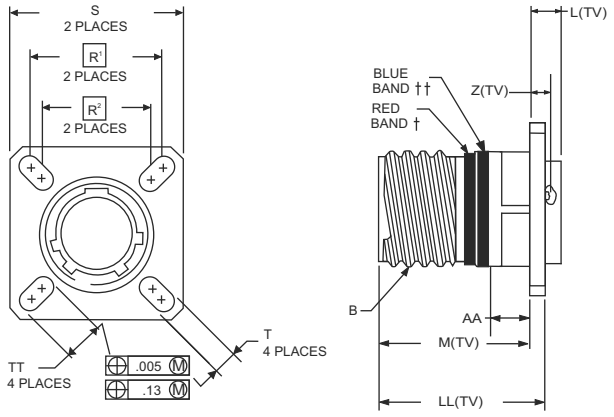
Millimeters

Shell Size	MS Shell Size Code	L Max. (TV)	M +0.00 –0.13 (TV)	R1	R2	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.

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

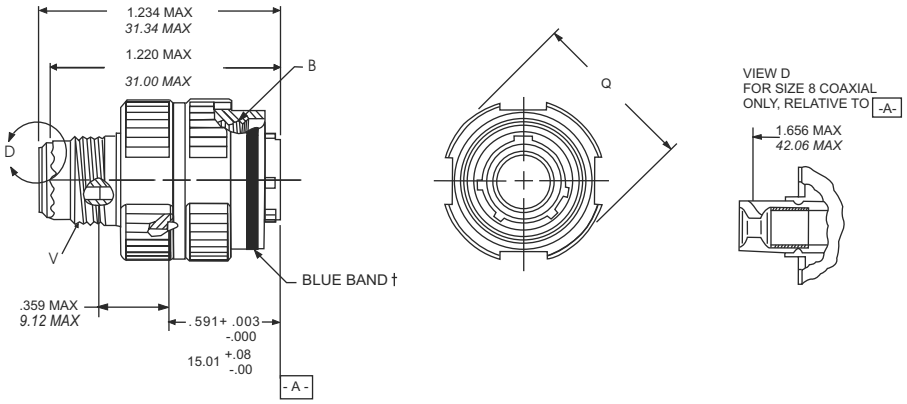
Shell Size	*MS Shell Size Code*	L Max. (TV)	*M +0.00 –0.13 (TV)*	*R1*	*R2*	*S Max.*	*T +0.20 –0.13*	*Z Max. (TV)*	*AA Max.*	*LL +0.15 –0.00 (TV)*	*TT +0.20 –0.13*
9	A	5.21	20.83	18.26	15.09	24.1	3.25	3.89	5.94	22.99	5.49
11	B	5.21	20.83	20.62	18.26	26.5	3.25	3.89	5.94	22.99	4.93
13	C	5.21	20.83	23.01	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.

*Available on request, contact factory

D38999/26



† Blue band indicates rear release contact retention system.

• To complete order number for TV metal connectors.

Inches

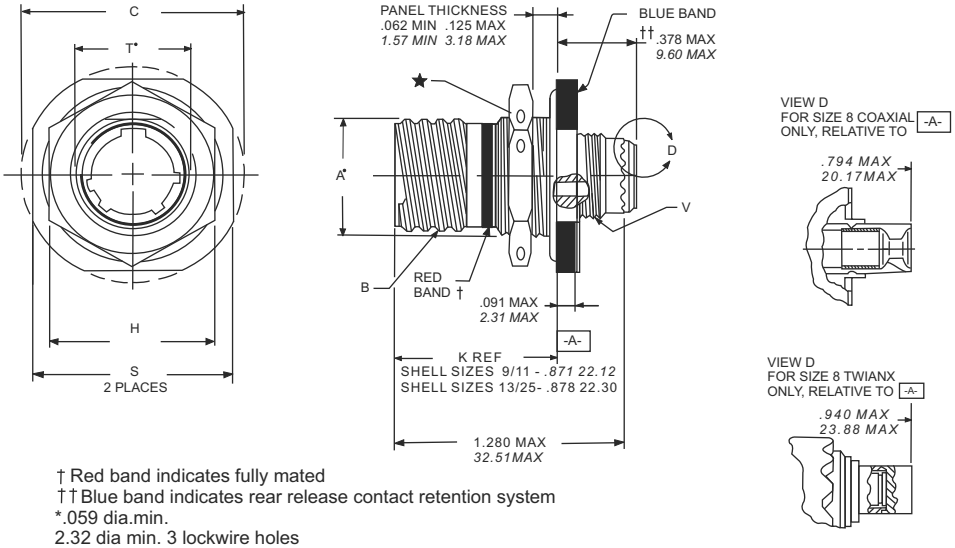
Shell Size	MS Shell Size Code	B Thread Class 2A 0.1P-0.3L-TS (Plated)	Q Dia. Max.
9	A	.6250	.859
11	B	.7500	.969
13	C	.8750	1.141
15	D	1.0000	1.266
17	E	1.1875	1.391
19	F	1.2500	1.500
21	G	1.3750	1.625
23	H	1.5000	1.750
25	J	1.6250	1.875

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

D38999/24



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

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

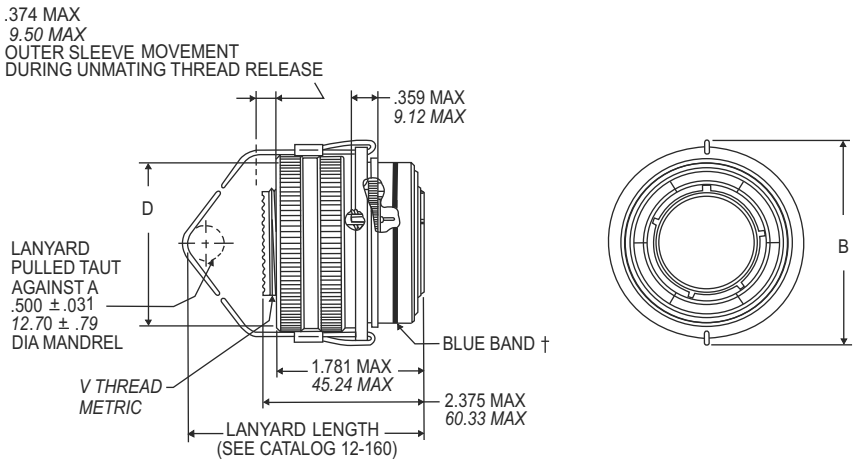
Millimeters

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

***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

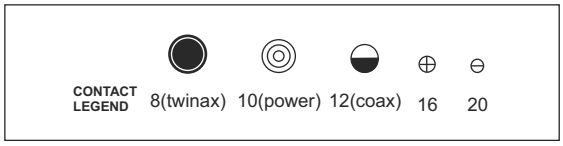
Shell Size	MS Shell Size Code	B Max.	D Hex +.43 –.41
11	B	1.846	1.109
13	C	1.972	1.250
15	D	2.079	1.375
17	E	2.205	1.500
19	F	2.301	1.625
21	G	2.472	1.750
23	H	2.594	1.875
25	J	2.705	2.000

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*

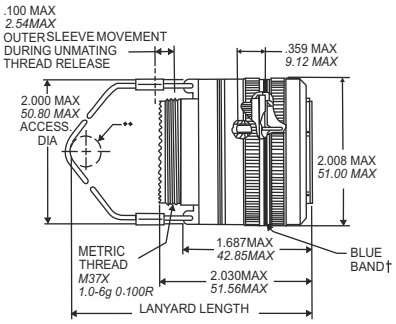
All dimensions for reference only

Lanyard Release Plug

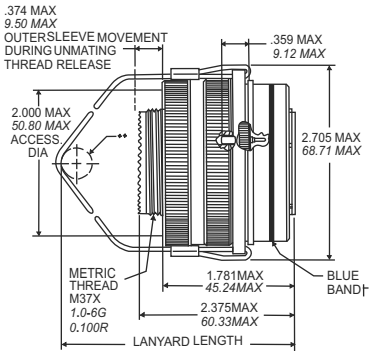


***D38999/31**

SHELL SIZE 25 ONLY



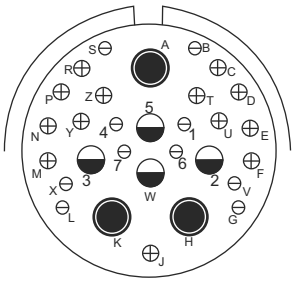
STYLE 1



STYLE 2

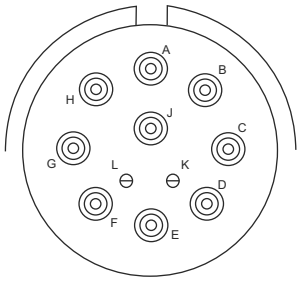
† Blue band indicates rear release contact retention system
* To complete order number, see page 22 and Amphenol catalogue 12-160
**Lanyard pulled taut against a .500± 0.31 dia. mandrel
*** Consult Amphenol for how to order proprietary part numbers.

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

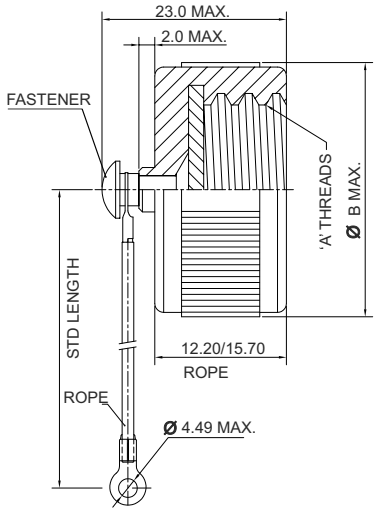
Insert Arrangement	Service Rating	Total Contacts	Contact Size			
			20	16*	12 (coax)	8 (twinax)
25-20	N	30	10	13*	4	3

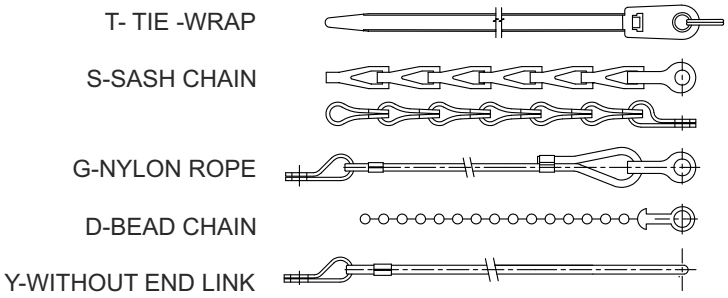
*Two size 16 contacts dedicated to fiber optics. Consult Amphenol or catalogue section 12-352 for fiber optic contact information.

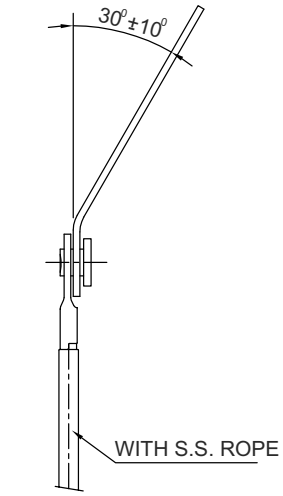
Insert Arrangement	Service Rating	Total Contacts	Contact Size	
			20	10 (power)
25-11††	N	11	11	9

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	1	1
20	1	1

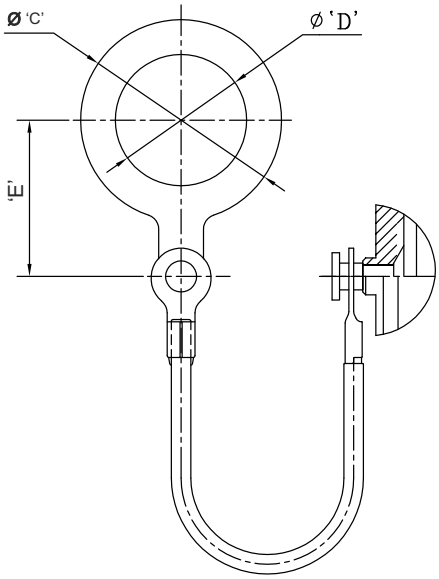
† Standard Subminiature Connector contacts-see page 20 for part numbers.
†† Currently available under proprietary part number only.







ANGLED RING



Shell Size	'A'-0.1P-0.3L T.S THREAD - 2B	'B' Max. Dia	'C' Max. Dia	'D' Min. Dia	'E' Max. Min.	'H' +13.0 -7.0
09	0.625"	23.0	27.0	17.64	21.0\18.0	127.0
11	0.750"	28.0	32.0	21.97	22.5\18.5	127.0
13	0.875"	31.0	37.0	25.12	25.0\23.5	127.0
15	1.000"	32.0	40.0	29.92	31.0\25.0	127.0
17	1.1875"	37.0	44.0	32.00	32.5\26.5	127.0
19	1.250"	39.0	46.0	36.27	34.0\28.0	127.0
21	1.375"	42.0	49.0	38.25	35.5\30.0	127.0
23	1.500"	45.0	54.0	42.62	37.5\31.5	127.0
25	1.625"	49.0	56.0	44.45	39.0\33.0	127.0

Notes :1)All dimensions are in mm, except 'A Threads' which are in inches.
2) Method of attachment to cover & or 'Ring' is optional.

REQUIREMENTS

MATERIAL:

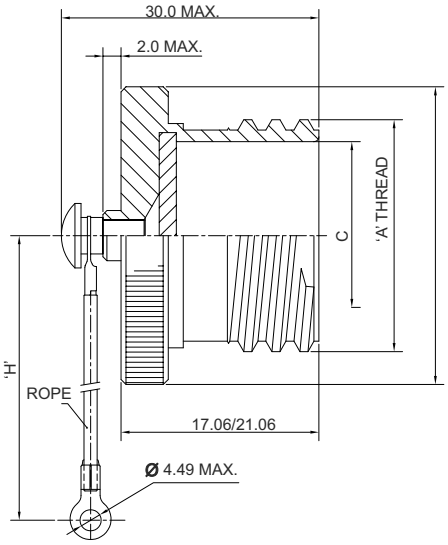
Cover : Machined Aluminium Alloy
Gasket: Silicone Elastomer
Ring: Stainless Steel Passivated
Rope: SS Teflon Coated. Insulation shall withstand 200°C Environment
Fastener: SS, Passivated
Option: Aluminium Integral To Cover
Mating Connector: MIL-DTL-38999, Series III Receptacle.

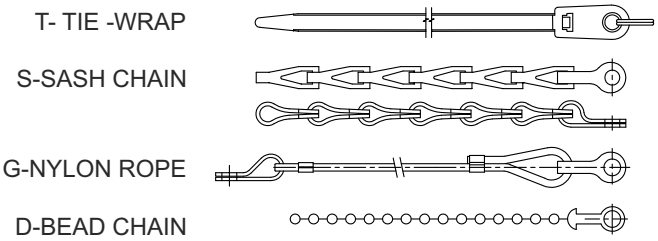
Ordering Information

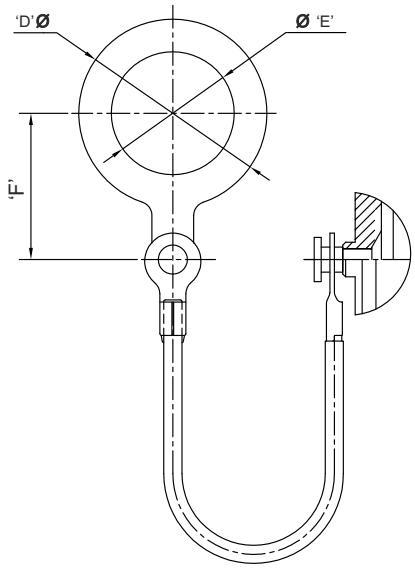
JAND38999/33 W 15 R

- JAND38999/33 — Designates Receptacle Dust Cover
- W — F - Electroless Nickel Finish; W - Aluminium, 500 hrs. Cadmium Olive Drab; For Other Finishes Contact Factory
- 15 — Shell Size :- 9,11,13,15,17,19,21,23 & 25
- R — Style: R - Rope; N - With Ring

Note :All dimensions for reference only.
For more options please refer our accessory catalogue or contact factory.







Shell Size	'A' THREAD - 2A -0.1P-0.3L T.S.	Ø'B' Max. Dia	'C' +0.00 -0.15	Ø'D' Max.	Ø'E' Min.	'F'	'H' +13.0 -7.0
09	0.625"	23.0	12.50	24.0	13.0	24.0\14.5	
11	0.750"	26.0	15.75	27.0	18.0	20.5\18.0	
13	0.875"	31.0	19.53	30.0	20.0	27.0\20.0	
15	1.000"	33.0	22.71	31.0	23.0	22.5\18.0	
17	1.1875"	37.0	25.88	37.0	26.0	30.5\23.5	127
19	1.250"	40.0	28.55	40.0	29.0	31.5\25.0	
21	1.375"	44.0	31.72	44.0	32.0	33.0\26.5	
23	1.500"	46.0	34.90	46.0	34.0	34.0\27.5	
25	1.625"	50.0	38.07	49.0	39.0	38.0\30.0	

Notes :1)All dimensions are in mm, except 'A Threads' which are in inches.
2) Method of attachment to cover & or 'Ring' is optional.

REQUIREMENTS

MATERIAL:

Cover : Machined Aluminium Alloy
Gasket: Silicone Elastomer
Ring: Stainless Steel Passivated
Rope: SS Teflon Coated. Insulation shall withstand 200^{0}C Environment
Fastener: SS, Passivated
Option: Aluminium Integral To Cover
Mating Connector: MIL-DTL-38999, Series III Plug.

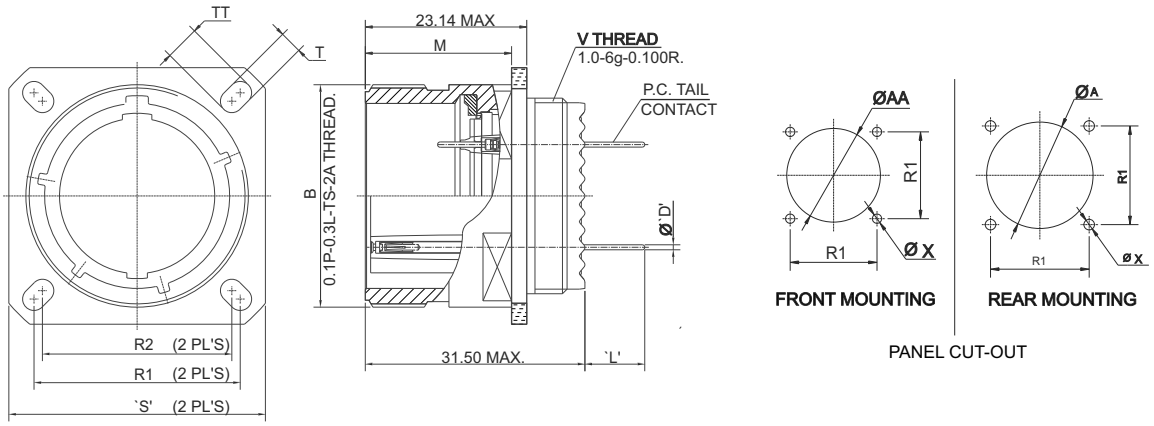
Ordering Information

JAND38999/32 W 15 R

- JAND38999/32 — Designates Plug Dust Cover
- W — F - Electroless Nickel Finish; W - Aluminium, 500 hrs. Cadmium Olive Drab; Z- Black Zinc Nickel Finish
- 15 — Shell Size :- 9,11,13,15,17,19,21,23 & 25
- R — Style: R - Rope; N - With Rope & Ring

Note :All dimensions for reference only.
For more options please refer our accessory catalogue or contact factory.

WALL MOUNTING R/CONN. P.C. TAIL CONTACT SER-III. (09 TO 25 SIZE) REGULAR.



ORDERING INFORMATION

D38999 /20-W-B-35 P N-CAX-QX

- Conn. Type
- Shell Style
- Service Class
- Shell Size
- Insert Arrangement
- Contact Type
- Alternate Position
- Contact Length (L)
- Contact Dia.

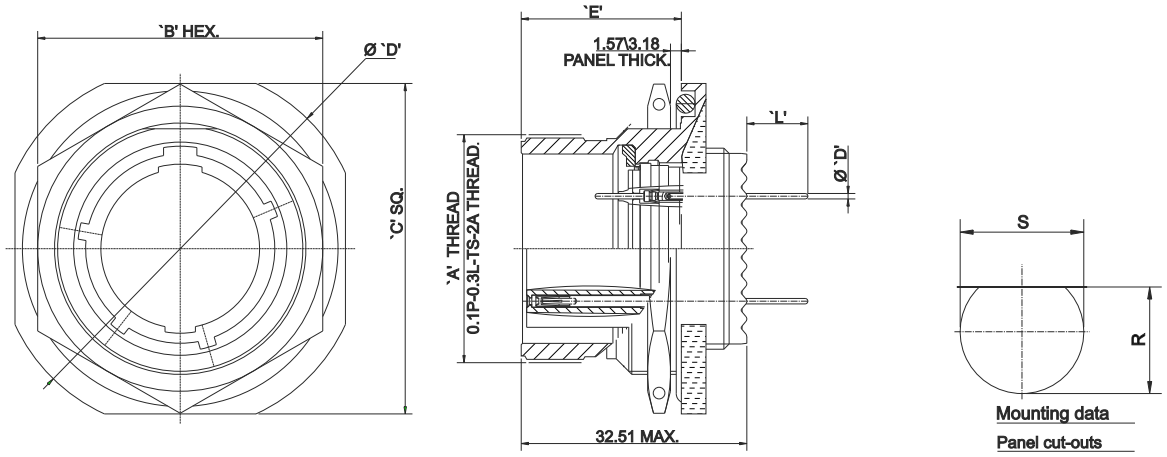
FOR DETAIL CONN. SPEC. REFER OUR D38999 CATALOG

Shell Size	B Thread.	M +0.0 -0.13	R1	R2	S MAX.	T +0.20 -0.13	TT +0.20 -0.13	V Metric Thread.	A MIN.	AA MIN.	X ±0.13
09	0.625"	20.83	18.26	15.09	24.10	3.25	5.49	M12	16.66	13.11	3.25
11	0.750"		20.62	18.26	26.50		4.93	M15	20.22	15.88	
13	0.875"		23.01	20.62	28.90			M18	23.42	19.05	
15	1.000"		24.61	23.01	31.30			M22	26.59	23.01	
17	1.1875"		26.97	24.61	33.70			M25	30.96	25.81	
19	1.250"		29.36	26.97	36.90			M28	32.94	28.98	
21	1.375"	20.07	31.75	29.36	40.10			M31	36.12	32.16	
23	1.500"		34.93	31.75	43.30	3.91	6.15	M34	39.29	34.93	3.91
25	1.625"		38.10	34.93	46.40			M37	42.47	37.69	3.81

PC, tail length 'L'	Contact ø 'D"											
	22D			20				16			12		
CA1=5.00±1.0	Ø 0.48±0.02	Ø 0.70/0.76	Ø 1.00±0.02	Ø 0.48±0.02	Ø 0.64±0.02	Ø 0.70/0.76	Ø 1.00±0.02	Ø 0.70/0.76	Ø 1.10±0.02	Ø 1.57±0.02	Ø 1.70±0.03		
CA2=8.50±0.50													
CA3=15.0±0.50													
CA4=20.0±0.50													
Contact ø type	Q1	Q2	Q3	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q1	Q2	Q3
PCB Hole ø min. (Recommended)	0.60	0.80	1.20	0.60	0.70	0.80	1.20	0.80	1.20	1.70	2.00		

All dimensions are in mm.

D38999 / JAM NUT RECEPTACLE CONN. ASSY. WITH P.C. TAIL CONTACT. (09 To 25 SIZE)



ORDERING INFORMATION

D38999 /24-W-B-35 P N-CAX-QX

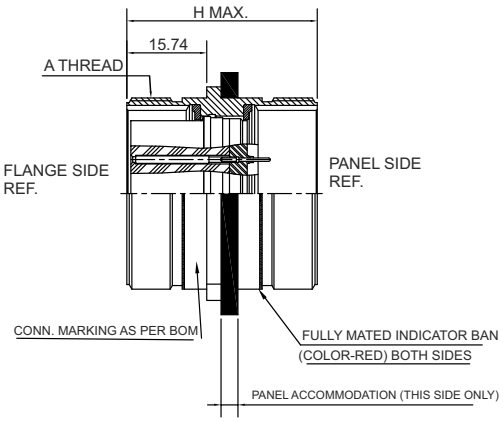
- Conn. Type
- Shell Style
- Service Class
- Shell Size
- Insert Arrangement
- Contact Type
- Alternate Position
- Contact Length (L)
- Contact Dia.

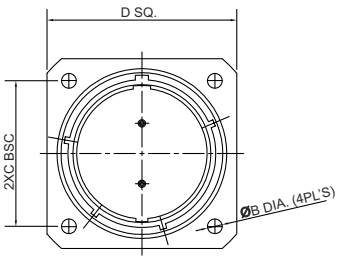
Shell Size	A Thread.	B +0.43 -0.41	C ±0.25	D Max	E	R +0.0 -0.25	S +0.25 -0.0
09	0.625"	22.23	26.97	30.45	22.12	17.02	17.78
11	0.7500"	25.4	31.75	35.20		19.59	20.96
13	0.8750"	30.18	34.93	38.38	22.30	24.26	25.65
15	1.000"	33.32	38.10	41.55		27.56	28.83
17	1.1875"	36.53	41.28	44.73		30.73	32.01
19	1.250"	39.67	46.02	49.50		33.91	35.18
21	1.375"	42.80	49.23	52.65		37.08	38.35
23	1.500"	46.02	52.37	55.85		40.26	41.53
25	1.625"	50.80	55.58	59.0		43.43	44.70

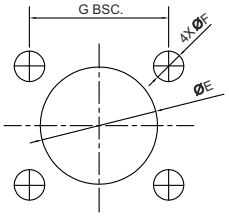
PC, tail length 'L'	Contact ø 'D"												
	22D			20				16			12		
CA1=5.00±1.0	Ø 0.48±0.02	Ø 0.70/0.76	Ø 1.00±0.02	Ø 0.48±0.02	Ø 0.64±0.02	Ø 0.70/0.76	Ø 1.00±0.02	Ø 0.70/0.76	Ø 1.10±0.02	Ø 1.57±0.02	Ø 1.70±0.03		
CA2=8.50±0.50													
CA3=15.0±0.50													
CA4=20.0±0.50													
Contact ø type	Q1	Q2	Q3	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q1	Q2	Q3
PCB Hole ø min. (Recommended)	0.60	0.80	1.20	0.60	0.70	0.80	1.20	0.80	1.20	1.70	2.00		

All dimensions are in mm.

Wall Mount Bulkhead Feed-Through 38999 Series III





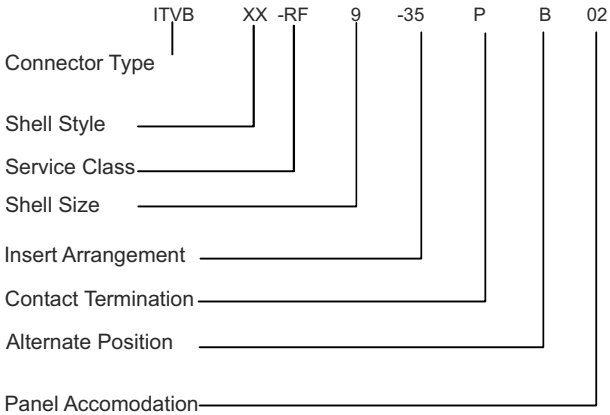


RECOMMENDED
PANEL MOUNTING HOLES

Table I Connector Dimension

Shell Size	'A' THREAD 0.1P-0.3L-2A	B DIA. ±0.254	C BSC	D DIM ±0.5	ØE Min.	ØF Holes	G BSC
9	0.6250	3.30	18.30	23.80	16.70		18.30
11	0.7500	3.30	20.60	26.20	20.20		20.60
13	0.8750	3.30	23.00	28.60	23.40		23.00
15	1.0000	3.30	24.60	31.00	26.60	3.4/3.1	24.60
17	1.1880	3.30	27.00	33.30	31.00		27.00
19	1.2500	3.00	29.40	36.50	32.90		29.40
21	1.3750	3.30	31.80	39.70	36.10		31.80
23	1.5000	4.00	34.90	42.90	39.30	4.0/3.8	34.90
25	1.6250	4.00	38.10	46.00	42.50	3.9/3.7	38.10

ORDERING INFORMATION



Connector Type
ITVB Bulkhead Feed-Through Connector

Shell Style
00 Wall Mount Receptacle

Service Class
RF Aluminium, Electroless Nickel Plated

RK Stainless Steel, Firewall Capacity-Contact Factory For Availability

RW Aluminium Olive Drab Cadmium Plate

RL Stainless Steel, Electroless Nickel

DT Aluminium, Durmalon

DZ Aluminium, Black Zinc-Nickel

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 (Product Catalog)

Contact Termination
P - Pin on Panel Side
S - Socket on Panel Side
PP - Pin on Both Side
SS - Socket on Both Side

Alternate Positions

A, B, C, D, E or Blank for Normal

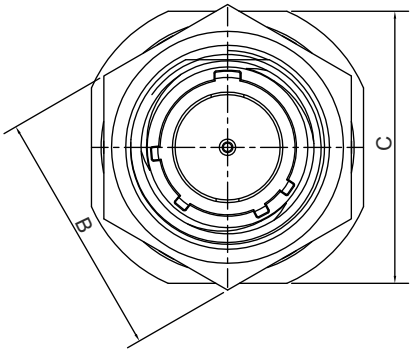
Panel Accommodation

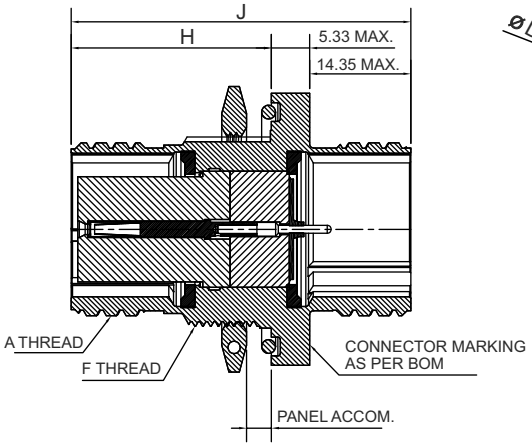
01. 3.175 Min.

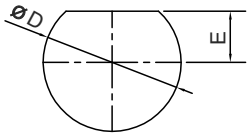
02. 6.35 min.

03. 12.70 Min.

JAM NUT BULKHEAD FEED-THROUGH 38999 SERIES III





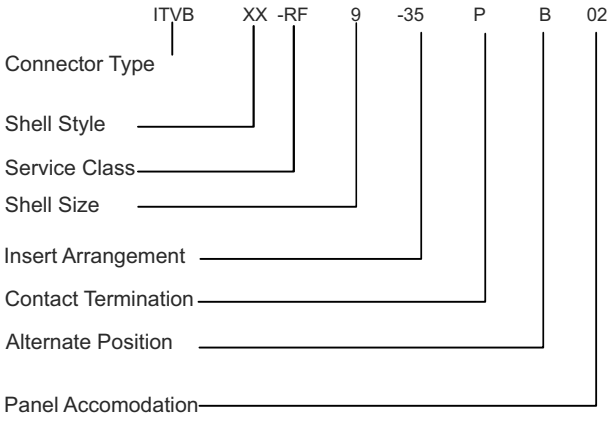


RECOMMENDED
PANEL CUT-OUT

TABLE II		
DASH NO.	J MAX.	H MAX.
01	40.60	22.90
02	43.90	25.90
03	50.30	32.30

Table I Connector Dimension						
Shell Size	'A' THREAD 0.1P-0.3L-TS-2	B DIM.	C DIM. MAX.	D DIA.	E DIM.	F THREAD
9	0.6250	22.20	27.70	17.70	8.20	M17X1
11	0.7500	25.40	32.50	20.90	9.80	M20X1
13	0.8750	31.80	35.60	27.60	12.20	M25X1
15	1.0000	34.90	38.90	28.80	13.70	M28X1
17	1.1875	38.10	42.20	32.00	15.30	M32X1
19	1.2500	41.30	46.70	35.20	16.10	M35X1
21	1.3750	44.50	50.50	38.40	17.70	M38X1
23	1.5000	47.60	53.10	41.50	19.30	M38X1
25	1.6250	50.80	56.10	44.70	20.90	M44X1

ORDERING INFORMATION



Connector Type
ITVB Bulkhead Feed-Through Connector

Shell Style
07 Jam Nut Receptacle

Service Class
RF Aluminium, Electroless Nickel Plated

RK Stainless Steel, Firewall Capacity-Contact Factory For Availability

RW Aluminium Olive Drab Cadmium Plate

RL Stainless Steel, Electroless Nickel

DT Aluminium, Durmalon

DZ Aluminium, Black Zinc-Nickel

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 (Product Catalog)

Contact Termination
P - Pin on Panel Side
S - Socket on Panel Side
PP - Pin on Both Side
SS - Socket on Both Side

Alternate Positions

A, B, C, D, E or Blank for Normal

Panel Accommodation	H Max.
01. 3.175 Min.	38.86
02. 6.35 min.	42.16
03. 12.70 Min.	48.51

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

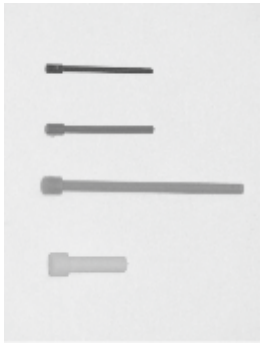
Contact Size	Proprietary No.	Military No.
8 (Coax)	10-482099-8	NA
8 (Twinax)	T3-4008-59P	NA
10 (Power)	10-576225	NA
12	10-405996-12	MS27488-12
16	10-405996-16	MS27488-16
20	10-405996-20	MS27488-20
22D	10-405996-22	MS27488-22

Contact Size	Wire Size (AWG)	Finished Wire outside dimensions	
		Minimum Inch / mm	Maximum Inch / mm
22 D	28,26,24,22	0.030 / 0.76	0.054 / 1.37
22M*	28,26,24	0.030 / 0.76	0.050 / 1.27
22*	26,24,22	0.034 / 0.86	0.060 / 1.52
20	24,22,20	0.040 / 1.02	0.083 / 2.11
16	20,18,16	0.065 / 1.65	0.109 / 2.77
12	14,12	0.097 / 2.46	0.142 / 3.61
8	M17/095-RG-180**	0.135 / 3.43	0.155 / 3.94

* Inactive for New design.
** MIL-C-17
Connectors shall meet the requirements specified when:
a. A full complement of wire of the applicable minimum or maximum insulation diameter is installed.
b. Any combinations of wire diameters not exceeding dimensions of (a), above can be used

Wire Sealing Plugs (For Respective Pin / Socket Insert) :-

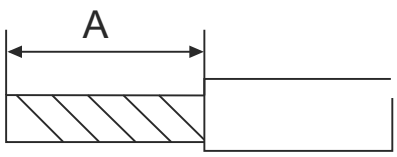
Series III Size	Series I & II Size	Part Number		Color Code
		AIIPL	MS27488	
22 D	22 D	105790	MS27488-22	Black
22M	22M	–	MS27488-22	Black
-	22	105790	MS27488-22	Black
20	20	104138	MS27488-20	Red
16	16	103964	MS27488-16	Blue
12	12	105793	MS27488-12	Yellow



Wire sealing plugs meet MS27488 standards.
The plugs are color coded according to size for easy identification. Wire sealing plug may be ordered separately

Wire Stripping

Wire Size	A in Inch / mm
22D or 22 M*	0.125 / 3.18
20	0.188 / 4.77
16	0.188 / 4.77
12	0.188 / 4.77

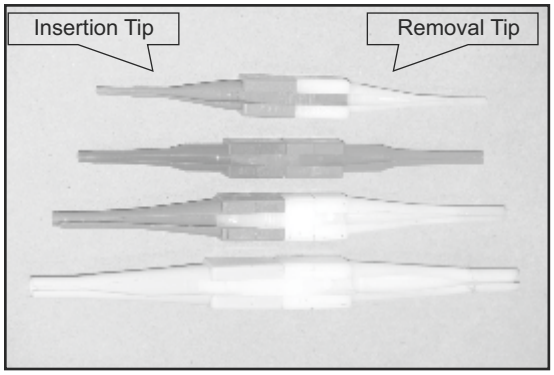


Note :- Strip insulation from end of wire to be crimped (Refer the above table)
Do not cut or damage wire strands.
* Inactive,not recommended for new design, replacement only.

Contact Size	Pin Contact Series I/II/III		Socket Contact Series I & III		Socket Contact Series II	
	Crimp Tool Part no.	Locator or Turret Part No.	Crimp Tool Part no.	Locator or Turret Part No.	Crimp Tool Part no.	Locator or Turret Part No.
22D or 22M	M22520/2-01	M22520/2-09	M22520/2-01	M22520/2-07	M22520/2-01	M22520/2-06
22	M22520/2-01	M22520/2-09	M22520/2-01	M22520/2-07	M22520/2-01	M22520/2-06
20	M22520/1-01	M22520/1-04 orTH 187	M22520/1-01	M22520/1-04	M22520/1-01	M22520/1-04
16	M22520/1-01	M22520/1-04 orTH 187	M22520/1-01	M22520/1-04	M22520/1-01	M22520/1-04
12	M22520/1-01	M22520/1-04	M22520/1-01	M22520/1-04	M22520/1-01	M22520/1-04

Tools – Plastic

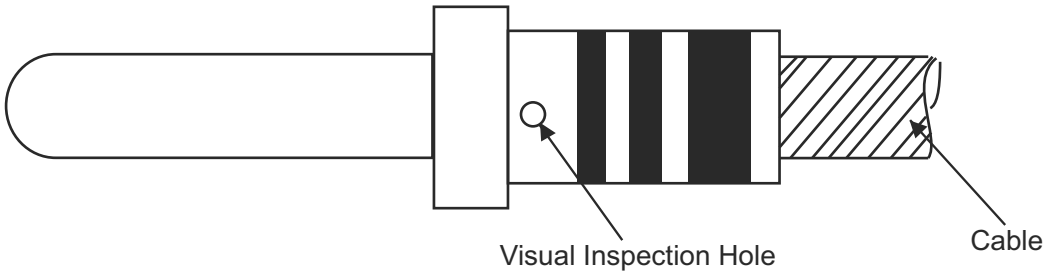
Contact Size	Insertion Color Tip	Removal Color Tip	AIIPL Part No.	AIIPL Description	M81969 Part No.	Superseded Military Part No.
22D	Green	White	105786	I/R Tool (Green / White)	M81969/14-01	MS27534-22D
22M	Green	White	-	-		
20	Red	Orange	105787	I/R Tool (Red / Orange)	M81969/14-10	MS27534-20
16	Blue	White	103968	I/R Tool (Blue / White)	M81969/14-03	MS27534-16
12	Yellow	White	105789	I/R Tool (Yellow / White)	M81969/14-04	MS27534-12



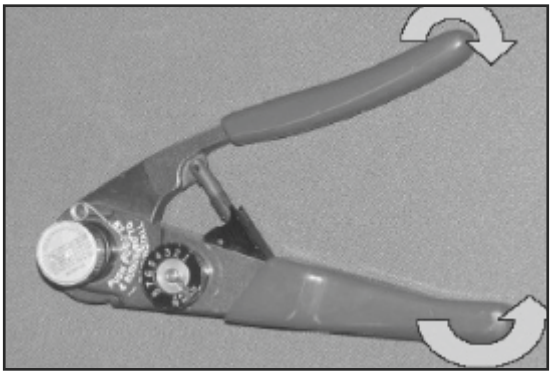
Tools – Metal (MS)

Contact Size	Insertion			Removal			
				Color Band		MS27495 Part No.	AIIPL Part No.
	Color Band	Ms27495 Part No.	AIIPL Part No.	No.1	No.2		
22D or 22M*	Black	MS27495 A22M	--	Black	White	MS27495 R22M	--
22*	Brown	MS27495 A22	–	Brown	White	MS27495 R22	–
20	Red	MS27495 A20	–	Red	White	MS27495 R20	–
16	Blue	MS27495 A16	--	Blue	White	MS27495 R16	--

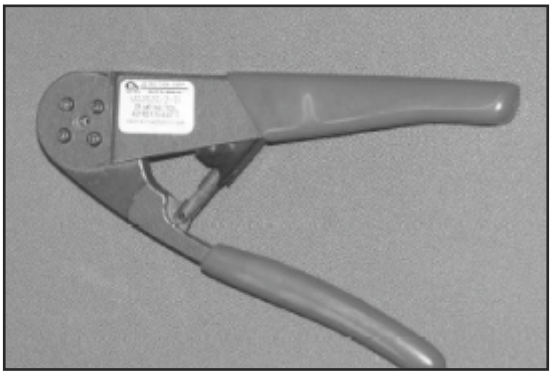
Note : Band No. 1 indicates tool size
Band No 2 Indicates removal tool
* Replacement only, not recommended for new design.



1. Insert stripped wire into contact crimp pot, wire must be Visible through inspection hole.



2. Using correct crimp tool (DMC or ASTRO Make) & Locater, cycle the tool once to be sure the indentors are open. Insert contact & wire into Locater
Squeeze tool handles firmly & completely to ensure a proper crimp. The tool will not release unless the crimp indentors in the tool head have been fully actuated.



3. Release crimped contact & wire from tool, be certain the wire is visible through inspection hole in contact.

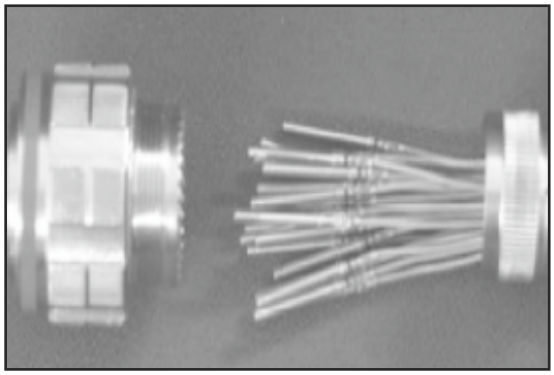


Fig. - 1

1. Remove accessories from plug or Receptacle & slip over wire bundle in proper order for reassembly.

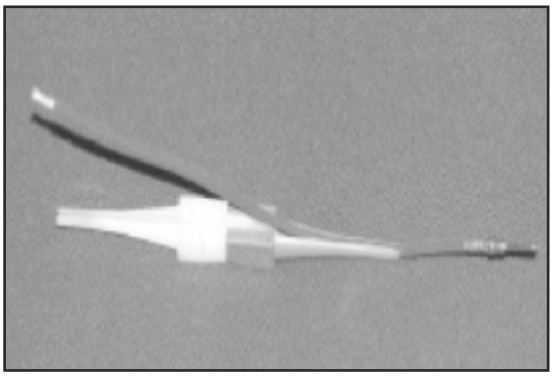


Fig. - 2

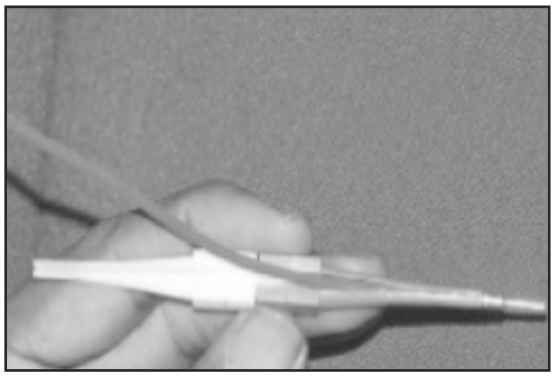


Fig. - 3

The contact insertion is made with the tool color side according to the contact sizes (Refer the table - tool - plastic)
2. Hold the tool & Insert the wire into the longitudinal groove. (Refer the Fig - 2)
3. Pull the crimped wire to the rear of the tool until the end of the tool is resting on the contact shoulder. (Refer the Fig. - 3)

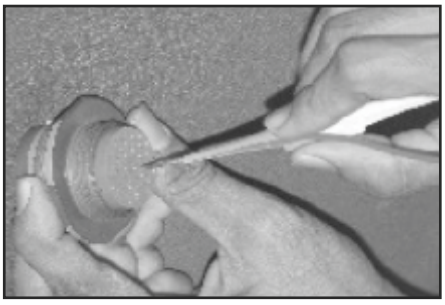


Fig. - 4

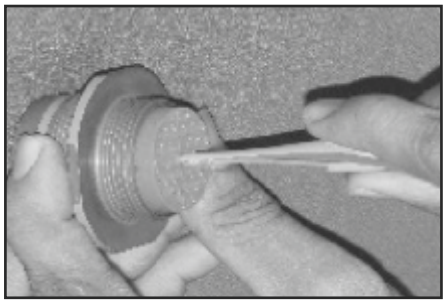


Fig. - 5

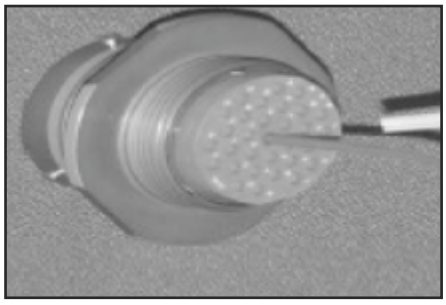


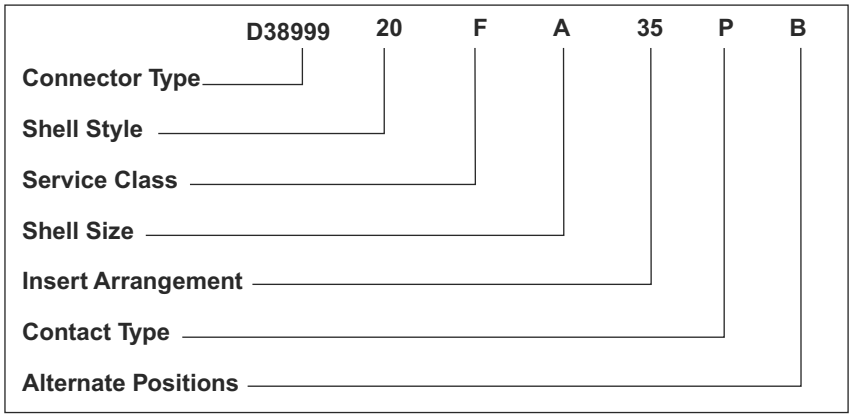
Fig. - 6

4. Place the contact to be connected in the chosen cupping.
5. With the tool, slowly push the contact in the cupping. You will feel a firm stop once the contact is in position in the cupping.
6. Release the wire & pull out the tool. Exert a gentle pull on wire to make sure that the contact is properly locked in.

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:



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 Shield-Ing 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

J* Composite Material Cadmium Green Finish

M* Composite Material Electro less Nickel Finish

*For J & M Class contact factory

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

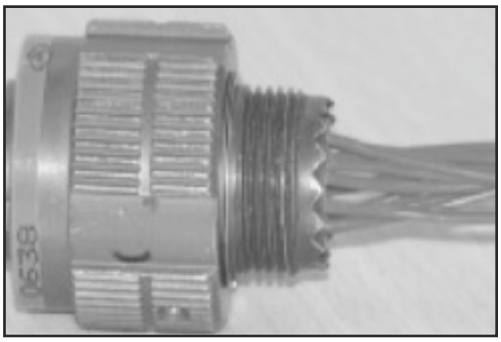
Contact Type

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)

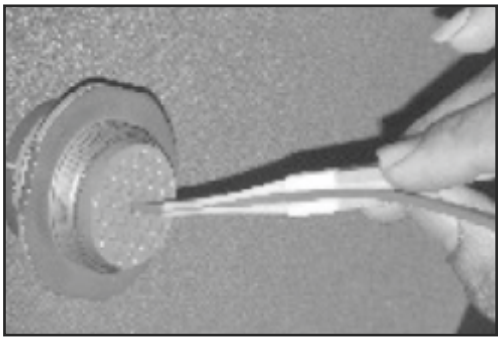
Alternate Positions

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

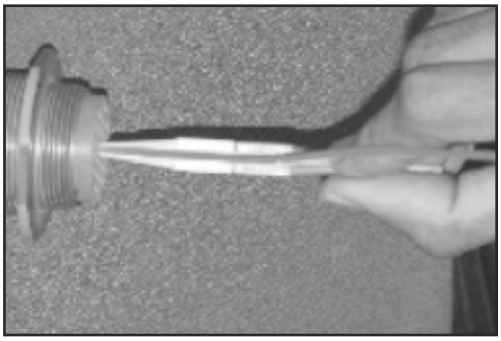
1. Remove accessories from plug or receptacle & slide accessories back along wire bundle.



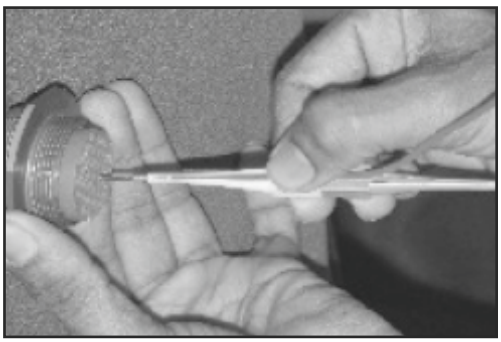
2. The contact removal is made with the tool WHITE side according to the contacts size.
3. Put the contact wire to be removed in the longitudinal tool groove.



4. Slowly slide the tool down along the wire in the cupping until a mechanical stop is reached. At this point, the contact retention clips are unlocked.



5. Press the contact wire to be removed against the grooves of the tool & pull the wire & tool simultaneously outside of the connecting cupping.



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 03/17 supercedes all existing Amphenol literature on Series III Connectors.

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A Global Company



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Bangalore Operations

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