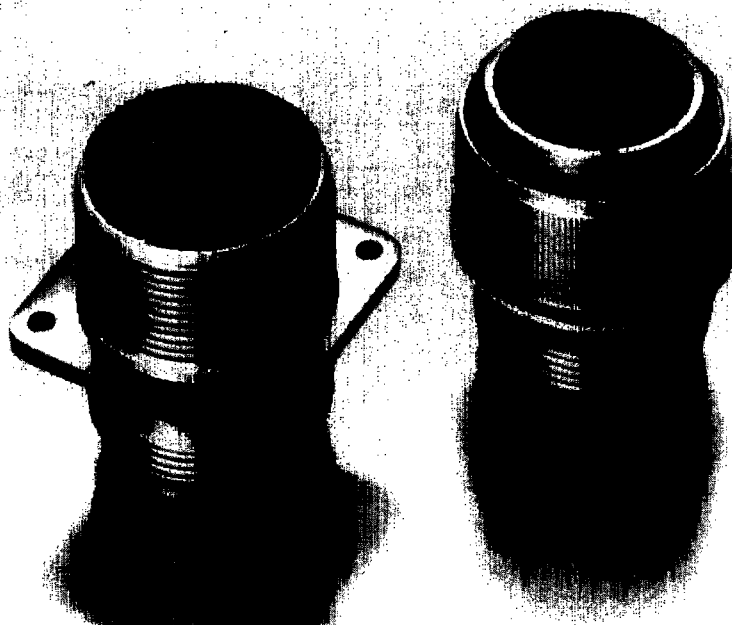


MIL-C-5015

Product Facts

- Largest number of shell sizes, styles, classes, and insert arrangements qualified to MIL-C-5015
- Contact sizes 16 through 0
- MS345* Series intermateable with existing MIL-C-5015 solder or crimp versions on existing equipment
- Self-locking plugs to eliminate the need for safety wiring
- Thermocouple pin and socket contacts are available, consult AMP or Matrix Science Corporation for specifications
- Consult AMP for information on shell sizes 44 and 48.



The environmentally sealed MIL-C-5015 connector with crimp contacts was developed to replace the MIL-C-5015 solder type connector. This redesigned connector is intermateable and intermountable.

These connectors accommodate contact sizes 0 to 16 and shell sizes 8 to 48". Multiple interlock systems provide for permanent insert retention. Plugs with an internal ratcheting mechanism, which

prevents unmating due to vibration or shock, are available as well as the standard plug with the captive coupling nut.

Complete environmental sealing includes individual contact seals, interfacial seals between contacts, a peripheral gasket shell-to-shell seal, redundant rear-wire seals, and insert-to-shell seals.

Other design features show how Matrix Science keeps an old connector standard abreast of current technology. The

captive coupling nut, for example, uses retaining rings in combination with "L" washers to prevent inadvertent disassembly. Superior tolerancing of the damage-proof retention clip provides positive retention of contacts, while positive control of the dielectric offers easy contact insertion.

Some of these connectors are also supplied to McDonnell Douglas Specification BAN 7025, DC60 Series.

MIL-C-5015 (Continued)

Performance Specifications

Voltage Rating

Altitude		Service Rating					
ft.	m	Inst.	A	D	E	B	C
Sea Level	-	1000	2000	2800	3500	4500	7000
50,000	15 240	400	600	675	750	825	975
70,000	21 326	260	360	400	440	480	560
110,000	33 528	200	200	200	200	200	200

Operating Temperature Range
-55°C to +200°C [-75°F to +392°F]

Environmental Seal
Wired, mated connectors with the specified accessory attached will meet the altitude immersion test specified in MIL-C-5015.

Durability
Minimum of 100 mating cycles

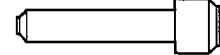
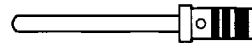
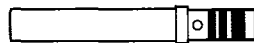
Shock
Wired, mated connectors are subjected to one shock in each of three mutually perpendicular axes with pulse of an approximate half sine wave of 50 g magnitude for a duration of 11 milliseconds. All contacts wired in series circuit with 100±10 milliamperes of current flow.

Contact Current Rating and Retention

Contact Size*	Current Rating		Contact Retention	
	Amperes Max.	Voltage Drop Millivolts	lb	N
16	13	50	25	111.2
12	23	50	30	133.4
8	46	25	50	222.4
4	80	14	60	266.9
0	150	12	75	333.6

* Organize individual circuits to maintain heat rise within operating temperature requirements.

Contacts, Sealing Plugs and Assembly Tools



Socket Contact

Pin Contact

Sealing Plug

Contact Size	Wire Range		Socket Contacts		Pin Contacts		Sealing Plugs	
	AWG	mm ²	Military Part No.	MATRIX Part No.	Military Part No.	MATRIX Part No.	Military Part No.	MATRIX Part No.
16S**	20-16	0.5-1.4	M39029/30-217	5100-033-1601	M39029/29-212	5000-029-0016	MS27488-16	3400-043-0016
16	20-16	0.5-1.4	M39029/30-218	5100-033-1602	M39029/29-212	5000-029-0016	MS27488-16	3400-043-0016
12	14-12	2-3	M39029/30-219	5100-033-0012	M39029/29-213	5000-029-0012	MS27488-12	3400-043-0012
8	10-8†	5-8.5	M39029/30-220	5100-033-0008	M39029/29-214	5000-029-0008	MS27488-8	3400-043-0008
4	6-4†	13-21	M39029/30-221	5100-033-0004	M39029/29-215	5000-029-0004	MS27488-4	3400-043-0004
0	2-0†	34-60	M39029/30-222	5100-033-0000	M39029/29-216	5000-029-0000	MS27488-0	3400-043-0000

** Shorter wire barrel

† Use MS3348 bushing to accommodate smaller wire.

Crimping Tools

Contact Size	Wire Range		Finished Wire Dia. Range		Color Code	Military Part No.	Crimping Tool	Power Unit 400B		
	AWG	mm ²	inch	mm				Turret or Positioner	Crimp Head	Locator
16S	20-16	0.5-1.4	.053-.103	1.34-2.62	Rd./Wh.	M22520/1-01	M22520/1-02	-	-	
16	20-16	0.5-1.4	.053-.103	1.34-2.62	Bl./Wh.	M22520/1-01	M22520/1-02	-	-	
12	14-12	2-3	.085-.158	2.15-4.01	Yel./Wh.	M22520/1-01	M22520/1-02	-	-	
8	10-8	5-8.5	.132-.255	3.35-6.48	Wh./Red.	M22520/23-01	M22520/23-02	414DA-8	404A	
4	6-4	13-21	.237-.370	6.01-9.40	Wh./Bl.	M22520/23-01	M22520/23-04	414DA-4	4112	
0	2-0	34-60	.360-.550	9.14-13.97	Wh./Yel.	M22520/23-01	M22520/23-05	414DA-0	4066	

Insertion/Extraction Tools

Contact Size	Color Code	Military Part No.	MATRIX Part No.
16	Bl./Wh.	M81969/14-03	6500-001-0016
12	Yel./Wh.	M81969/14-04	6500-001-0012
8	Wh./Red.	M81969/14-06	6500-018-0008
4	Wh./Bl.	M81969/14-07	6500-018-0004
0	Wh./Yel.	M81969/14-08	6500-018-0000

MIL-C-5015 (Continued)

Military Part Number System

MS3456 KS 16 S - 8 P W

Insert Clocking Position Leave blank for normal
Use W, X, Y or Z for alternate positions

Contact Style P = Pin S = Socket A = Less Pin
B = Less Socket
(Use A&B only when other than a full comple-
ment of power contacts is to be installed.)

Insert Arrangement

Shell Size

Class

LS = Stainless steel shell, passivated, fluid resistant insert

KT = Steel shell, cadmium olive drab finish, non-flammable
hard dielectric and fluid resistant insert

KS = Stainless steel shell, passivated, non-flammable
hard dielectric and fluid resistant insert

MS Number

Note: Class K is inactive and has been replaced by Class KT for all applications.

Pin and Socket Connectors
MATRIX Engine/Firewall Cylindrical Connectors

MATRIX Part Number System

944 6 KS 16S - 8 P W ***

Modification Number (Consult AMP)

Insert Position Leave blank for normal
Use W, X, Y or Z for alternate positions

Contact Style P = Pin S = Socket

Insert Arrangement

Shell Size

Class

FS = Stainless steel shell, passivated, fluid resistant insert

KT = Steel shell, cadmium olive drab finish, non-flammable
hard dielectric and fluid resistant insert

KS = Stainless steel shell, passivated, non-flammable
hard dielectric and fluid resistant insert

Configuration

9440 = Receptacle, wall mounting

9441 = Receptacle, cable connecting*

9442 = Receptacle, box mounting*

9444 = Receptacle, jam nut mounting*

9446 = Plug, standard

9816 = Plug, self-lock

Matrix Series Number

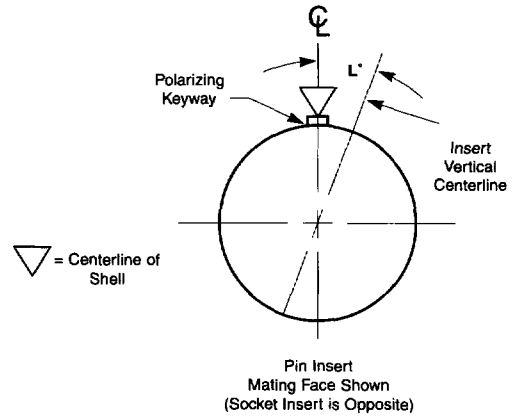
* Class FS only

MIL-C-5015 (Continued)

Polarization

Clocking Positions (Per MIL-STD-1651)

1. In the Normal position, the insert vertical centerline and key/keyway centerlines coincide: $L=0^\circ$.
2. In the "Alternate" insert position (positions W, X, Y & Z), the insert is rotated relative to the centerline of the master key or keyway of the shell.
 - a. In Alternate positions the pin insert is rotated clockwise within the shell so that the angle "L" between the indexing radius and the centerline of the master key or keyway of the shell is as required.
 - b. In Alternate positions the socket insert is rotated counterclockwise within the shell so that the angle "A" between the indexing radius and the centerline of the master key or keyway of the shell is as required.



Insert Arrangement and Clocking Chart (Per MIL-STD-1651)

Shell Size & Insert Arrangement	Contacts		Service Rating	Alternate Insert Positions L Degrees				Remarks
	Quantity	Size		W	X	Y	Z	
8S-1	1	16	A	-	-	-	-	
10S-2	1	16	A	-	-	-	-	
10SL-3	3	16	A	-	-	-	-	Service Rating Inst. Class K
10SL-4	2	16	A	-	-	-	-	
12S-3	2	16	A	70	145	215	290	
12S-4	1	16	D	-	-	-	-	
12-5	1	12	D	-	-	-	-	
14S-1**	3	16	A	-	-	-	-	
14S-2	4	16	Inst.	-	120	240	-	
14-3	1	8	A	-	-	-	-	
14S-5	5	16	Inst.	-	110	-	-	
14S-6	6	16	Inst.	-	-	-	-	
14S-7	3	16	A	90	180	270	-	
14S-9**	2	16	A	70	145	215	290	
16S-1	7	16	A	80	-	-	280	
16S-8	5	16	A	-	170	265	-	
16-9	2	16	A	35	110	250	325	
	2	12						
16-10	3	12	A	90	180	270	-	
16-11	2	12	A	35	110	250	325	
16-12	1	4	A	-	-	-	-	
16-13	2	12	A	35	110	250	325	One alumel and one chromel contact
18-1	10	16	A (B,C,F,G) Inst. (All Others)	70	145	215	290	
18-4	4	16	D	35	110	250	325	

* Consult AMP for availability.
**Inactive for new design.

Shell Size & Insert Arrangement	Contacts		Service Rating	Alternate Insert Positions L Degrees				Remarks
	Quantity	Size		W	X	Y	Z	
18-5	1	16	D	80	110	250	280	
	2	12						
18-8	7	16	A	70	-	-	290	
	1	12						
18-9	5	16	Inst.	80	110	250	280	
	2	12						
18-10**	4	12	A	-	120	240	-	
18-11	5	12	A	-	170	265	-	
18-12*	6	16	A	80	-	-	280	
18-13	3	12	A	80	110	250	280	
	1	8						
18-15*	4	12	A	-	120	240	-	
18-19**	10	16	A	-	120	240	-	
18-22**	3	16	D	70	145	215	290	
20-2	1	0	D	-	-	-	-	
20-4	4	12	D	45	110	250	-	
20-7	4	16	D (A,B,G,H)	80	110	250	280	
	4	16	A (C,D,E,F)					
20-8	4	16	Inst.	80	110	250	280	
	2	8						
20-14	3	12	A	80	110	250	280	
	2	8						
20-15	7	12	A	80	-	-	280	
20-16	7	16	A	80	110	250	280	
	2	12						

MIL-C-5015 (Continued)

Insert Arrangement and Clocking Chart (Continued) (Per MIL-STD 1651)

Shell Size & Insert Arrangement	Contact		Service Rating	Alternate Insert Positions L Degrees				Remarks
	Quantity	Size		W	X	Y	Z	
20-17	1	16	A	90	180	270	—	
	5	12						
20-18	6	16	A	35	110	250	325	
	3	12						
20-21	8	16	A	35	110	250	325	
	1	12						
20-22	3	16	A	80	110	250	280	
	3	8						
20-24	2	16	A	35	110	250	325	
	2	8						
20-27	14	16	A	35	110	250	325	
20-29	17	16	A	80	—	—	280	
20-33	11	16	A	—	—	—	—	
22-2	3	8	D	70	145	215	290	
22-4**	2	12	A	35	110	250	325	
	2	8						
22-5	4	16	D	35	110	250	325	
	2	12						
22-14	19	16	A	80	110	250	280	
22-19	14	16	A	80	110	250	280	
22-21	2	16	A	80	110	250	280	
	1	0						
22-22	4	8	A	—	110	250	—	
22-23	1	12	D (H)	35	—	250	—	
	7	12	A (All Others)					
24-1**	1	12	D	80	110	250	280	
	1	0						
24-2	7	12	D	80	—	—	280	
24-5**	16	16	A	80	110	250	280	
24-7	14	16	A	80	110	250	280	
	2	12						
24-10	7	8	A	80	—	—	280	
24-11	6	12	A	35	110	250	325	
	3	8						
24-12	3	12	A	80	110	250	280	
	2	4						

** Inactive for new design.

Shell Size & Insert Arrangement	Contact		Service Rating	Alternate Insert Positions L Degrees				Remarks
	Quantity	Size		W	X	Y	Z	
24-20	9	16	D	80	110	250	280	
	2	12						
24-22	4	8	D	45	110	250	—	
24-28	24	16	Inst.	80	110	250	280	
	2	12	D (A & E)					
28-1	4	12	A (B,D,F,H)	80	110	250	280	
	1	8	D (J)					
	2	8	A (G&C)					
28-2	12	16	D	35	110	250	325	
	2	12						
28-9	6	16	D	80	110	250	280	
	6	12						
	1	12	D (G)					
28-10	2	12	A (A & F)	80	110	250	280	
	2	8	A (B & E)					
	2	4	A (C & D)					
28-11	18	16	A	80	110	250	280	
	4	12						
28-12	26	16	A	90	180	270	—	
28-15	35	16	A	80	110	250	280	
	1	16	B (R)					
28-17	3	16	D (M,N,P)	80	110	250	280	
	11	16	A (All Others)					
28-20	4	16	A	80	110	250	280	
	10	12						
28-21	37	16	A	80	110	250	280	
28-22	3	16	D	70	145	215	290	
	3	4						
	1	12	E (A)					
32-1	2	12	D (D & C)	80	110	250	280	
	2	0	D (B & E)					
	16	16						
32-6	2	12	A	80	110	250	280	
	3	8						
	2	4						

MIL-C-5015 (Continued)

Insert Arrangement and Clocking Chart (Continued) (Per MIL-STD-1651)

Shell Size & Insert Arrangement	Contacts		Service Rating	Alternate Insert Positions L Degrees				Remarks
	Quantity	Size		W	X	Y	Z	
32-7	4	16	Inst. (A,B,H,J)	80	125	235	280	
	24	16						
	7	12	A					
32-9	12	16	D	80	110	250	280	
	2	4						(All Others)
32-13	18	16	D	80	110	250	280	
	5	12						
32-15	6	12	D	35	110	250	280	
	2	0						
32-17	4	4	D	45	110	250	—	
32-63	5	4	D	—	—	—	—	
32-73	46	16	A	36	—	—	—	
36-3	3	12	D	70	145	215	290	
	3	0						
36-5	4	0	A	—	120	240	—	
36-6	4	4	A	35	110	250	325	
	2	0						

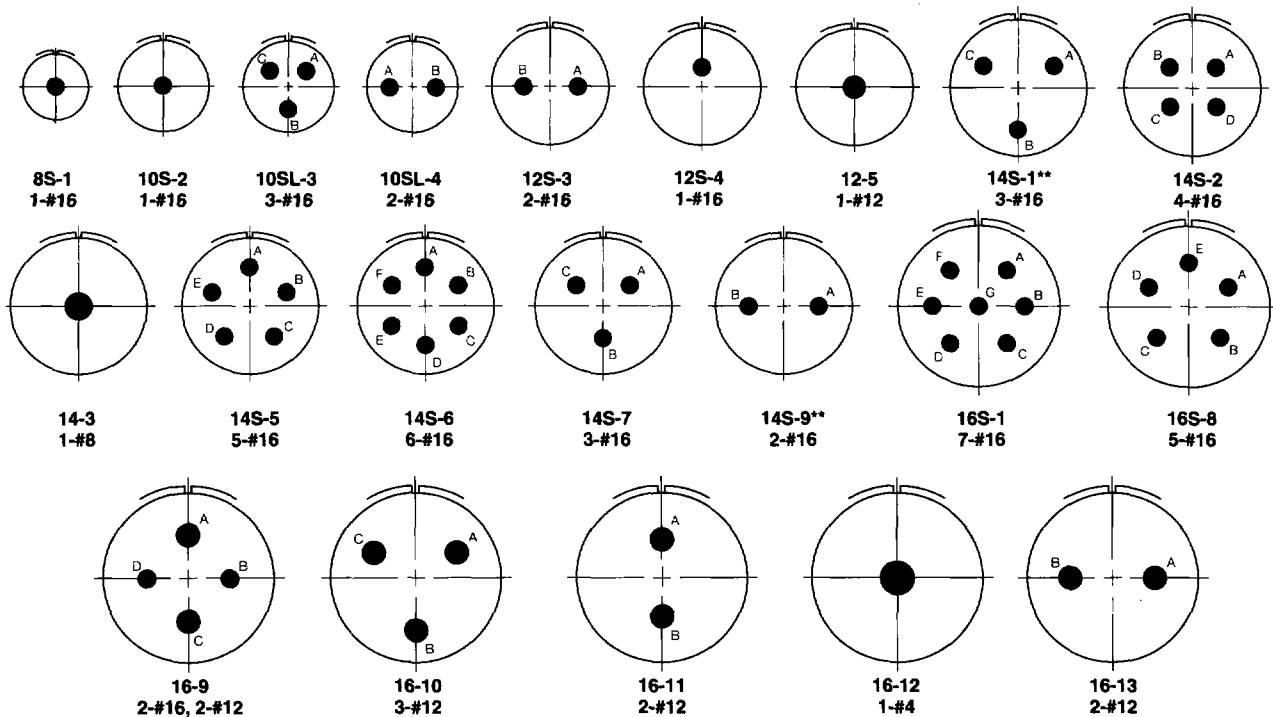
Shell Size & Insert Arrangement	Contacts		Service Rating	Alternate Insert Positions L Degrees				Remarks
	Quantity	Size		W	X	Y	Z	
36-7	40	16	A	80	110	250	280	
	7	12						
36-8	46	16	A	80	110	250	280	
	1	12						
36-9	14	16	A	80	125	235	280	
	14	12						
	2	8						
36-10	48	16	A	80	125	235	280	
36-15	35	16	D (M) A (All Others)	60	125	245	305	
36-52	52	16	A	72	144	216	288	
40-1	24	16	D	65	130	235	300	
	6	12						
40-9	24	16	A	65	125	255	310	
	22	12						
	1	8						

2
Pin and Socket Connectors
MATRIX Engine/Firewall Cylindrical Connectors

Insert Arrangements (Per MIL-STD-1651)

Numbering identification example: 10SL-3 (Insert Number)
2-#16 (Contact quantity and size)

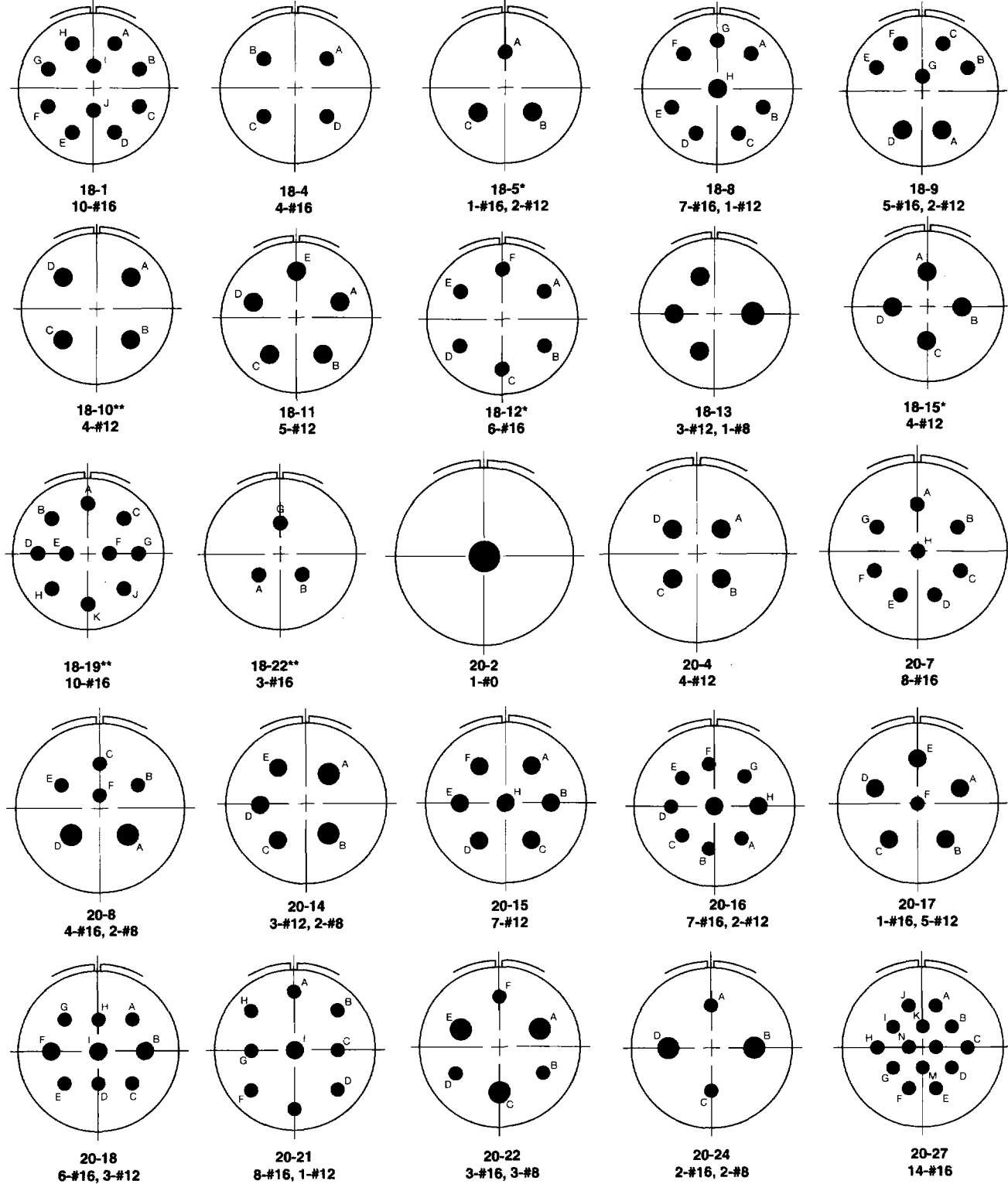
Note: For Service Rating see table above and on previous two pages.



**Inactive for new design.
Note: Mating face of pin insert is shown. Socket insert is opposite.

MIL-C-5015 (Continued)

Insert Arrangements (Per MIL-STD-1651) (Continued)



*Consult AMP for availability.

**Inactive for new design.

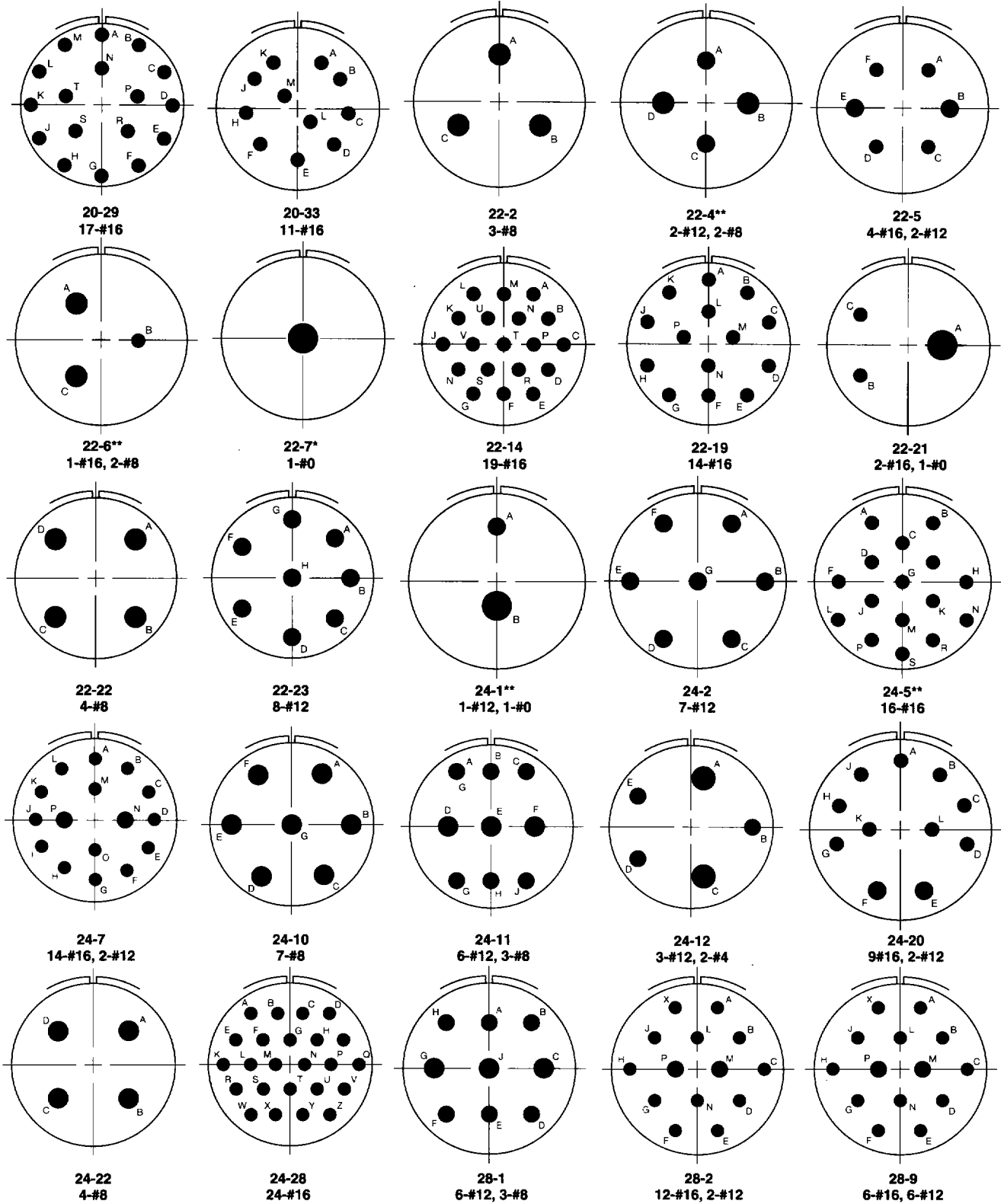
Note: Mating face of pin insert is shown. Socket insert is opposite.

Pin and Socket Connectors
MATRIX Engine/Firewall Cylindrical Connectors

MIL-C-5015 (Continued)

Insert Arrangements (Per MIL-STD-1651) (Continued)

2
Pin and Socket Connectors
MATRIX Engine/Firewall Cylindrical Connectors



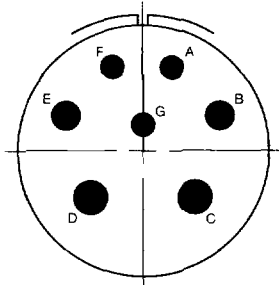
* Consult AMP for availability.

**Inactive for new design.

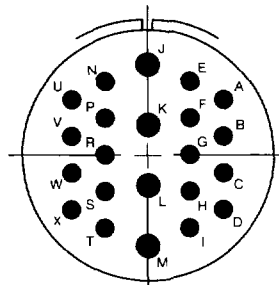
Note: Mating face of pin insert is shown. Socket insert is opposite.

MIL-C-5015 (Continued)

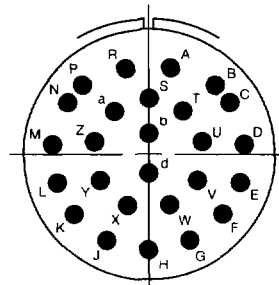
Insert Arrangements (Per MIL-STD-1651) (Continued)



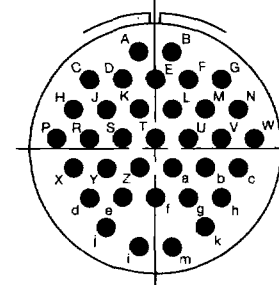
28-10
3-#12, 2-#8, 2-#4



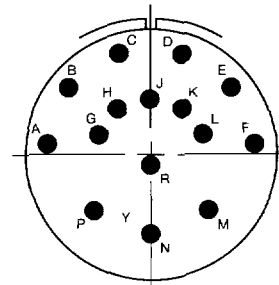
28-11
18-#16, 4-#12



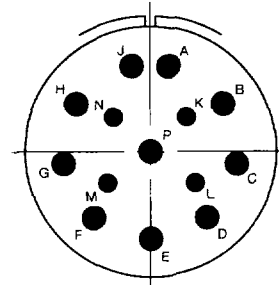
28-12
26-#16



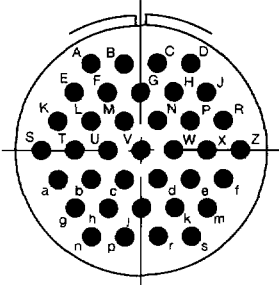
28-15
35-#16



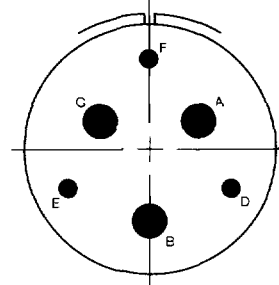
28-17
15-#16



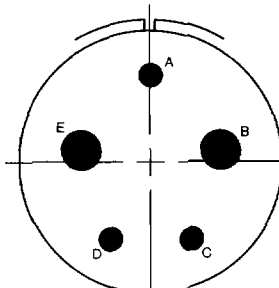
28-20
4-#16, 10-#12



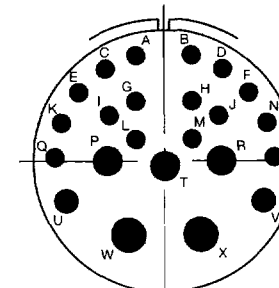
28-21
37-#16



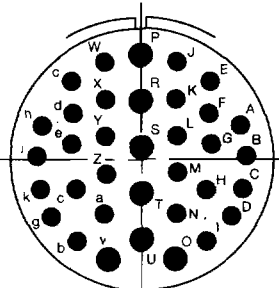
28-22
3-#16, 3-#4



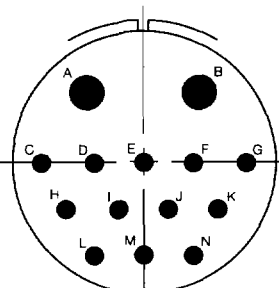
32-1
3-#12, 2-#0



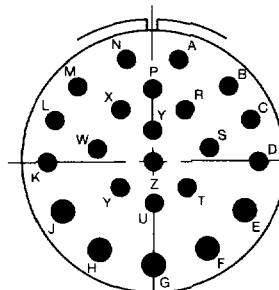
32-6
16-#16, 2-#12,
3-#8, 2-#4



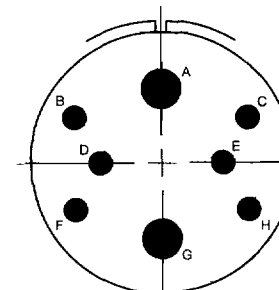
32-7
28-#16, 7-#12



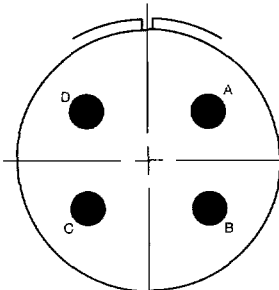
32-9
12-#16, 2-#4



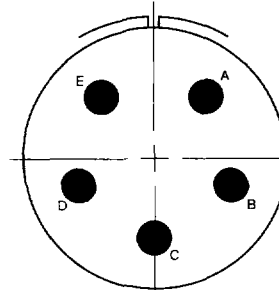
32-13
18-#16, 5-#12



32-15
6-#12, 2-#0



32-17
4-#4



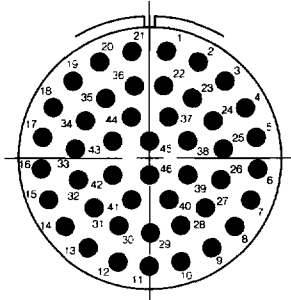
32-63
5-#4

Note: Mating face of pin insert is shown. Socket insert is opposite.

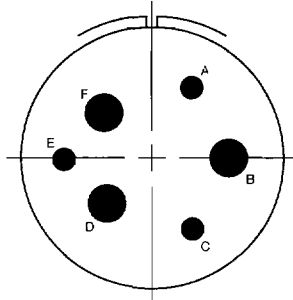
Pin and Socket Connectors
MATRIX Engine/Firewall Cylindrical Connectors

MIL-C-5015 (Continued)

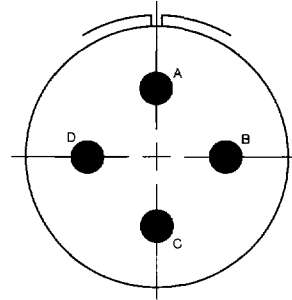
Insert Arrangements (Per MIL-STD-1651) (Continued)



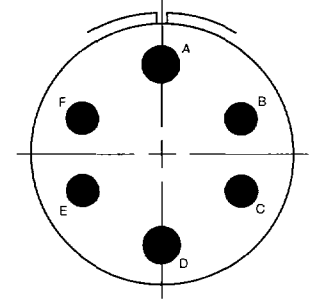
32-73
46-#16



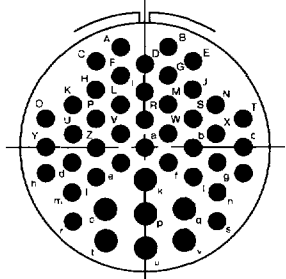
36-3
3-#12, 3-#0



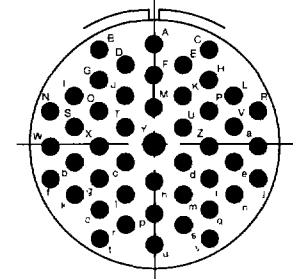
36-5
4-#0



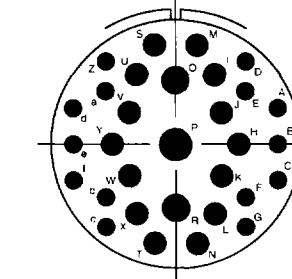
36-6
4-#4, 2-#0



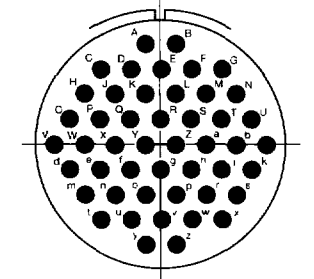
36-7
40-#16, 7-#12



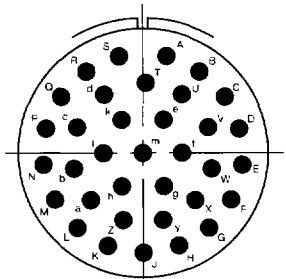
36-8
46-#16, 1-#12



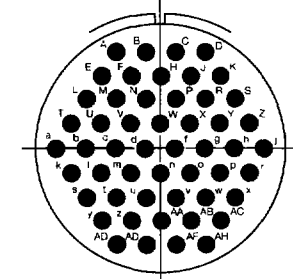
36-9
14-#16, 14-#12,
2-#8, 1-#4



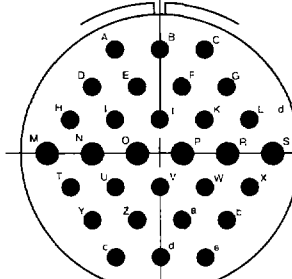
36-10
48-#16



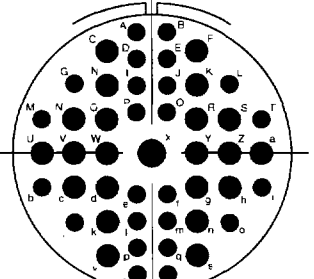
36-15
35-#16



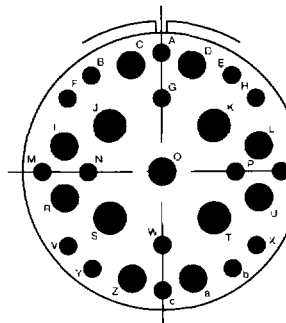
36-52
52-#16



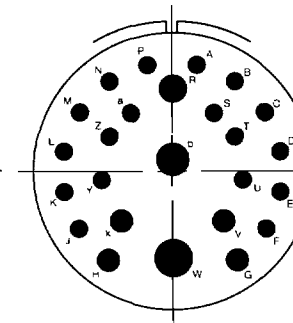
40-1
24-#16, 6-#12



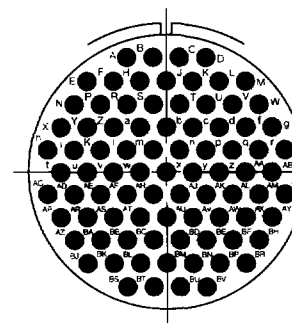
40-9
24-#16, 22-#12, 1-#8



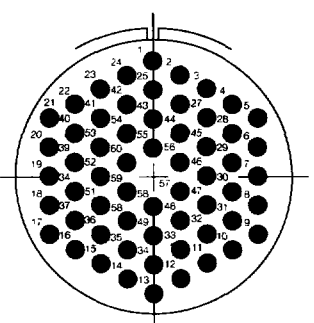
40-10*
16-#16, 9-#8, 4-#4



40-11*
18-#16, 4-#12, 1-#8, 1-#4, 1-#0



40-56*
85-#16



40-62*
60-#16

*Consult AMP for availability.
Note: Mating face of pin insert is shown. Socket insert is opposite.

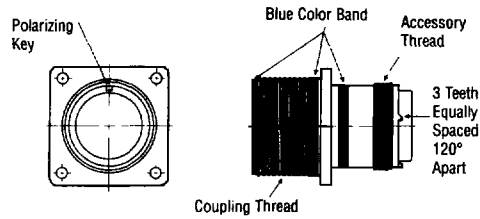
2
Pin and Socket Connectors
MATRIX Engine/Firewall Cylindrical Connectors

MIL-C-5015 (Continued)

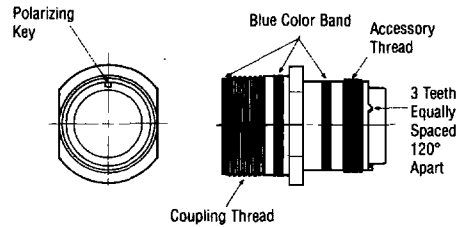
Shell Size

8S
10S
10SL
12
12S
14
14S
16
16S
18
20
22
24
28
32
36
40

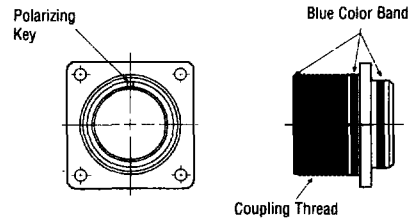
**Receptacle Shell,
Flange Wall Mount,
Threaded Coupling**
Military No. MS3450
MATRIX No. 9440
McDonnell Douglas
BAN 7025
No. DC 62, DC 63



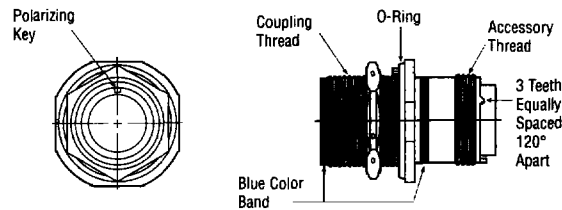
**Receptacle Shell,
Cable Connecting,
Threaded Coupling**
Military No. MS3451
MATRIX No. 9441



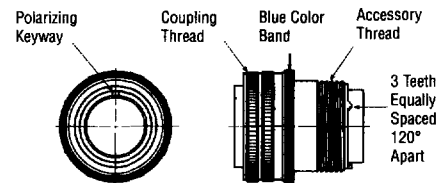
**Receptacle Shell,
Flange Box Mount,
Threaded Coupling**
Military No. MS3452
MATRIX No. 9442



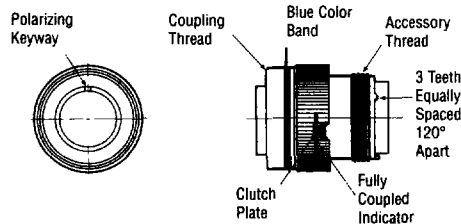
**Receptacle Shell,
Jam Nut Mount,
Threaded Coupling**
Military No. MS3454
MATRIX No. 9444



**Plug Shell,
Threaded Coupling**
Military No. MS3456
MATRIX No. 9446
McDonnell Douglas
BAN 7025
No. DC 62, DC 63



**Plug Shell,
Self-Locking,
Threaded Coupling**
Military No. MS3459
MATRIX No. 9816
McDonnell Douglas
BAN 7025
No. DC 62, DC 63



Pin and Socket Connectors
MATRIX Engine/Firewall Cylindrical Connectors