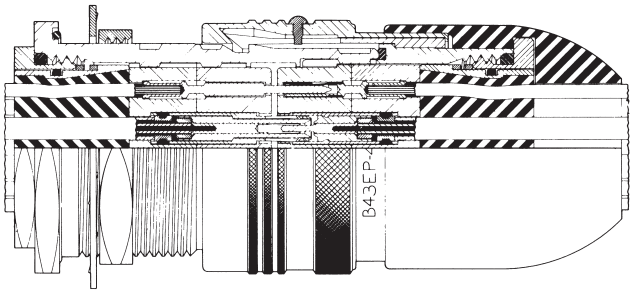
MARC 43 Series Connectors

General Information

A high density (.080 [2.03] contact centers), lightweight, subminiature, cylindrical connector series featuring crimp contacts and finger-tip, push-pull, quick disconnect coupling. This series conforms to the applicable performance requirements of MIL-C-26482 and is available in unsealed, environmentally sealed, and hermetic types.

A large assortment in insert arrangements — accommodating AWG 12 through 32 gauge wire and miniature coaxial cables — is available for the design engineer's choice. The contacts are



retained by shoulder entrapment and can be crimped with the standard M22520 tools, using appropriate locators.

This proven series of connectors has a long history of outstanding performance on many military and aerospace programs. MARC 43 Series Connectors are ideal for applications where high performance must be achieved at low cost.

Materials and Finishes

MARC 43 Series Connector housings and quick disconnect couplings are machined from bar stock aluminum to combine maximum strength with minimum weight. Threaded couplings are machined from non-magnetic, stainless steel bar stock for durability of the coupling threads. Contacts are manufactured from high conductivity copper alloys which have been selected for low contact resistance over the operating range of the connectors. Inserts are molded from flame-resistant, glass-filled diallyl phthalate, meeting ASTM D5948 requirements. All resilient parts are made of high temperature, silicone rubbers. Fuel resistant compounds are used where swelling affects the performance of the connector. All materials are carefully selected for their non-magnetic properties.

The standard finish is clear, non-conductive anodize on connector housings and quick disconnect couplings. For threaded coupling applications, aluminum components are hard, black anodized, and stainless steel plug coupling is passivated with black oxide finish. Conductive finish modifications include gold, cadmium, and iridite finishes. Contacts are gold plated per MIL-G-45204 requirements. See page 63 for modification information.

Service and Performance Data

I. Electrical — Electrical Ratings

Current Rating		Dielectric	Working Voltage	
Contact Size	Amperes, Max., +27°C[1]	Withstanding Voltage (RMS)	Sea Level	70,000 ft. [21,336 m] Alt.
22 AWG	5 amps	1000	750	300
16 AWG	20 amps	1000	750	300
12 AWG	50 amps	1000	750	300
50 ohm	3 amps	1000	750	300
75 ohm	3 amps	1250	1000	300
95 ohm	3 amps	1500	1250	300

[1] Consult nomograph.

II. Mechanical — Durability: 500 Cycles Mate/Unmate.
Coupling/Uncoupling Forces and Tightening Torques:

Shell Size	Coupling/ Uncoupling Force (In-Lbs.) Max.	Tightening Torque (In-Lbs.)	
		Retaining Nut	Mounting Nut
A	13 [57.8 N]	20, Max. [2.26 Nm]	30-45 [3.39 Nm – 5.08 Nm]
B	17 [75.6 N]	20, Max. [2.26 Nm]	40-55 [4.52 Nm – 6.21 Nm]
C	21 [93.4 N]	20, Max. [2.26 Nm]	55-70 [6.21 Nm – 7.91 Nm]

Operating Temperature: -85°F to 257°F [-65°C to +125°C].

Contact Size	Wire Size	Conductor Dia. (Stranded)[1]	Dielectric Dia. (Teflon)	Shield Dia.	Jacket Dia.[2]
22	22, 24, 26	**.019-.032** .482-.813	—	—	**.039-.054** .990-1.37
16[3]	16, 18, 20	**.038-.061** .965-1.55	—	—	**.065-.081** 1.65-2.06
12	12 AWG	**.071-.093** 1.80-2.36	—	—	**.096-.120** 2.44-3.05
50 ohm	50 ohm	**.013** .330 Max.	**.032-.036** .813-.914	**.048-.054** 1.22-1.37	**.065-.087** 1.65-2.21
75 ohm	75 ohm	**.013** .330 Max.	**.060-.066** 1.52-1.68	**.078-.084** 1.98-2.13	**.096-.109** 2.44-2.77
95 ohm	95 ohm	**.013** .330 Max.	**.100-.104** 2.54-2.64	**.115-.123** 2.92-3.12	**.137-.154** 3.48-3.91

[1] Tolerance of conductor diameters required for a reliable crimp. Smaller sizes readily accommodated — consult Tyco Electronics.
[2] Smaller jacketed cable can be accommodated but environmental seal may be impaired. Smooth extruded jacket should be used for consistent wire sealing.
[3] Size 16 AWG Contact for size 20 AWG Wire – Use Tool 010-0080-0000.

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MARC 43 Series Connectors (Continued)

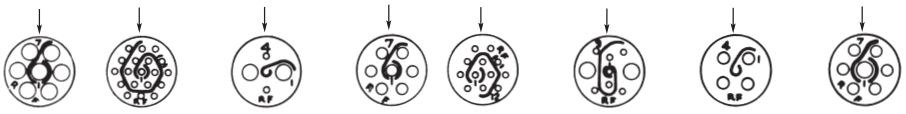
Test Data

MARC 43 Series Connectors meet the applicable performance requirements of specification MIL-C-26482 (Navy) to include the following selected test parameters listed below:

DESCRIPTION MIL-C-26482 Test Para	TEST REQUIREMENTS
Insulation Resistance, Room and High Temp., Para. 4.7.3	Insulation resistance of unmated connectors shall be 5000 megohms, minimum at room temperature and 2000 megohms, minimum, at 257°F [+125°C] when measured per MIL-STD-202, Method 302, Test Condition B.
Dielectric Withstanding Voltage, Para. 4.7.4	No evidence of dielectric breakdown or flashover when mated and unmated plugs are subjected to 1000 volts, rms, per MIL-STD-202, Method 301.
Durability, Para. 4.7.9	Plugs and receptacles designed to withstand up to 500 cycles of engagement and separation without detrimental electrical or mechanical damage to the connectors.
Corrosion, Para. 4.7.10	Unmated plugs and receptacles shall show no exposure of basis metal due to corrosion which would affect electrical or mechanical performance of the connectors after subjection to 24 hours exposure to salt spray atmosphere per MIL-STD 202, Method 101.
Sweep Vibration, Mated, Para. 4.7.11	Mated connectors shall show no circuit interruptions greater than 10 micro-seconds during 12 hours vibration to include six sweeps in two axes at -67°F [-55°C], room temperature, and 257°F [+125°C] per MIL-STD-202, Method 204, Test Condition B. Post inspection shall show no detrimental cracking, breaking, or loosening of parts.
Moisture Resistance, Para. 4.7.13 and 4.7.13.1	The insulation resistance of mated connectors shall exceed 100 megohms after subjection to moisture resistance testing per MIL-STD-202, Method 106.
Contact Retention, Para. 4.7.16	Contacts shall withstand 15 lbs [66.7 N] axial load without axial displacement in excess of 0.012 [0.305] or damage to contacts or inserts when the axial load is applied to the mating end of the contacts in unmated plugs and receptacles at a rate of approximately 1 lb/sec.

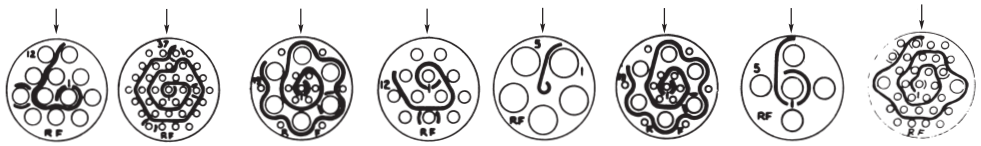
Contact Arrangements[1]

"A Size" Insert Layouts (A =) Shell Size 9



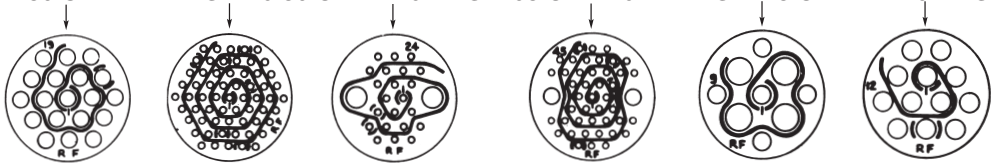
Insert Arrangement [2]	-1	-2	-5	-11	-12	-14	-17	-21
Number of Contacts	7	19	2-22 AWG	7	12	7-22 AWG	4	6-16 AWG
Contact Size	50 Ohm	22 AWG	2-50 Ohm	16 AWG	22 AWG	2-50 Ohm	16 AWG	1-50 Ohm

"B Size" Insert Layouts (B =) Shell Size 12



Insert Arrangement [2]	-9	-10[3]	-15	-19	-34	-37	-47	-49
Number of Contacts	12	37	13-22 AWG	12	5	13-22 AWG	5	29-22 AWG
Contact Size	50 Ohm	22 AWG	6-50 Ohm	16 AWG	95 Ohm	6-12 AWG	75 Ohm	2-16 AWG

"C Size" Insert Layouts (C =) Shell Size 15



Insert Arrangement [2]	-3	-4	-7	-13	-27	-48
Number of Contacts	19	61	22-22 AWG	43-22 AWG	5-75 Ohm	12
Contact Size	50 Ohm	22 AWG	2-75 Ohm	2-50 Ohm	4-95 Ohm	75 Ohm

Notes: [1] Views shown are front face view of receptacles. Front face view of plugs is mirror image of that shown.
[2] Arrow (▼) indicates insert top or vertical position in relation to top or vertical position of connector housings.
[3] Arrangement also available in hermetic seal receptacles.

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MARC 43 Series Connectors (Continued)

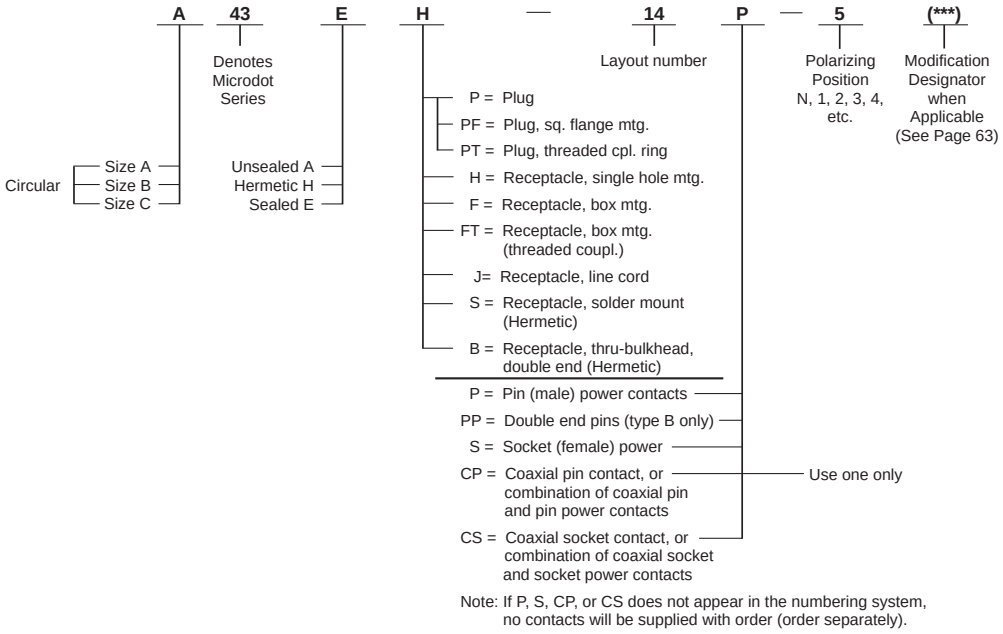
Part Number and Ordering Information

MARC 43 Series Connector part numbers indicate size, shape, insert layout, type of seal, style of contact and polarization. **Note:** Pin or socket (power or coaxial) contacts may be used in either plugs or receptacles. However, it is recommended that pins be placed in the receptacle when possible to take advantage of our "scoop-proof" design. (The style—pin or socket—of a coaxial contact refers to the outer contact body.)

Alternate Keying. Standard alternate polarizing key positions are shown below. Additional polarizing keyways are available upon request.

Supplemental Accessory Hardware. We also manufacture supplemental accessory hardware (protective covers, cable clamps, etc.) to adapt these connectors to almost any application. For modifications to fit your requirements, contact Tyco Electronics.

Typical Part Number



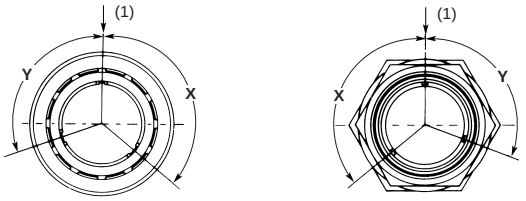
Note: If P, S, CP, or CS does not appear in the numbering system, no contacts will be supplied with order (order separately).

Polarizing Key Positions

All MARC 43 Series Connector multi-pin plugs and receptacles are available in alternate polarizing positions as listed below:

(1) Arrow (▾) indicates top or vertical position (master key-keyway) and coincides with top or vertical position of insert. This relationship remains constant with alternate polarizing key positions.

N—for Normal



Plug Receptacle

Size A		
Part No.	X°	Y°
A43****N	130	110
A43****-1	130	150
A43****-2	90	110
A43****-3	210	110
A43****-4	130	35
A43****-5	90	230

Size B		
Part No.	X°	Y°
B43****N	130	110
B43****-1	130	90
B43****-2	130	145
B43****-3	105	110
B43****-4	155	110
B43****-5	80	110
B43****-6	190	110
B43****-7	130	170
B43****-8	215	110
B43****-9	80	230
B43****-10	130	30

Size C		
Part No.	X°	Y°
C43****N	130	110
C43****-1	130	90
C43****-2	130	150
C43****-3	130	170
C43****-4	190	110
C43****-5	150	110
C43****-6	90	110
C43****-7	70	110
C43****-8	70	230
C43****-9	90	230
C43****-10	210	110
C43****11	30	110
C43****12	250	30
C43****13	130	30
C43****14	30	230

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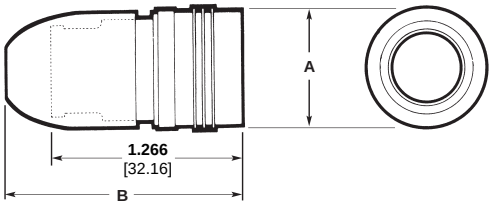
MARC 43 Series Connectors (Continued)

Configurations

Type P

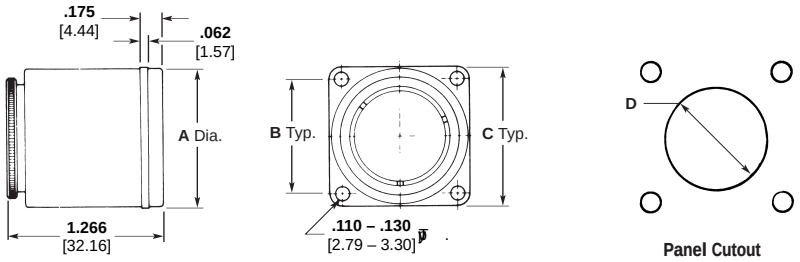
Straight Plug, Push-Pull Coupling, Sealed or Unsealed (Mates with Receptacles, All Types)



Shell Size	Dimensions	
	A	B
A	**.766** 19.46	**1.578** 40.08
B	**.953** 24.21	**1.656** 42.06
C	**1.141** 28.98	**1.75** 44.45

Type PF

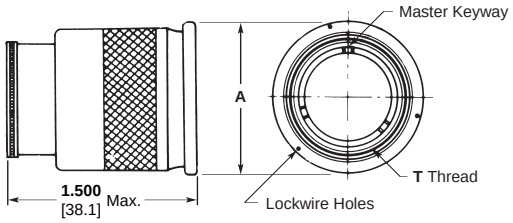
Straight Plug, Square Flange Mounting, Push-Pull Coupling, Sealed or Unsealed (Mates with Receptacles, all Types.)



Shell Size	Dimensions			
	A	B	C	D
A	**.730** 18.54	**.664** 16.86	**.875** 22.23	**.750** 19.05
B	**.920** 23.37	**.786** 19.96	**1.000** 25.40	**.940** 23.88
C	**1.110** 28.19	**.924** 23.47	**1.125** 28.58	**1.130** 28.70

Type PT

Straight Plug, Threaded Coupling, Sealed or Unsealed (Mates with Receptacles, Types H, HH, and FT)



Shell Size	Dimensions	
	A	T (Class 2B)
A	**.813** 20.65	5/8-32 UN
B	**1.000** 25.40	13/16-28 UN
C	**1.19** 30.23	1-28 UN

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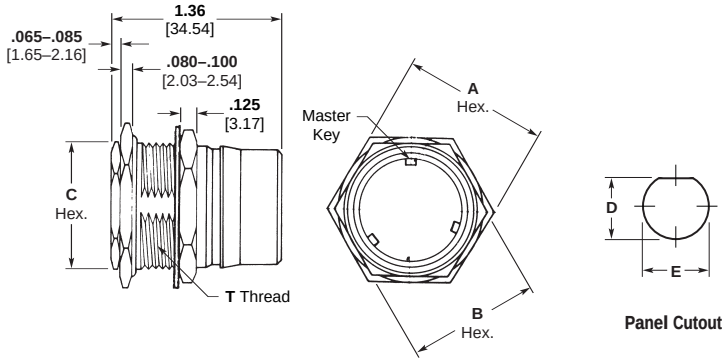
MARC 43 Series Connectors (Continued)

Configurations (Continued)

Type H

Receptacle, Single Hole Mounting
Sealed or Unsealed
(Mates with Plugs, Types P, PF and PT)

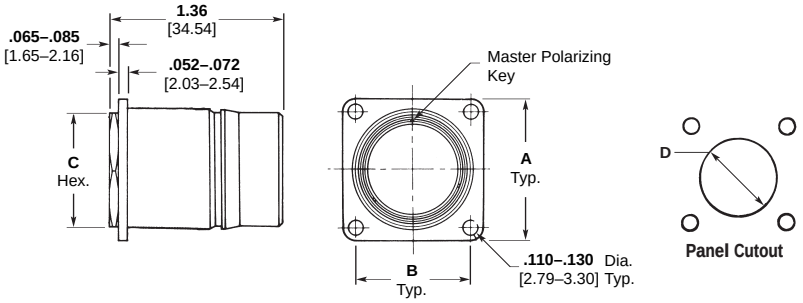


Shell Size	Dimensions					
	A	B	C	D	E	T (Class 2A)
A	**.75** 19.05	**.687** 17.45	**.562** 14.27	**.607-.611** 15.42-15.52	**.625-.629** 15.8-15.97	5/8-32 UN
B	**.937** 23.80	**.875** 22.23	**.75** 19.05	**.794-.798** 20.17-20.27	**.812-.816** 20.62-20.72	13/16-28 UN
C	**1.125** 28.58	**1.062** 26.97	**.875** 22.23	**.975-.979** 24.77-24.87	**.999-1.003** 25.37-25.47	1-28 UN

.313 [7.95] max. panel for P & PF
.109 [2.77] max. panel. for PT

Type 43F

Receptacle, Box Mounting, Sealed or Unsealed (Mates with Plugs, Types P and PF)



Shell Size	Dimensions			
	A	B	C	D
A	**.875** 22.23	**.594** 15.08	**.562** 14.27	**.595** 15.11
B	**1.000** 25.40	**.786** 19.96	**.75** 19.05	**.783** 19.89
C	**1.125** 28.58	**.906** 23.01	**.875** 22.23	**.960** 24.38

Note: Unless otherwise shown, tolerances are: Decimals ±.015 [±.381], fractions ±1/32.

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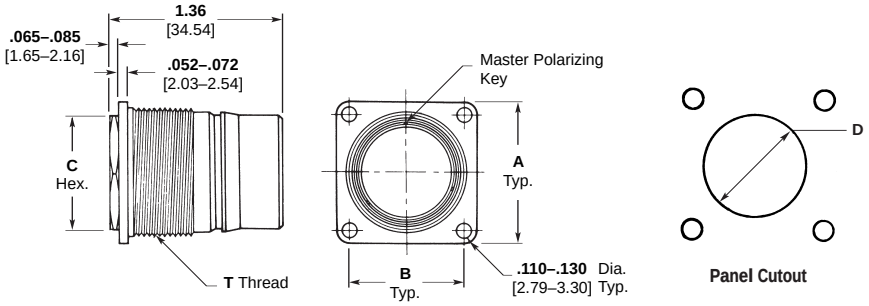
MARC 43 Series Connectors (Continued)

Configurations (Continued)

Type FT

Receptacle, Box Mounting, Threaded Coupling, Sealed or Unsealed (Mates with Plugs, Types PT, P and PF)

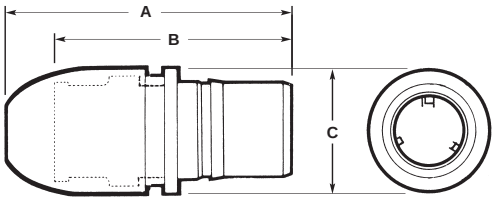


Shell Size	Dimensions				
	A	B	C	T (Class 2A)	D
A	**.875** 22.23	**.594** 15.08	**.562** 14.27	5/8-32 UN	**.645** 16.38
B	**1.000** 25.40	**.786** 19.96	**.75** 19.05	13/16-28 UN	**.832** 21.13
C	**1.125** 28.58	**.906** 23.01	**.875** 22.23	1-28 UN	**1.020** 25.90

Max. panel thickness is .125 [3.18].

Type J

Receptacle, Line Cord, Sealed or Unsealed (Mates with Plugs, Types P and PF)



Shell Size	Dimensions		
	A	B	C
A	**1.703** 43.26	**1.36** 34.54	**.766** 19.46
B	**1.781** 45.24	**1.36** 34.54	**.953** 24.21
C	**1.875** 47.63	**1.36** 34.54	**1.141** 28.98

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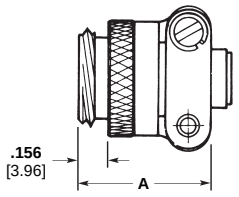
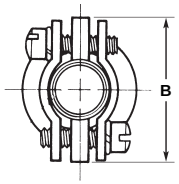
Accessories

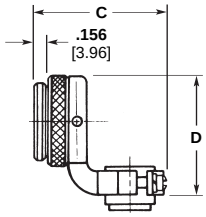
Cable Clamps

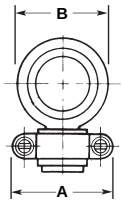




Straight

Shell Size	Part No.	A [Max.]	B [Max.]
A	086-0099-00X1	**.704** 17.88	**.750** 19.05
B	086-0100-00X1	**.773** 19.63	**.932** 23.67
C	086-0101-00X1	**.829** 21.05	**1.078** 27.38





Right-Angle

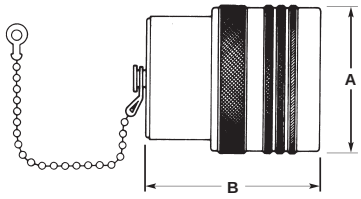
Shell Size	Part No.	A [Max.]	B [Max.]	C [Max.]	D [Max.]
A	086-0103-00X1	**.737** 18.72	**.600** 15.24	**1.100** 27.94	**.879** 22.33
B	086-0104-00X1	**.913** 23.19	**.770** 19.55	**1.250** 31.75	**1.067** 27.10
C	086-0105-00X1	**1.048** 26.62	**.962** 24.43	**1.469** 37.31	**1.233** 31.32

Contacts (see pages 78 and 79)

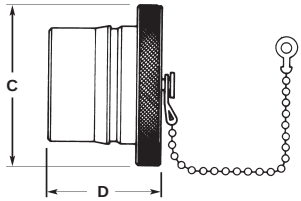
Contact Size	Pin Part No.	Socket Part No.
22 AWG	083-0009-00R4	082-0464-00Y9
16 AWG	083-0158-00R4	082-0113-00T1
12 AWG	083-0173-00R4	082-0132-00T1
50 ohm Coaxial (Solder Type)	084-0024-00T2	084-0027-00T2
50 ohm Coaxial (Crimp Type)	141-1500-0001	142-1500-0001
75 ohm Coaxial	084-0025-00T2	084-0028-00T2
95 ohm Coaxial	084-0026-00T2	084-0029-00T2

Contact Cavity Sealing Plugs (see page 80)

Contact Size	Sealed Connector Part No.	Unsealed Connector Part No.
22 AWG	086-0055-0000	086-0001-0000
16 AWG	086-0056-0000	086-0014-0000
12 AWG	086-0057-0000	086-0015-0000
50 ohm Coaxial	086-0058-0000	086-0061-0000
75 ohm Coaxial	086-0059-0000	086-0062-0000
95 ohm Coaxial	086-0060-0000	086-0063-0000



Receptacle Cover



Plug Cover

Protective Covers

Shell Size	Receptacle Cover Part No.[1]		Plug Cover Part No.[1]		Dimensions (Max.)			
	With Chain	Without Chain	With Chain	Without Chain	A	B	C	D
A	086-0049-00J2	086-0073-00P1	086-0052-00J2	086-0076-00P1	**.766** 19.46	**.950** 24.13	**.969** 24.62	**.913** 23.19
B	086-0050-00J2	086-0074-00P1	086-0053-00J2	086-0077-00P1	**.953** 24.21	**.950** 24.13	**1.156** 29.36	**.913** 23.19
C	086-0051-00J2	086-0075-00P1	086-0054-00J2	086-0078-00P1	**1.141** 28.98	**.950** 24.13	**1.344** 34.14	**.913** 23.19

[1] For threaded plug (PT) and receptacle (FT) covers, consult Tyco Electronics. Wire rope/lanyard attachments and plastic protective caps also available, consult Tyco Electronics.

Modifications

The MARC 43 Series Connector modification identification system provides alteration of standard MARC 43 Series Connectors to include special finishes, accessories, MARC 53 Series Connector housings, and custom quality assurance provisions — processing, testing, serialization, traceability. Consult your sales representative or Tyco Electronics for additional modification information.

Standard modifications include:

(009): MARC 43 Series Connector, anodized finish — black.

(048): MARC 43 Series Connector, iridite finish — gold.

(056): MARC 43 Series Connector, cadmium plated — clear.

(057): MARC 43 Series Connector including cable clamp, straight type.

(078): MARC 43 Series Connector insert arrangement plus MARC 53 Series Connector positive lock coupling.

(094): MARC 43 Series Connector coaxial insert arrangement to include all-crimp coaxial contacts plus MARC 53 Series Connector positive lock coupling.

(098): MARC 43 Series Connector connector including cable clamp, right-angle type.

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Dimensions are in inches and millimeters unless otherwise specified. Values in brackets are metric equivalents.

Dimensions are shown for reference purposes only. Specifications subject to change.

USA: 1-800-522-6752
Canada: 1-905-470-4425
Mexico: 01-800-733-8926
C. America: 52-55-5-729-0425
South America: 55-11-3611-1514
Hong Kong: 852-2735-1628
Japan: 81-44-844-8013
UK: 44-141-810-8967