

Metal-Shell Circular Plastic Connectors

Product Facts

- Economical combination of thermoplastic UL 94V-0 rated connector housings and metal shells
- Available in three sizes:
 - Series 1—Accepts Multimate contacts, shell sizes 14-5, 14-7, 22-16, 28-24, and 28-37 standard sex; 14-5, 14-7, 22-14, and 28-37 reverse sex
 - Series 2—Accepts 20 DF and 20 DM contacts, shell sizes 22-28 and 28-63 standard sex; 22-28 and 28-57 reverse sex
 - Series 3—Accepts Type XII power contacts, shell sizes 22-3 and 28-7 standard and reverse sex
- Series 4—Accepts Multimate contacts, and Type XII power contacts, shell size 28-16M and 28-22M standard sex
- Compatible with MIL Spec metal housing type connectors
- Choice of application tooling to meet all production requirements



AMP Metal-Shell Circular Plastic Connectors offer the reliability of higher priced all metal connectors at a fraction of the cost, and are offered in the more popular contact configurations.

Connector housings are made of lightweight, sturdy, thermoplastic material that are UL 94V-0 rated, with zinc alloy, nickel plated shells for added strength and protection. These connectors are available in a variety of configurations to meet your signal, low current and high current requirements. Operating temperatures range from -55°C to +125°C [-67°F to +257°F].

Signal and low current is provided by a choice of AMP Multimate contacts: .062 [1.57] pin diameter and 20 DF and 20 DM contacts, .040 [1.02] pin diameter. High current requirements are met by the Type XII capable of carrying up to 35 amperes of current.

These quick connect/disconnect circular connectors feature polarized housings to prevent mismatching with other insert arrangements.

AMP Metal-Shell Circular Plastic Connectors are available in square flange receptacles and free-hanging plug connectors.

For additional economy, industry accepted AMP Type III+ pin and socket contacts are available on reels in strip-form for high volume, low cost, automatic machine terminations. For low volume, prototype or maintenance and repair Type III+ contacts are also available in loose piece form.

Metal-Shell CPC Connectors, Series 1, Standard Sex



Listed part numbers are for connectors only; contacts must be ordered separately.

Material and Finish

Square Flange Receptacle—

Housing—Thermoplastic, UL 94V-0 rated, black

Metal-Shell—Zinc alloy, plated nickel

Grooved Pin—Steel alloy, plated nickel

Plug—

Housing—Thermoplastic, UL 94V-0 rated, black

Metal-Shell—Zinc alloy, plated nickel

Tetraseal Seal—Fluorocarbon

Retainer Ring—Stainless steel

Coupling Ring—Zinc alloy, plated nickel

Related Product Data

Contacts—Pages 16-20

Contact Arrangement—Page 60

Component Dimensions—Page 69

Accessories—Page 70

Performance Characteristics—Page 6

Application Tooling—Pages 75-78

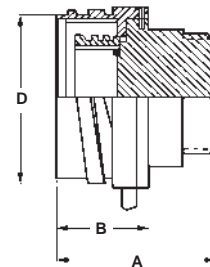
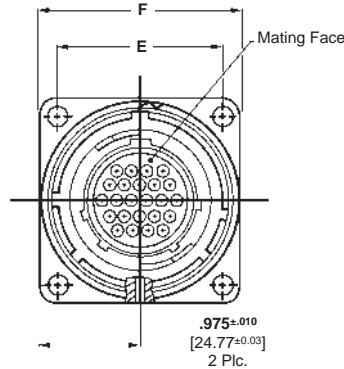
Technical Documents—Page 79

TETRASEALS Ring (Installed in plugs only.)

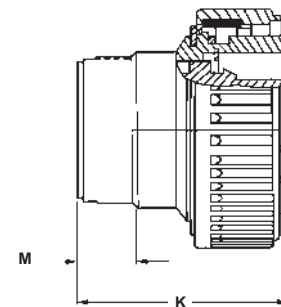
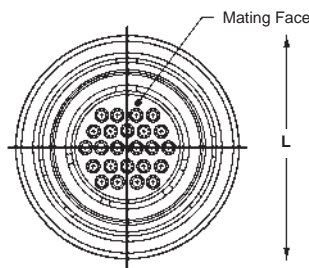
The TETRASEALS Ring provides splash-proof sealing between mating metal shells. It is located behind the plug shell external keys (under the coupling ring). When mated with a receptacle, the ring is compressed against the inside diameter of the mating end edge of the receptacle shell.

Metal-Shell Circular Plastic Connectors, Series 1

Square Flange Receptacles (Accepts Multimatch Pins)

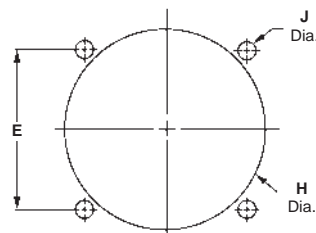


Plugs (Accepts Multimatch Sockets)

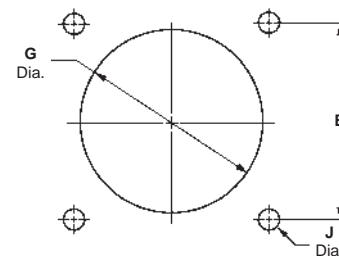


Arrangement	Square Flange Receptacle	Plug Part No.	
		without TETRASEALS Ring	with TETRASEALS Ring
14-5	208719-1	208718-1	208718-2
14-7	208715-1	208714-1	208714-2
22-16	208489-1	208488-1	208488-3
28-24	208459-1	208457-1	208457-3
28-37	208471-1	208470-1	208470-3

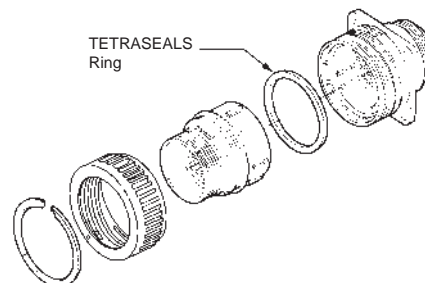
Note: Maximum wire insulation diameter is .100 [2.54], except arrangements 14-5 and 28-24 are .150 [3.81] max.



Rear Mount Panel Cutout



Front Mount Panel Cutout



Metal-Shell CPC Connectors, Series 1, Reverse Sex



Listed part numbers are for connectors only; **contacts must be ordered separately.**

Material and Finish

Square Flange Receptacle—

Housing—Thermoplastic, UL 94V-0 rated, black

Metal-Shell—Zinc alloy, plated nickel

Grooved Pin—Steel alloy, plated nickel

Plug—

Housing—Thermoplastic, UL 94V-0 rated, black

Metal-Shell—Zinc alloy, plated nickel

Tetraseal Seal—Fluorocarbon

Retainer Ring—Retainer Ring

Coupling Ring—Zinc alloy, plated nickel

Related Product Data

Contacts—Pages 16-20

Contact Arrangement—Page 60

Component Dimensions—Page 69

Accessories—Page 70

Performance Characteristics—Page 6

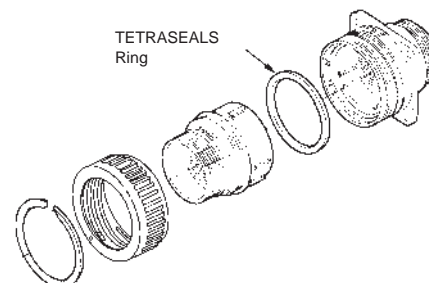
Application Tooling—Pages 75-78

Technical Documents—Page 79

TETRASEALS Ring

(Installed in plugs only.)

The TETRASEALS Ring provides splash-proof sealing between mating metal shells. It is located behind the plug shell external keys (under the coupling ring). When mated with a receptacle, the ring is compressed against the inside diameter of the mating end edge of the receptacle shell.

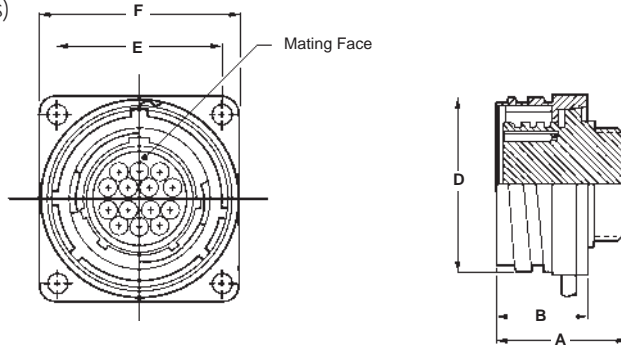


Note: All part numbers are RoHS Compliant.

Metal-Shell Circular Plastic Connectors, Series 1 (Continued)

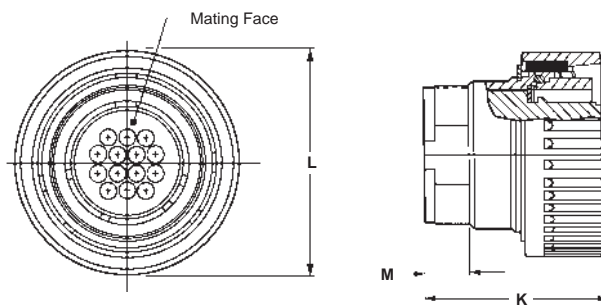
Square Flange Receptacles

(Accepts Multimite Sockets)



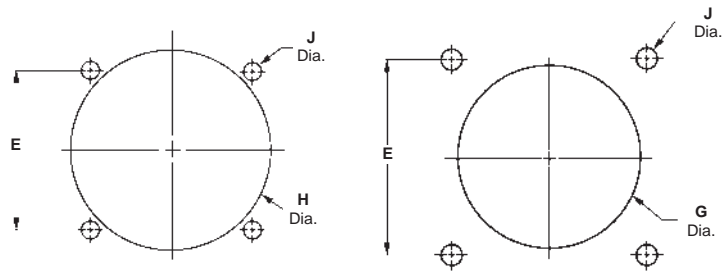
Plugs

(Accepts Multimite Pins)



Arrangement	Square Flange Receptacle	Plug Part No.	
		without TETRASEALS Ring	with TETRASEALS Ring
14-5	208721-1	208720-1	—
14-7	208717-1	208716-1	208716-2
22-14	208487-1	208486-1	208486-3
28-37	208473-1	208472-1	208472-3

Note: Maximum wire insulation diameter is .100 [2.54], except arrangements 14-5 and 28-24 are .150 [3.81] max.

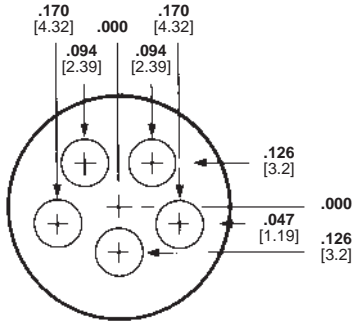


Rear Mount Panel Cutout

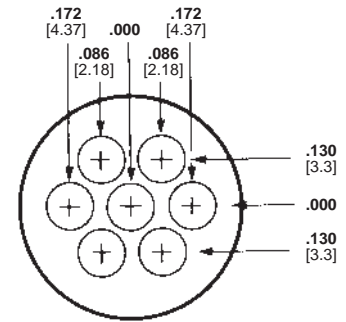
Front Mount Panel Cutout

Metal-Shell CPC Connectors, Series 1, Contact Arrangements

Shell Size 14

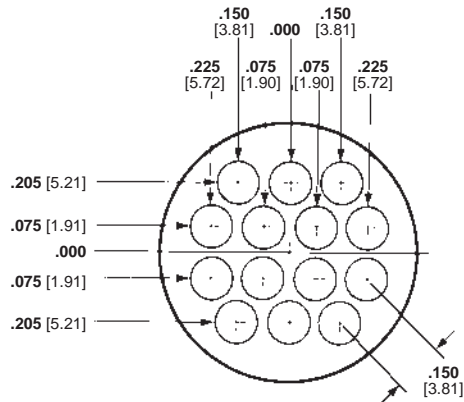


Arrangement 14-5
Max. Wire Ins. Dia. = .150 [3.81]

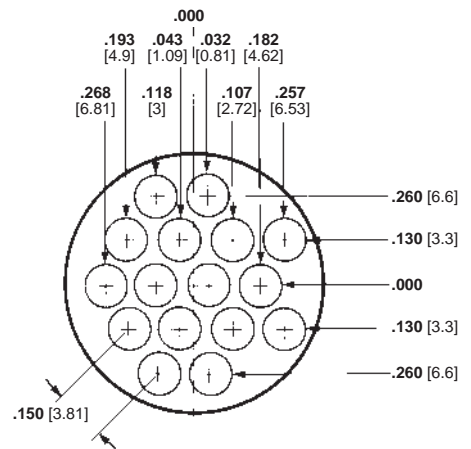


Arrangement 14-7
Max. Wire Ins. Dia. = .100 [2.54]

Shell Size 22



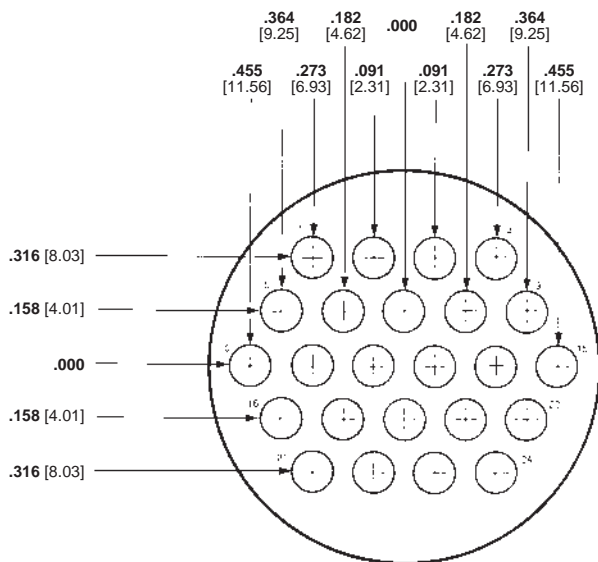
Arrangement 22-14
Max. Wire Ins. Dia. = .100 [2.54]



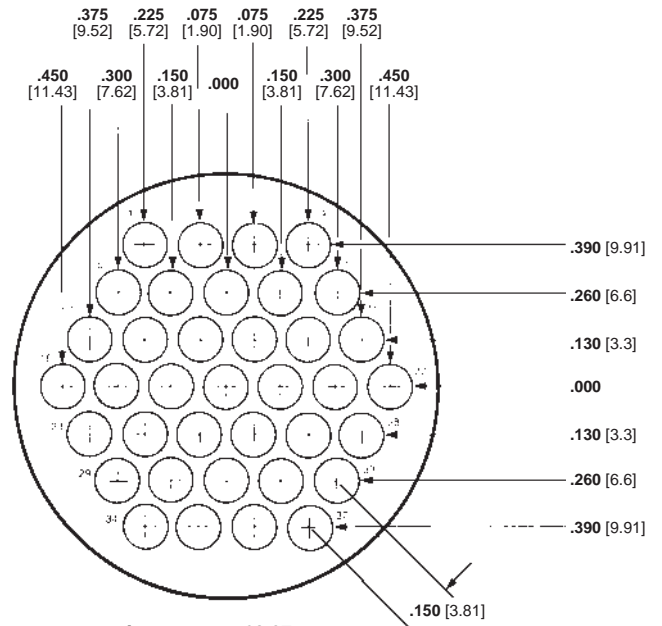
Arrangement 22-16
Max. Wire Ins. Dia. = .100 [2.54]

Note: Contact arrangements shown are of pin mating face (plug or receptacle). Socket mating face is mirror image.

Shell Size 28



Arrangement 28-24
Max. Wire Ins. Dia. = .150 [3.81]



Arrangement 28-37
Max. Wire Ins. Dia. = .100 [2.54]

Metal-Shell CPC Connectors, Series 2, Standard Sex



Listed part numbers are for connectors only; **contacts must be ordered separately.**

Material and Finish

- Square Flange Receptacle**—Thermoplastic, UL 94V-0 rated, black
- Housing and Retention Insert**—Thermoplastic, UL 94V-0 rated, black
- Metal-Shell**—Zinc alloy, plated nickel
- Grooved Pin**—Steel alloy, plated nickel

- Plug**—
- Housing**—Thermoplastic, UL 94V-0 rated, black
- Metal-Shell**—Zinc alloy, plated nickel
- Tetraseal Seal**—Fluorocarbon
- Retainer Ring**—Stainless steel
- Coupling Ring**—Zinc alloy, plated nickel

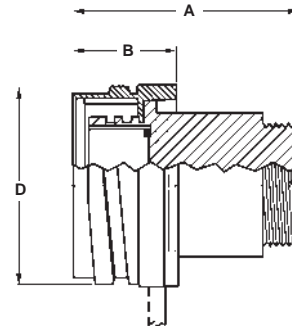
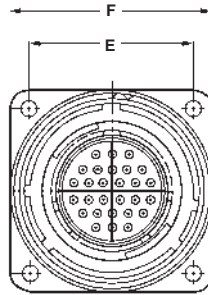
Related Product Data

- Contacts**—Pages 28-29
- Contact Arrangement**—Page 63
- Component Dimensions**—Page 69
- Accessories**—Pages 37, 38 and 70
- Performance Characteristics**—Page 6
- Application Tooling**—Pages 75-78
- Technical Documents**—Page 79

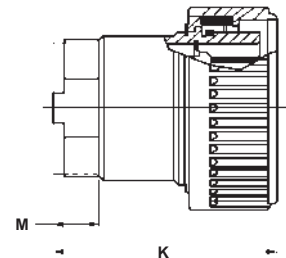
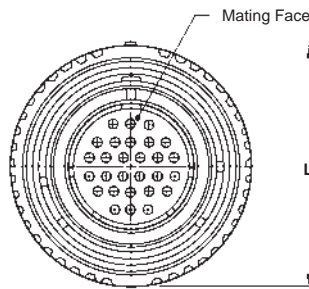
Note: All part numbers are RoHS Compliant.

Metal-Shell Circular Plastic Connectors, Series 2

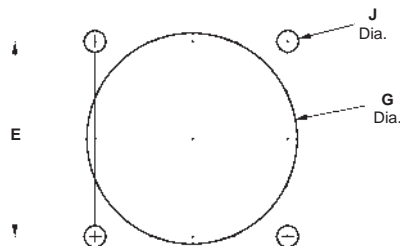
Square Flange Receptacles
(Accepts 20 DF and 20 DM Pins)



Plugs
(Accepts 20 DF and 20 DM Sockets)



Arrangement	Part No.	
	Square Flange Receptacle	Plug without Tetraseals Ring
22-28	208491-1	208490-1
28-63	208477-1	208476-1



Recommended Panel Cutout

Metal-Shell CPC Connectors, Series 2, Reverse Sex



Listed part numbers are for connectors only; **contacts must be ordered separately.**

Material and Finish

- Square Flange Receptacle—**
- Housing and Retention Insert—** Thermoplastic, UL 94V-0 rated, black
- Metal-Shell—** Zinc alloy, plated nickel
- Grooved Pin—** Steel alloy, plated nickel

Plug—

- Housing—** Thermoplastic, UL 94V-0 rated, black
- Metal-Shell—** Zinc alloy, plated nickel
- Tetraseal Seal—** Fluorocarbon
- Retainer Ring—** Stainless steel
- Coupling Ring—** Zinc alloy, plated nickel

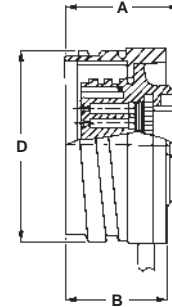
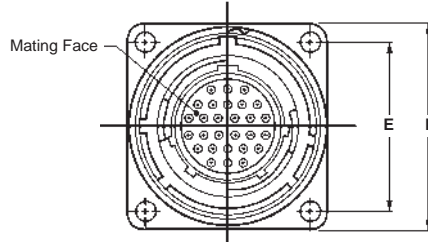
Related Product Data

- Contacts—** Pages 28-29
- Contact Arrangement—** Page 63
- Component Dimensions—** Page 69
- Accessories—** Pages 37, 38 and 70
- Performance Characteristics—** Page 6
- Application Tooling—** Pages 75-78
- Technical Documents—** Page 79

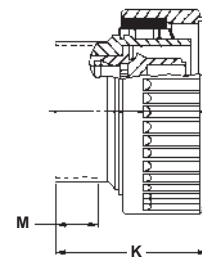
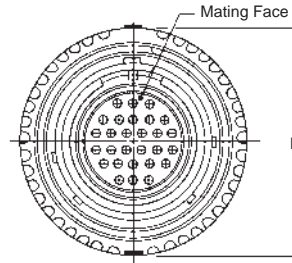
Note: All part numbers are RoHS Compliant.

Metal-Shell Circular Plastic Connectors, Series 2 (Continued)

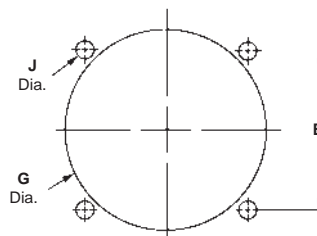
Square Flange Receptacles
(Accepts 20 DF and 20 DM Sockets)



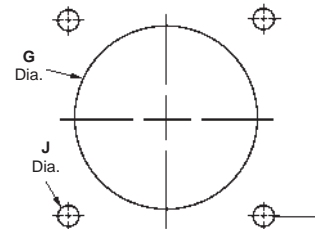
Plugs
(Accepts 20 DF and 20 DM Pins)



Arrangement	Part No.	
	Square Flange Receptacle	Plug without Tetraseals Ring
22-28	208493-1	208492-1
28-57	208475-1	208474-1



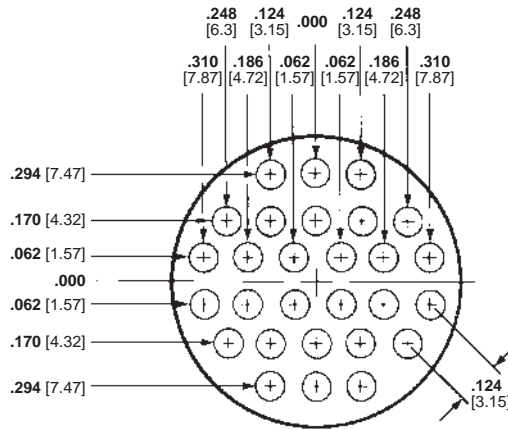
Rear Mount Panel Cutout



Front Mount Panel Cutout

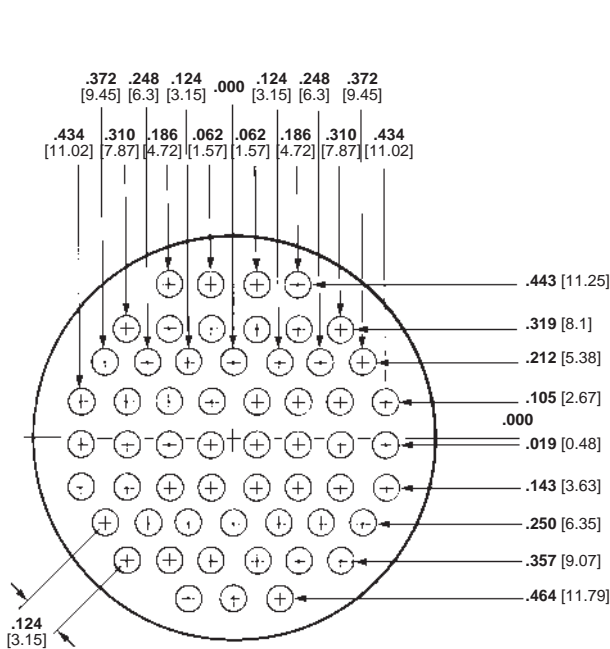
Metal-Shell CPC Connectors, Series 2, Contact Arrangements

Shell Size 22

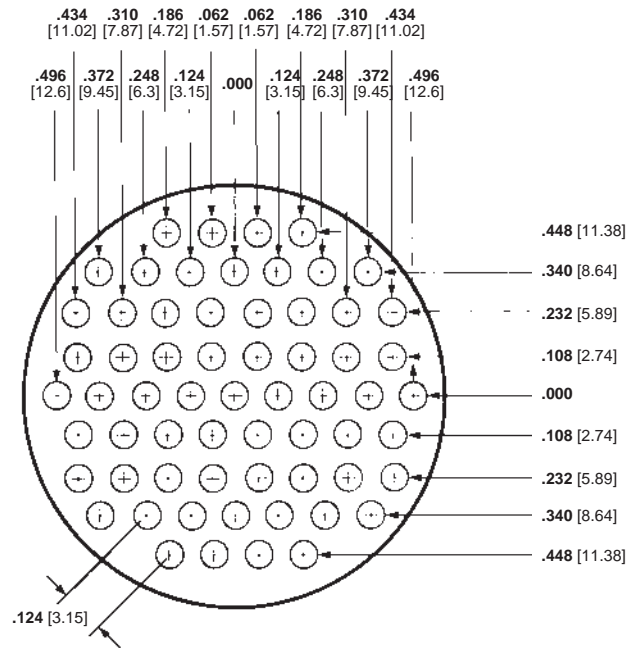


Arrangement 22-28
Max. Wire Ins. Dia. = .068 [1.73]

Shell Size 28



Arrangement 28-57
Max. Wire Ins. Dia. = .068 [1.73]



Arrangement 28-63
Max. Wire Ins. Dia. = .068 [1.73]

Note: Contact arrangements shown are of pin mating face (plug or receptacle). Socket mating face is mirror image.

Metal-Shell CPC Connectors, Series 3, Standard Sex



Listed part numbers are for connectors only; **contacts must be ordered separately.**

Material and Finish

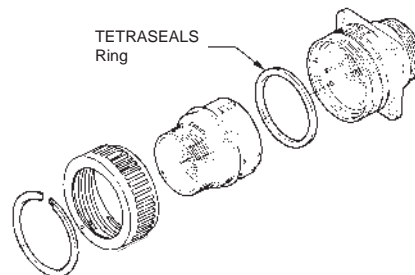
- Square Flange Receptacle—**
- Housing**—Thermoplastic, UL 94V-0 rated, black
- Metal-Shell**—Zinc alloy, plated nickel
- Peripheral Seal**—Elastomer, grey
- Grooved Pin**—Stainless steel
- Plug—**
- Housing**—Thermoplastic, UL 94V-0 rated, black
- Metal-Shell**—Zinc alloy, plated nickel
- Tetraseal Seal**—Fluorocarbon
- Retainer Rings**—Stainless Steel
- Coupling Ring**—Zinc alloy, plated nickel

Related Product Data

- Contacts**—Page 33-34
- Contact Arrangement**—Page 66
- Component Dimensions**—Page 69
- Accessories**—Pages 37, 38 and 70
- Performance Characteristics**—Page 6
- Application Tooling**—Pages 75-78
- Technical Documents**—Page 79

TETRASEALS Ring
(Installed in Plugs only)

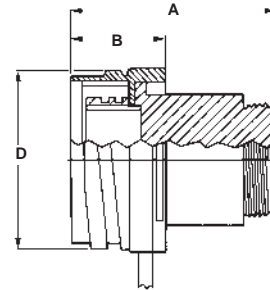
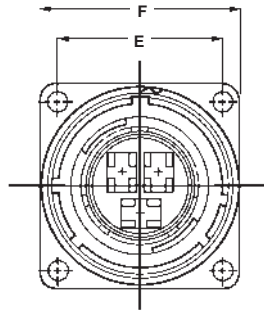
The TETRASEALS Ring provides splash-proof sealing between connector metal-shells. It is located behind the plug-shell external keys (under the coupling ring). When mated with a receptacle, the ring is compressed against the inside diameter of the mating end edge of the receptacle shell.



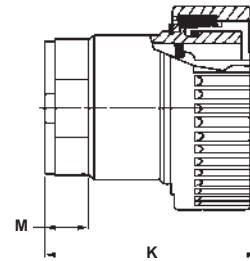
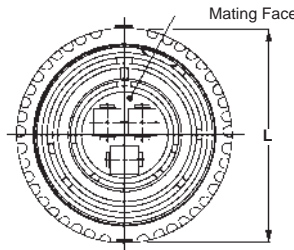
Note: All part numbers are RoHS Compliant.

Metal-Shell Circular Plastic Connectors, Series 3

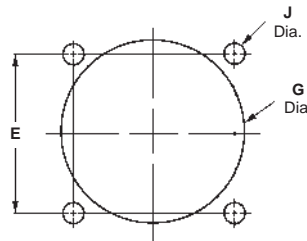
Square Flange Receptacles
(Accepts Type XII Male Pins)



Plugs
(Accepts Type XII Female Sockets)



Arrangement	Square Flange Receptacle	Plug Part No.	
		without TETRASEALS Ring	with TETRASEALS Ring
22-3	208495-1	208494-1	208494-3
28-7	208483-1	208482-1	—



Recommended Panel Cutout

Metal-Shell CPC Connectors, Series 3, Reverse Sex



Listed part numbers are for connectors only; **contacts must be ordered separately.**

Material and Finish

- Square Flange Receptacle—**
- Housing—**Thermoplastic, UL 94V-0 rated, black
- Metal-Shell—**Zinc alloy, plated nickel
- Peripheral Seal—**Elastomer, grey
- Grooved Pin—**Stainless steel
- Plug—**
- Housing—**Thermoplastic, UL 94V-0 rated, black
- Metal-Shell—**Zinc alloy, plated nickel
- Tetraseal Seal—**Fluorocarbon
- Retainer Rings—**Stainless Steel
- Coupling Ring—**Zinc alloy, plated nickel

Related Product Data

- Contacts—**Page 33-34
- Contact Arrangement—**Page 66
- Component Dimensions—**Page 69
- Accessories—**Pages 37, 38 and 70
- Performance Characteristics—**Page 6
- Application Tooling—**Pages 75-78
- Technical Documents—**Page 79

TETRASEALS Ring

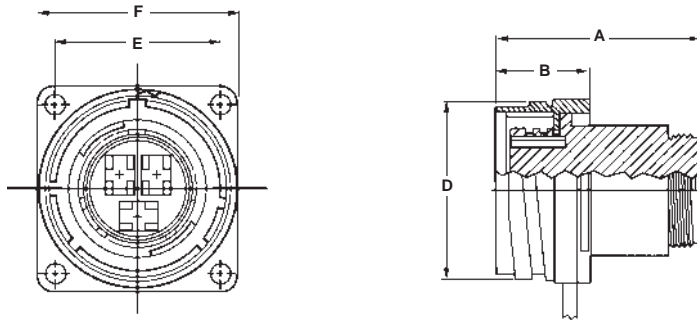
(Installed in Plugs only)

The TETRASEALS Ring provides splash-proof sealing between connector metal-shells. It is located behind the plug-shell external keys (under the coupling ring). When mated with a receptacle, the ring is compressed against the inside diameter of the mating end edge of the receptacle shell.

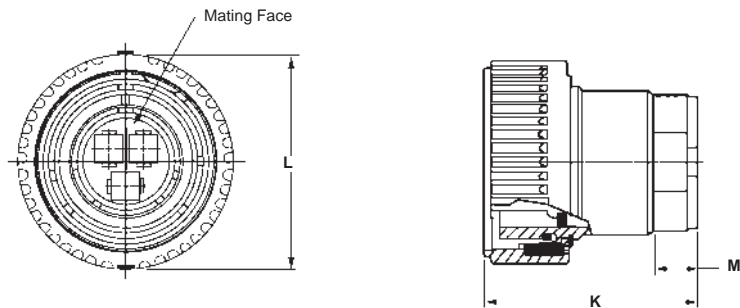
Note: All part numbers are RoHS Compliant.

Metal-Shell Circular Plastic Connectors, Series 3 (Continued)

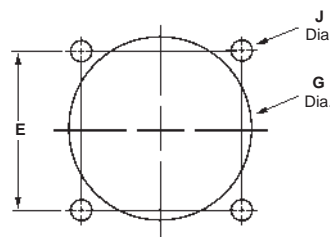
Square Flange Receptacles
(Accepts Type XII Female Sockets)



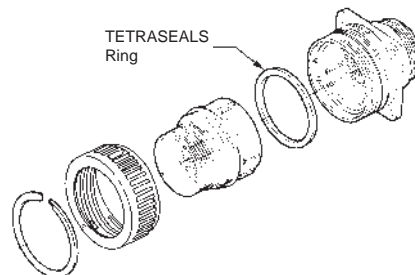
Plugs
(Accepts Type XII Male Pins)



Arrangement	Square Flange Receptacle	Plug Part No.	
		without TETRASEALS Ring	with TETRASEALS Ring
22-3	208497-1	208496-1	—
28-7	208485-1	208484-1	208484-3

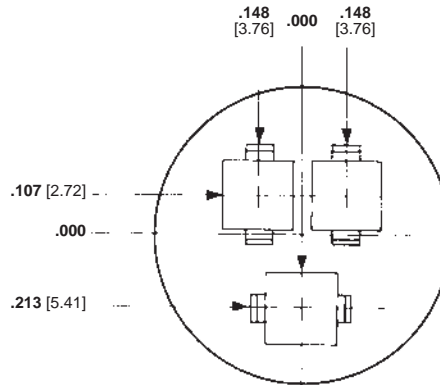


Recommended Panel Cutout



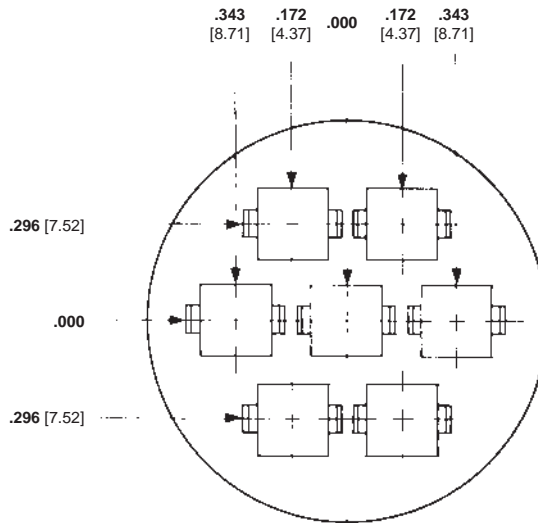
Metal-Shell CPC Connectors, Series 3, Contact Arrangements

Shell Size 22



Arrangement 22-3
Max. Wire Ins. Dia. = .220 [5.59]

Shell Size 28



Arrangement 28-7
Max. Wire Ins. Dia. = .220 [5.59]

Note: Contact arrangements shown are of pin mating face (plug or receptacle). Socket mating face is mirror image.

Metal-Shell CPC Connectors, Series 4



Listed part numbers are for connectors only; **contacts must be ordered separately.**

Material and Finish

Square Flange Receptacle—

Housing—Thermoplastic, UL 94V-0 rated, black

Metal-Shell—Zinc alloy, plated nickel

Grooved Pin—Stainless steel

Plug—

Housing—Thermoplastic, UL 94V-0 rated, black

Metal-Shell—Zinc alloy, plated nickel

Tetraseal Seal—Fluorocarbon

Retainer Rings—Stainless Steel

Coupling Ring—Zinc alloy, plated nickel

Related Product Data

Contacts—Pages 16-22 and 33-34

Contact Arrangement—Page 68

Component Dimensions—Page 69

Accessories—Pages 37, 38 and 70

Performance Characteristics—Page 6

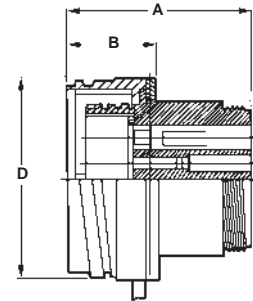
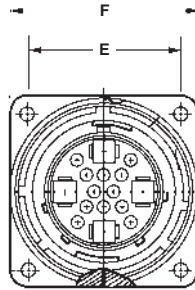
Application Tooling—Pages 75-78

Technical Documents—Page 79

Metal-Shell Circular Plastic Connectors, Series 4

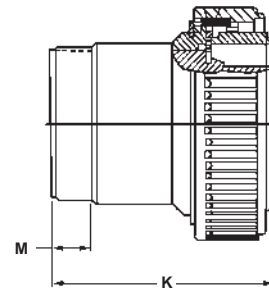
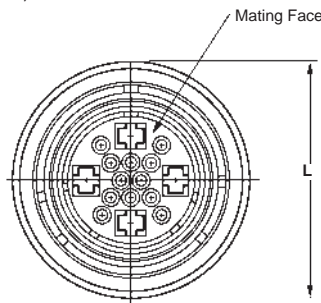
Square Flange Receptacles

(Standard Sex Receptacles accept Type XII Male and Multimatch Pins. Reverse Sex Receptacles accept Type XII Female and Multimatch Sockets.)

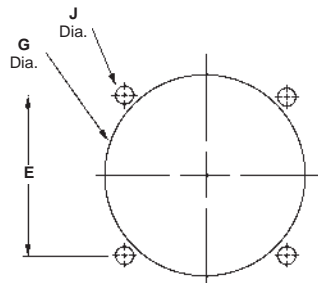


Plugs

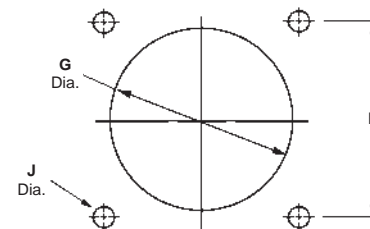
(Standard Sex Plugs accept Type XII Female and Multimatch Sockets. Reverse Sex Plugs accept Type XII Male and Multimatch Pins.)



Arrangement	Square Flange Receptacle		Plug Part No.		
	Standard Sex	Reverse Sex	without TETRASEALS Ring	Reverse Sex	with TETRASEALS Ring
28-16M	208479-1	1776088-1	208478-1	1776089-1	208478-3
28-22M	208481-1	—	208480-1	—	208480-3



Rear Mount Panel Cutout

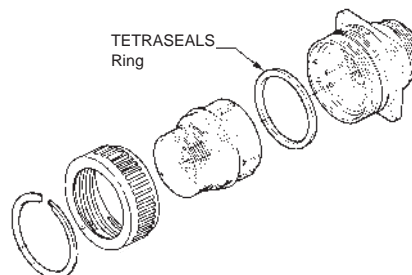


Front Mount Panel Cutout

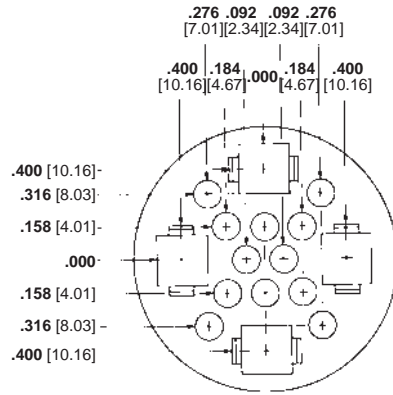
TETRASEALS Ring

(Installed in Plugs only)

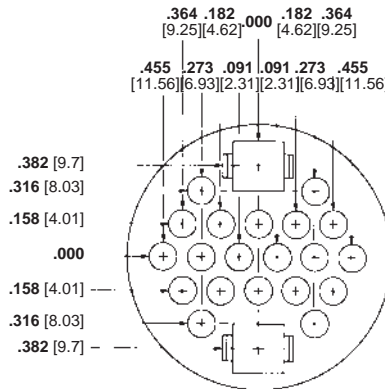
The TETRASEALS Ring provides splash-proof sealing between connector metal-shells. It is located behind the plug-shell external keys (under the coupling ring). When mated with a receptacle, the ring is compressed against the inside diameter of the mating end edge of the receptacle shell.



Metal-Shell CPC Connectors, Series 4, Contact Arrangements



Arrangement 28-16M
Max. Wire Ins. Dia. =
.150 [3.81] for Multimate Contacts,
.220 [5.59] for Power Contacts



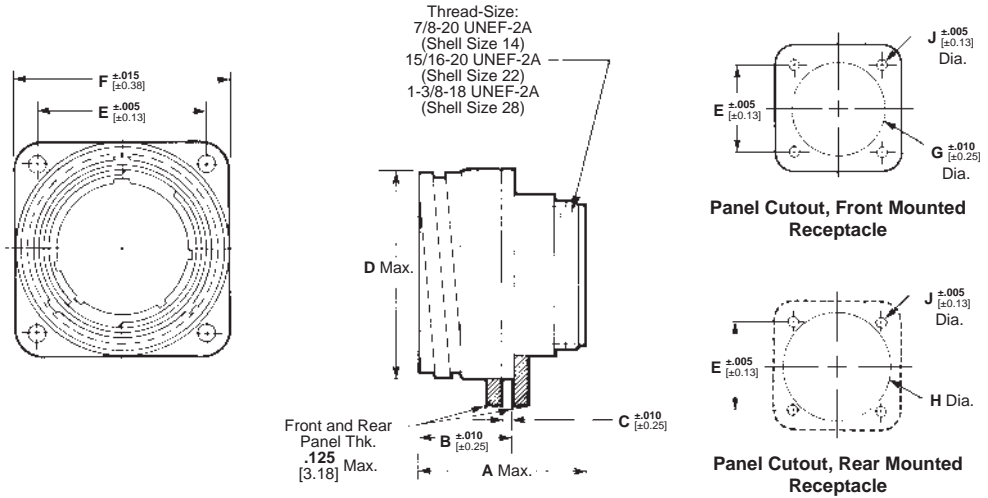
Arrangement 28-22M
Max. Wire Ins. Dia. =
.150 [3.81] for Multimate Contacts,
.220 [5.59] for Power Contacts

Note: Contact arrangements shown are of pin mating face (plug or receptacle). Socket mating face is mirror image.

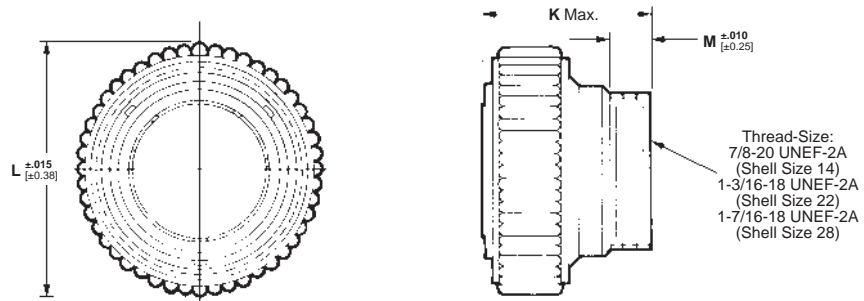
Metal-Shell CPC
Series 4

Metal-Shell CPC Connectors Component Dimensions

Square Flange Receptacles



Plugs



For drawings, technical data or samples, contact your sales engineer or call Technical Support.

Series	Arrangement No.	Sex	Dimensions												
			A	B	C	D	E	F	G	H	J	K	L	M	
1	14-5	Std.	1.415	.745	.100	1.031	.906	1.185	1.070	1.070	.125	1.400	1.225	.380	
		Rev.	35.94	18.92	2.54	26.19	23.01	30.1	27.18	27.18	3.18	35.56	31.12	9.65	
	14-7	Std.	1.415	.745	.100	1.031	.906	1.185	1.070	1.070	.125	1.400	1.225	.380	
		Rev.	35.94	18.92	2.54	26.19	23.01	30.1	27.18	27.18	3.18	35.56	31.12	9.65	
	22-14	Rev.	1.190	.790	.103	1.503	1.250	1.534	1.156	1.554	.120	1.560	1.750	.380	
			30.22	20.07	2.62	38.18	31.75	38.96	29.36	39.47	3.05	39.62	44.45	9.65	
	22-16	Std.	1.470	.790	.103	1.503	1.250	1.534	1.156	1.554	.120	1.265	1.750	.380	
			37.34	20.07	2.62	38.18	31.75	38.96	29.36	39.47	3.05	32.13	44.45	9.65	
	28-24	Std.	1.555	.875	.125	1.900	1.562	1.950	1.610	1.970	.145	1.560	2.170	.380	
			39.5	22.23	3.18	48.26	39.67	49.53	40.89	50.04	3.68	39.62	55.12	9.65	
28-37	Std.	1.540			1.900	1.562	1.950	1.610	1.970		1.560	2.170	.380		
	Rev.	39.12	.875	.125	48.26	39.67	49.53	40.89	50.04	3.68	39.62	55.12	9.65		
2	22-28	Std.	.934	.790	.103	1.503	1.250	1.534	1.156	1.554	.120	1.295	1.750	.380	
		Rev.	23.72	20.07	2.62	38.18	31.75	38.96	29.36	39.47	3.05	32.89	44.45	9.65	
	28-57	Rev.	1.229	.875	.125	1.900	1.562	1.950	1.610	1.970	.145	1.408	2.170	.380	
			31.22	22.22	3.18	48.26	39.67	49.53	40.89	50.04	3.68	35.76	55.12	9.65	
	28-63	Std.	1.229	.875	.125	1.900	1.562	1.950	1.610	1.970	.145	1.408	2.170	.380	
			31.22	22.22	3.18	48.26	39.67	49.53	40.89	50.04	3.68	35.76	55.12	9.65	
	3	22-3	Std.	1.755	.790	.103	1.503	1.250	1.534	1.156	1.554	.120	1.805	1.750	.380
			Rev.	44.58	20.07	2.62	38.18	31.75	38.96	29.36	39.47	3.05	45.85	44.45	9.65
		28-7	Std.	1.825	.875	.125	1.900	1.562	1.950	1.610	1.970	.145	2.125	2.170	.380
			Rev.	46.36	22.22	3.18	48.26	39.67	49.53	40.89	50.04	3.68	53.98	55.12	9.65
4	28-13M	Std.	1.825	.875	.125	1.900	1.562	1.950	1.610	1.970	.145	2.125	2.170	.380	
			46.36	22.22	3.18	48.26	39.67	49.53	40.89	50.04	3.68	53.98	55.12	9.65	
	28-16M	Std.	1.825	.875	.125	1.900	1.562	1.950	1.610	1.970	.145	2.125	2.170	.380	
			46.36	22.22	3.18	48.26	39.67	49.53	40.89	50.04	3.68	53.98	55.12	9.65	
28-22M	Std.	1.825	.875	.125	1.900	1.562	1.950	1.610	1.970	.145	2.125	2.170	.380		
		46.36	22.22	3.18	48.26	39.67	49.53	40.89	50.04	3.68	53.98	55.12	9.65		