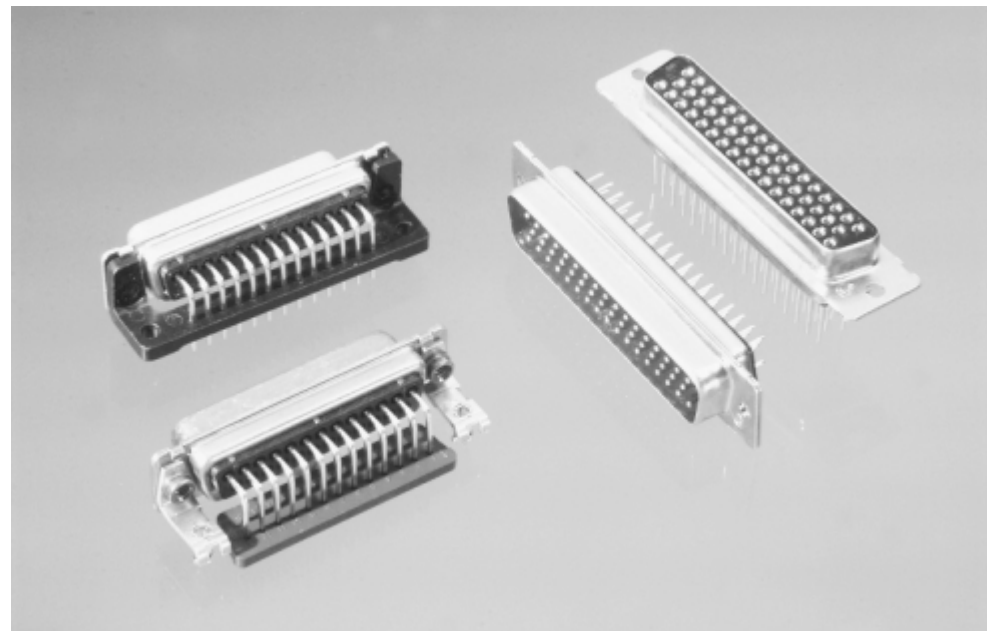


Product Facts

- Military qualified connectors conform to the latest amendments of MIL-DTL-24308

- MIL-C-39029 contacts offer reliability and economies of high speed termination by automatic machine
- Connector savers (feed-through) preserve permanently mounted connectors in high use applications
- Choice of sizes — Size 1 through 5 for Series 109, standard density with 9, 15, 25, 37 and 50 contacts; Size 1 through 6 for Series 90, high density with 15, 26, 44, 62, 78 and 104 contacts
- Series 109 standard density connectors are available with cavities for power or coaxial contacts mixed with size 20 signal contacts
- Right-angle and straight PC board connectors in Series 109, standard density
- Preloaded, straight-posted connectors available in Series 90, high density
- Preloaded, solder cup connectors available in Series 109, standard density
- Produced under a Quality Management System certified to ISO 9001

A copy of the certificate is available upon request



Military Sub-miniature D Connectors are compact pin and socket connectors especially designed for high density packages. They are ideally suited for applications such as military equipment, ground support devices, computer peripheral equipment, modems and industrial instrumentation.

In addition to the complete selection of standard military subminiature D-type connectors, Tyco Electronics offers special application versions such as connectors which mix power/coax cavities with size 20 signal contacts; feed-through connectors which provide a disposable interface for high use applications; and special non-magnetic connectors with a rubber grommet on the rear, for strain relief.

Series 109 and Series 90 military connectors conform

to the latest amendments of the MIL-DTL-24308 specification and thus are interchangeable with similar connectors in the same sizes from other manufacturers. A broad range of connectors is included in this catalog, complemented by a variety of commercial cable clamps and mating hardware, which can be found in catalog 1307612.

Each AMPLIMITE crimp connector has metal clips which retain the pins and sockets after they are loaded into the inserts from the rear.

Series 109 connectors accept size 20 contacts, while Series 90 connectors accept size 22 contacts. Cavity spacing conforms to military specifications.

Size 20 and size 22 pins and sockets are designed for an 8-indent crimp. They are supplied loose-piece for

crimping in a standard M22520/2 hand operated tool or tape-mounted for high speed application by an AMP-TAPEMATIC Stripper/Crimper Machine.

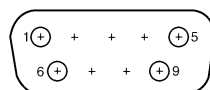
Series 90 and Series 109 connectors preloaded with contacts are available for printed circuit board mounting.

Special Series 109 connectors with power/coax cavities accept power contacts for 18 through 8 AWG [0.8-8 mm²] wire or coaxial contacts for RG/U 174, 188A and 316 cable, in combination with standard size 20 signal contacts.

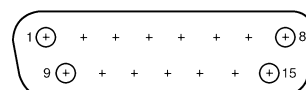
A complete range of non-military AMPLIMITE subminiature D connectors, contacts and accessories are shown in catalog 1307612, available on request from Tyco Electronics.

Series 109 Connectors (Standard Density)

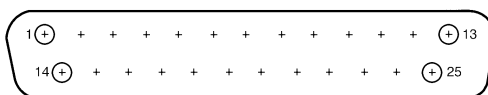
Insert Arrangements



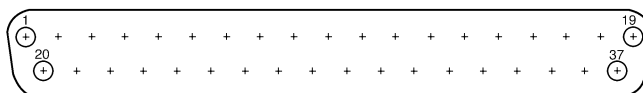
**9 Position
(Shell Size 1)
MS 18273-1**



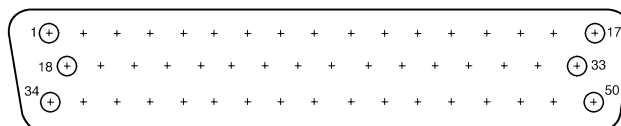
**15 Position
(Shell Size 2)
MS 18274-1**



**25 Position
(Shell Size 3)
MS 18275-1**



**37 Position
(Shell Size 4)
MS 18276-1**



**50 Position
(Shell Size 5)
MS 18277-1**

Note: Mating face of plug shown; receptacle is mirror image.



Electronics

Size 20 Crimp Contacts for Series 109 Connectors (MIL-C-39029)

Size 20 Crimp, Snap-In Contacts .040 [1.02] Pin Diameter

Material and Finish:

Pin and Socket Body —

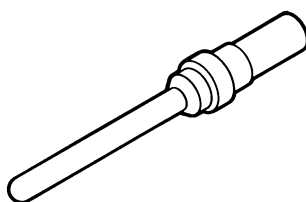
^aContact Body & Mating Area —

Copper alloy, plated gold .000050–
.000100 [0.00127–0.00254] thick over
.000050–.000100 [0.00127–0.00254]
thick nickel underplate.

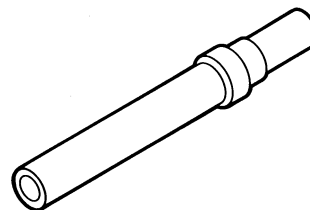
^b**Contact Body** — Copper alloy, gold
flash .000005 [0.00013] min thick over
.000050–.000100 [0.00127–0.00254]
thick nickel underplate.

^b**Mating Area** — Copper alloy, plated
gold .000050 min thick over
.000050–.000100 [0.00127–0.00254]
thick nickel underplate.

Socket Hood — Passivated stainless
steel.



Pin
M39029/64-369
(Supersedes M24308/11-1)



Socket
M39029/63-368
(Supersedes M24308/10-1)

Wire Size Range		Ins. Dia. (Max.)	Contact Configuration	Tape Mounted Contacts Part No.	Loose Piece Contacts		Hand Tool		Contact Color Band
AWG	[mm ²]				Military Part No. (M39029/)	AMP Part No.	Tool No. (M22520/)	Positioner No. (M22520/)	
20-24	0.6-0.2	.072 1.83	Pin	205089-2 ^a	64-369	205089-1 ^a	02-01	02-08	orange, blue, white
			Socket	205090-2 ^a	63-368	205090-1 ^a	02-01	02-08	orange, blue, gray
20-24	0.6-0.2	.072 1.83	Pin	1218371-2 ^b	64-369	1218371-1 ^b	02-01	02-08	orange, blue, white
			Socket	1218372-2 ^b	63-368	1218372-1 ^b	02-01	02-08	orange, blue, gray

Tape mounted contacts are used in the AMP-TAPEMATIC Stripper/Crimper Machine Part Number **599406-7** (page 5142).

Notes: 1. These contacts are used in Series 109 military connectors.

2. Insertion/Extraction Tool Part Number **91067-2** (Military Part Number **M81969/1-02**) is used to install and remove pin and socket contacts.

3. See AMP Instruction Sheet 408-7516 for wire length, tool and selector settings.

4. Color bands are read in the direction of terminal (wire barrel) end to mating end.

Crimp, Series 109, Standard Density Connectors (MIL Qualified)

Material and Finish:

Shell — Steel, cadmium plated

Insert — Approved material per MIL-DTL-24308

Retention Clips — Stainless steel

Related Product Data:

Cavity Identification — page 5101

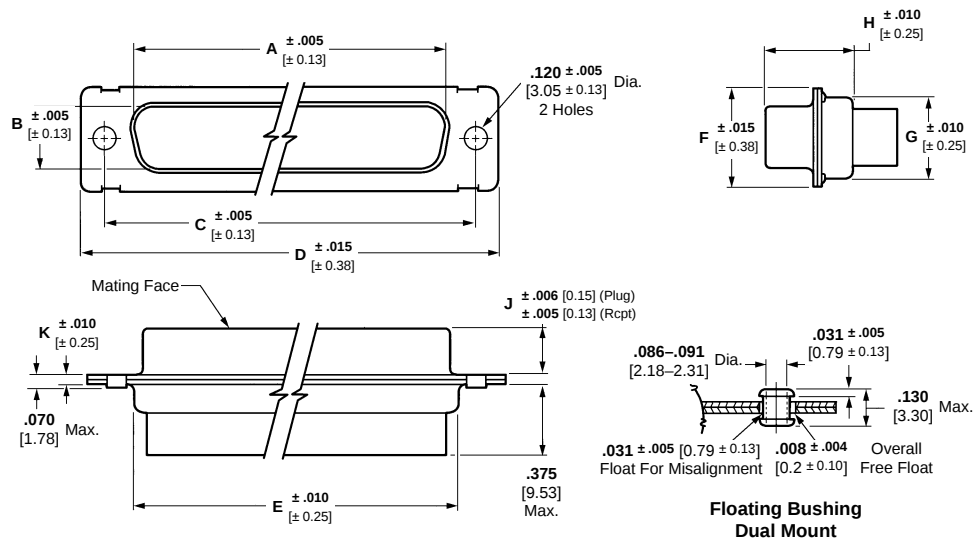
Contacts — pages 5102-5104

Mounting, Mating Specifications — page 5143

Accessories — pages 5148-5150

Attention: Connector marking

Connector marking may differ from package marking. All connectors marked per MIL-DTL-24308.



Series 109 Plugs per MIL-DTL-24308

No. of Contact Pos. (Shell Size)	Dimensions											Standard Mount		Floating Bushing Mount		Description
	A (Inside)	B (Inside)	C	D	E	F	G	H	J	K		Military Part No. M24308/	AMP Part No.	Military Part No. M24308/	AMP Part No.	
9 (1)	.666 16.92	.329 8.36	.984 24.99	1.213 30.81	.759 19.28	.494 12.55	.422 10.72	.422 10.72	.235 5.97	.030 0.76		4-259F	205162-1	4-324F	205412-1	Plug only
15 (2)	.994 25.25	.329 8.36	1.312 33.32	1.541 39.14	1.083 27.51	.494 12.55	.422 10.72	.422 10.72	.235 5.97	.030 0.76		4-260F	205164-1	4-325F	205408-1	Plug only
25 (3)	1.534 38.96	.329 8.36	1.852 47.04	2.088 53.04	1.625 41.3	.494 12.55	.422 10.72	.426 10.82	.230 5.84	.039 0.99		4-261F	205166-1	4-326F	205413-1	Plug only
37 (4)	2.182 55.42	.329 8.36	2.500 63.5	2.729 69.32	2.272 57.71	.494 12.55	.422 10.72	.426 10.82	.230 5.84	.039 0.99		4-262F	205168-1	4-327F	205414-1	Plug only
50 (5)	2.079 52.81	.441 11.2	2.406 61.11	2.635 66.93	2.178 55.32	.605 15.37	.534 13.56	.426 10.82	.230 5.84	.039 0.99		4-263F	205170-1	4-328F	205415-1	Plug only
												4-5F	205564-2	4-306F	205431-2	Plug with pins

Series 109 Receptacles per MIL-DTL-24308

No. of Contact Pos. (Shell Size)	Dimensions											Standard Mount		Floating Bushing Mount		Description
	A (Outside)	B (Outside)	C	D	E	F	G	H	J	K		Military Part No. M24308/	AMP Part No.	Military Part No. M24308/	AMP Part No.	
9 (1)	.643 16.33	.311 7.9	.984 24.99	1.213 30.81	.759 19.28	.494 12.55	.422 10.72	.429 10.9	.243 6.17	.030 0.76		2-281F	205161-1	2-292F	205416-1	Recept. only
15 (2)	.971 24.66	.311 7.9	1.312 33.32	1.541 39.14	1.083 27.51	.494 12.55	.422 10.72	.429 10.9	.243 6.17	.030 0.76		2-282F	205163-1	2-293F	205417-1	Recept. only
25 (3)	1.511 38.38	.311 7.9	1.852 47.04	2.088 53.04	1.625 41.3	.494 12.55	.422 10.72	.429 10.9	.243 6.17	.039 0.99		2-283F	205165-1	2-294F	205418-1	Recept. only
37 (4)	2.159 54.84	.311 7.9	2.500 63.5	2.729 69.32	2.272 57.71	.494 12.55	.422 10.72	.429 10.9	.243 6.17	.039 0.99		2-284F	205167-1	2-295F	205419-1	Recept. only
50 (5)	2.064 52.43	.423 10.74	2.406 61.11	2.635 66.93	2.178 55.32	.605 15.37	.534 13.56	.429 10.9	.243 6.17	.039 0.99		2-285F	205169-1	2-296F	205420-1	Recept. only
												2-5F	205563-2	2-27F	205432-2	Recept. with sockets

Notes: 1. Size 20 contacts supplied with connectors are loose piece.

2. "F" is stamped on connectors following M24308 Part Number as required. "F" designates cadmium shell plating.

3. See pages 5151 through 5155 (Military to AMP Part Number cross reference) for additional part numbers.)



Electronics

Material and Finish:

Shell — Steel, cadmium plated

Insert — Approved material per MIL-DTL-24308

Contact — Copper alloy plated gold over nickel underplate*

Spacer — Aluminum alloy, Iridite finish

Related Product Data:

Cavity Identification — page 5101

Mounting, Mating Specifications — page 5143

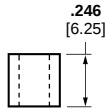
Accessories — pages 5148-5150

PCB Layouts — See page 5144 or AMP customer drawing.

***Socket Body** — .000050 [0.00127] min. gold over .000050 [0.00127] min. nickel

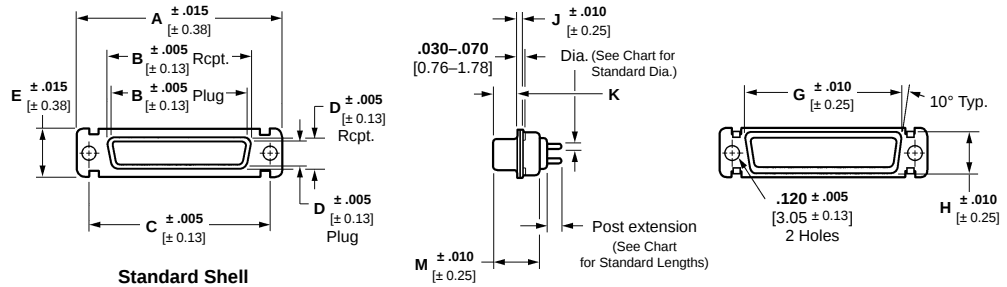
Mating Area — .000050 [0.00127] min. gold over .000050 [0.00127] min. nickel

Plug Body — .000050 [0.00127] min. gold over .000050 [0.00127] min. nickel



Spacer

Straight PCB, Series 109, Standard Density Connectors (MIL Qualified)



Standard Shell

MS Shell Size	Connector Style	Dimensions									
		A	B	C	D	E	G	H	J	K	M
1	Plug	1.213 30.81	.666 16.92	.984 24.99	.329 8.36	.494 12.55	.759 19.28	.422 10.72	.030 0.76	.238/.229 6.04/5.81	.422 10.72
	Receptacle	1.213 30.81	.643 16.33	.984 24.99	.311 7.90	.494 12.55	.759 19.28	.422 10.72	.030 0.76	.248/.238 6.29/6.04	.429 10.90
2	Plug	1.541 39.14	.994 25.25	1.312 33.32	.329 8.36	.494 12.55	1.083 27.51	.422 10.72	.030 0.76	.238/.229 6.04/5.81	.422 10.72
	Receptacle	1.541 39.14	.971 24.66	1.312 33.32	.311 7.90	.494 12.55	1.083 27.51	.422 10.72	.030 0.76	.248/.238 6.29/6.04	.429 10.90
3	Plug	2.088 53.04	1.534 38.96	1.852 47.04	.329 8.36	.494 12.55	1.625 41.28	.422 10.72	.039 0.99	.236/.224 5.99/5.68	.426 10.82
	Receptacle	2.088 53.04	1.511 38.38	1.852 47.04	.311 7.90	.494 12.55	1.625 41.28	.422 10.72	.030 0.76	.248/.238 6.29/6.04	.429 10.90
4	Plug	2.729 69.32	2.182 55.42	2.500 63.5	.329 8.36	.494 12.55	2.272 57.71	.422 10.72	.039 0.99	.236/.224 5.99/5.68	.426 10.82
	Receptacle	2.729 69.32	2.159 54.84	2.500 63.5	.311 7.90	.494 12.55	2.272 57.71	.422 10.72	.030 0.76	.248/.238 6.29/6.04	.429 10.90
5	Plug	2.635 66.93	2.079 52.81	2.406 61.11	.441 11.20	.605 15.37	2.178 55.32	.534 13.56	.039 0.99	.236/.224 5.99/5.68	.426 10.82
	Receptacle	2.635 66.93	2.064 52.43	2.406 61.11	.423 10.74	.605 15.37	2.178 55.32	.534 13.55	.030 0.76	.248/.238 6.29/6.04	.429 10.90

Receptacle Assemblies

Shell Size	No. Pos.	Post Dia.	Post Ext. ±.020 [± 0.51]	Military Part No. M24308/	AMP Part No.
1	9	.030 0.76	.156 3.96	23-1F	443975-1
2	15	.030 0.76	.156 3.96	23-2F	443975-2
3	25	.030 0.76	.156 3.96	23-3F	443975-3
4	37	.030 0.76	.156 3.96	23-4F	443975-4
5	50	.030 0.76	.156 3.96	23-5F	443975-5
1	9	.030 0.76	.188 4.78	23-7F	443976-1
2	15	.030 0.76	.188 4.78	23-8F	443976-2
3	25	.030 0.76	.188 4.78	23-9F	443976-3
4	37	.030 0.76	.188 4.78	23-10F	443976-4
5	50	.030 0.76	.188 4.78	23-11F	443976-5
1	9	.040 1.02	.156 3.96	23-13F	443977-1
2	15	.040 1.02	.156 3.96	23-14F	443977-2
3	25	.040 1.02	.156 3.96	23-15F	443977-3
4	37	.040 1.02	.156 3.96	23-16F	443977-4
5	50	.040 1.02	.156 3.96	23-17F	443977-5
1	9	.040 1.02	.188 4.78	23-19F	443978-1
2	15	.040 1.02	.188 4.78	23-20F	443978-2
3	25	.040 1.02	.188 4.78	23-21F	443978-3
4	37	.040 1.02	.188 4.78	23-22F	443978-4
5	50	.040 1.02	.188 4.78	23-23F	443978-5

Plug Assemblies

Shell Size	No. Pos.	Post Dia.	Post Ext. ±.020 [± 0.51]	Military Part No. M24308/	AMP Part No.
1	9	.030 0.76	.156 3.96	24-1F	1218124-1
2	15	.030 0.76	.156 3.96	24-2F	1218124-2
3	25	.030 0.76	.156 3.96	24-3F	1218124-3
4	37	.030 0.76	.156 3.96	24-4F	1218124-4
5	50	.030 0.76	.156 3.96	24-5F	1218124-5
1	9	.030 0.76	.188 4.78	24-7F	1218125-1
2	15	.030 0.76	.188 4.78	24-8F	1218125-2
3	25	.030 0.76	.188 4.78	24-9F	1218125-3
4	37	.030 0.76	.188 4.78	24-10F	1218125-4
5	50	.030 0.76	.188 4.78	24-11F	1218125-5
1	9	.040 1.02	.156 3.96	24-13F	1218126-1
2	15	.040 1.02	.156 3.96	24-14F	1218126-2
3	25	.040 1.02	.156 3.96	24-15F	1218126-3
4	37	.040 1.02	.156 3.96	24-16F	1218126-4
5	50	.040 1.02	.156 3.96	24-17F	1218126-5
1	9	.040 1.02	.188 4.78	24-19F	1218127-1
2	15	.040 1.02	.188 4.78	24-20F	1218127-2
3	25	.040 1.02	.188 4.78	24-21F	1218127-3
4	37	.040 1.02	.188 4.78	24-22F	1218127-4
5	50	.040 1.02	.188 4.78	24-23F	1218127-5

Right-Angle, PCB Plugs, Series 109, Standard Density Connectors (MIL Qualified)

Material and Finish:

Shell — Steel, cadmium plated

Insert and Post Spacer — Approved material per MIL-DTL-24308

Contact — Copper alloy with .000050 [0.00127] min. gold plate over .000050 [0.00127] min. nickel underplate

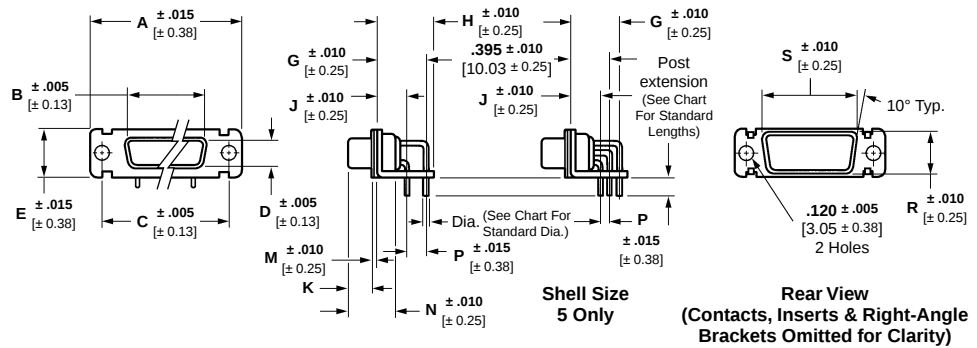
Related Product Data:

Cavity Identification — page 5101

Mounting, Mating Specifications — page 5143

Accessories — pages 5148-5150

PCB Layouts — See page 5144 or AMP customer drawing.



MS Shell Size	Connector Style	Dimensions													
		A	B	C	D	E	G	H	J	K	M	N	P	R	S
1	Plug	1.213 30.81	.666 16.92	.984 24.99	.329 8.36	.494 12.55	.395 10.03	.484 12.29	.283 7.19	.238/.229 6.04/5.81	.030 0.76	.422 10.72	.112 2.84	.422 10.72	.759 19.28
2	Plug	1.541 39.14	.994 25.25	1.312 33.33	.329 8.36	.494 12.55	.395 10.03	.484 12.29	.283 7.19	.238/.229 6.04/5.81	.030 0.76	.422 10.72	.112 2.84	.422 10.72	1.083 27.51
3	Plug	2.088 53.04	1.534 38.96	1.852 47.04	.329 8.36	.494 12.55	.395 10.03	.484 12.29	.283 7.19	.236/.224 5.99/5.68	.039 0.99	.426 10.82	.112 2.84	.422 10.72	1.625 29.59
4	Plug	2.729 69.32	2.182 55.42	2.500 63.5	.329 8.36	.494 12.55	.395 10.03	.484 12.29	.283 7.19	.236/.224 5.99/5.68	.039 0.99	.426 10.82	.112 2.84	.422 10.72	2.272 57.71
5	Plug	2.635 66.93	2.079 52.81	2.406 61.11	.441 10.44	.605 15.37	.507 12.88	.594 15.09	.283 7.19	.236/.224 5.99/5.68	.039 0.99	.426 10.82	.112 2.84	.534 13.56	2.178 55.32

Plug Assemblies — .030 [0.76] Post Dia.

Shell Size	No. Pos.	Post Ext. ± .020 [± 0.51]	Military Part No. M24308/	AMP Part No.
1	9	.125 3.18	24-25F	1218440-1
2	15	.125 3.18	24-26F	1218440-2
3	25	.125 3.18	24-27F	1218440-3
4	37	.125 3.18	24-28F	1218440-4
5	50	.125 3.18	24-29F	1218440-5
1	9	.156 3.96	24-31F	1218441-1
2	15	.156 3.96	24-32F	1218441-2
3	25	.156 3.96	24-33F	1218441-3
4	37	.156 3.96	24-34F	1218441-4
5	50	.156 3.96	24-35F	1218441-5
1	9	.188 4.78	24-49F	1218444-1
2	15	.188 4.78	24-50F	1218444-2
3	25	.188 4.78	24-51F	1218444-3
4	37	.188 4.78	24-52F	1218444-4
5	50	.188 4.78	24-53F	1218444-5

Plug Assemblies — .040 [1.02] Post Dia.

Shell Size	No. Pos.	Post Ext. ± .020 [± 0.51]	Military Part No. M24308/	AMP Part No.
1	9	.125 3.18	24-37F	1218442-1
2	15	.125 3.18	24-38F	1218442-2
3	25	.125 3.18	24-39F	1218442-3
4	37	.125 3.18	24-40F	1218442-4
5	50	.125 3.18	24-41F	1218442-5
1	9	.156 3.96	24-43F	1218443-1
2	15	.156 3.96	24-44F	1218443-2
3	25	.156 3.96	24-45F	1218443-3
4	37	.156 3.96	24-46F	1218443-4
5	50	.156 3.96	24-47F	1218443-5
1	9	.188 4.78	24-55F	1218445-1
2	15	.188 4.78	24-56F	1218445-2
3	25	.188 4.78	24-57F	1218445-3
4	37	.188 4.78	24-58F	1218445-4
5	50	.188 4.78	24-59F	1218445-5

Note: The suffix "F" on M24308 part numbers designates cadmium shell plating.



Electronics

Right-Angle, PCB Receptacles, Series 109, Standard Density Connectors (MIL Qualified)

Material and Finish:

Shell — Steel, cadmium plated

Insert and Post Spacer — Approved material per MIL-DTL-24308

Contacts —

Socket Body — Copper alloy with .000050 [0.00127] min. gold plate over .000050 [0.00127] min. nickel underplate

Mating Area — Copper alloy with .000050 [0.00127] min. gold plate over .000050 [0.00127] min. nickel underplate

Related Product Data:

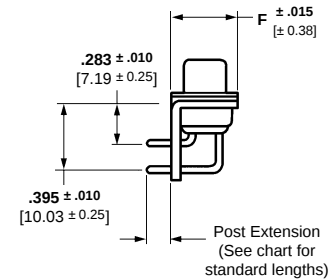
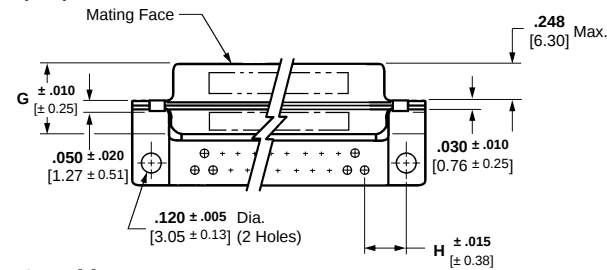
Cavity Identification — page 5101

Mounting, Mating Specifications — page 5143

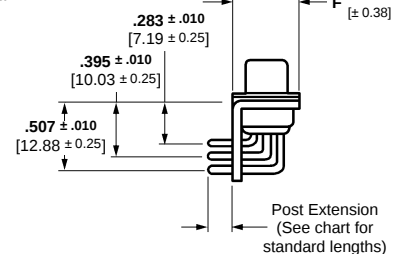
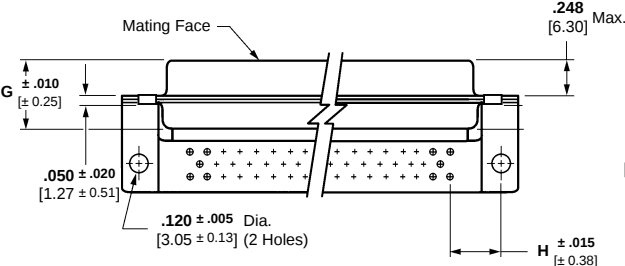
Accessories — pages 5148-5150

PCB Layouts — See page 5144 or AMP customer drawing.

9, 15, 25 and 37 Positions

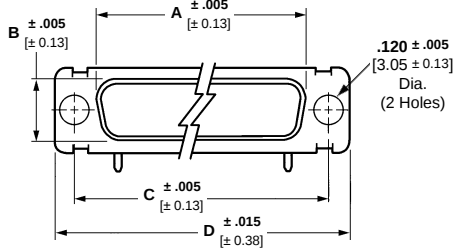


50 Positions



Receptacle Assemblies

No. of Contact Pos. (Shell Size)	Dimensions					
	A (Outside)	B (Outside)	C	D	F	H
9 (1)	.643 16.33	.311 7.9	.984 24.99	1.213 30.81	.494 12.55	.276 7.01
15 (2)	.971 24.66	.311 7.9	1.312 33.32	1.541 39.14	.494 12.55	.278 7.06
25 (3)	1.511 38.38	.311 7.9	1.852 47.04	2.088 53.04	.494 12.55	.274 6.96
37 (4)	2.159 54.84	.311 7.9	2.500 63.5	2.729 69.32	.494 12.55	.272 6.91
50 (5)	2.064 52.43	.423 10.74	2.406 61.11	2.635 66.93	.605 15.37	.333 8.46



Receptacle Assemblies — .030 [0.76] Post Dia.

Shell Size	No. Pos.	Post Ext. ± .020 [± 0.51]	Military Part No. M24308/	AMP Part No.
1	9	.125 3.18	23-25F	1218434-1
2	15	.125 3.18	23-26F	1218434-2
3	25	.125 3.18	23-27F	1218434-3
4	37	.125 3.18	23-28F	1218434-4
5	50	.125 3.18	23-29F	1218434-5
1	9	.156 3.96	23-31F	1218408-1
2	15	.156 3.96	23-32F	1218408-2
3	25	.156 3.96	23-33F	1218408-3
4	37	.156 3.96	23-34F	1218408-4
5	50	.156 3.96	23-35F	1218408-5
1	9	.188 4.78	23-49F	1218437-1
2	15	.188 4.78	23-50F	1218437-2
3	25	.188 4.78	23-51F	1218437-3
4	37	.188 4.78	23-52F	1218437-4
5	50	.188 4.78	23-53F	1218437-5

Receptacle Assemblies — .040 [1.02] Post Dia.

Shell Size	No. Pos.	Post Ext. ± .020 [± 0.51]	Military Part No. M24308/	AMP Part No.
1	9	.125 3.18	23-37F	1218435-1
2	15	.125 3.18	23-38F	1218435-2
3	25	.125 3.18	23-39F	1218435-3
4	37	.125 3.18	23-40F	1218435-4
5	50	.125 3.18	23-41F	1218435-5
1	9	.156 3.96	23-43F	1218436-1
2	15	.156 3.96	23-44F	1218436-2
3	25	.156 3.96	23-45F	1218436-3
4	37	.156 3.96	23-46F	1218436-4
5	50	.156 3.96	23-47F	1218436-5
1	9	.188 4.78	23-55F	1218438-1
2	15	.188 4.78	23-56F	1218438-2
3	25	.188 4.78	23-57F	1218438-3
4	37	.188 4.78	23-58F	1218438-4
5	50	.188 4.78	23-59F	1218438-5

Note: The suffix "F" on M24308 part numbers designates cadmium shell plating.

Solder Cup, Series 109, Standard Density Connectors

Material and Finish:

Shell — Steel or brass, cadmium plated

Insert — Approved material per MIL-DTL-24308

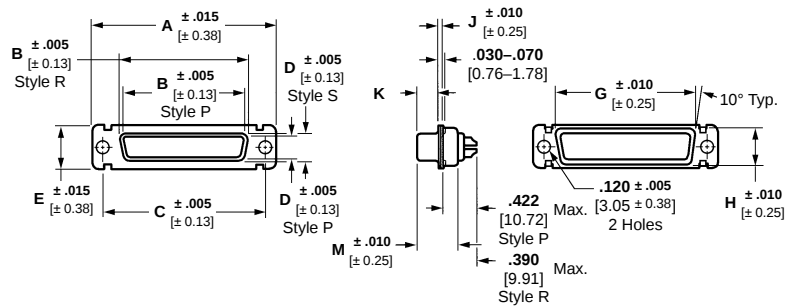
Contact — Copper alloy, plated gold over copper underplate

Related Product Data:

Cavity Identification — page 5101

Mounting, Mating Specifications —
page 5143

Accessories — pages 5148-5150



Standard Shell Rear View

MS Shell Size	Connector Style	Dimensions									
		A	B	C	D	E	G	H	J	K	M
1	Plug	1.213 30.81	.666 16.92	.984 24.99	.329 8.36	.494 12.55	.759 19.28	.422 10.72	.030 0.76	.238/.229 6.09/5.81	.422 10.72
	Receptacle	1.213 30.81	.643 16.33	.984 24.99	.311 7.90	.494 12.55	.759 19.28	.422 10.72	.030 0.76	.248/.238 6.29/6.09	.429 10.90
2	Plug	1.541 39.14	.994 25.25	1.312 33.32	.329 8.36	.494 12.55	1.083 27.51	.422 10.72	.030 0.76	.238/.229 6.09/5.81	.422 10.72
	Receptacle	1.541 39.14	.971 24.66	1.312 33.32	.311 7.90	.494 12.55	1.083 27.51	.422 10.72	.030 0.76	.248/.238 6.29/6.09	.429 10.90
3	Plug	2.088 53.04	1.534 38.96	1.852 47.04	.329 8.36	.494 12.55	1.625 41.28	.422 10.72	.039 0.99	.236/.224 5.99/5.68	.426 10.82
	Receptacle	2.088 53.04	1.511 38.38	1.852 47.04	.311 7.90	.494 12.55	1.625 41.28	.422 10.72	.030 0.76	.248/.238 6.29/6.09	.429 10.90
4	Plug	2.729 69.32	2.182 55.42	2.500 63.5	.329 8.36	.494 12.55	2.272 57.71	.422 10.72	.039 0.99	.236/.224 5.99/5.68	.426 10.82
	Receptacle	2.729 69.32	2.159 54.84	2.500 63.5	.311 7.90	.494 12.55	2.272 57.71	.422 10.72	.030 0.76	.248/.238 6.29/6.09	.429 10.90
5	Plug	2.635 66.93	2.079 52.81	2.406 61.11	.441 11.20	.605 15.37	2.178 55.32	.534 13.56	.039 0.99	.236/.224 5.99/5.68	.426 10.82
	Receptacle	2.635 66.93	2.064 52.43	2.406 61.11	.423 10.74	.605 15.37	2.178 55.32	.534 13.55	.030 0.76	.248/.238 6.29/6.09	.429 10.90

Solder Cup Assemblies

Steel Shells

Contact Style	Shell Size	No. Pos.	Mount	Military Part No. M24308/	AMP Part No.
Receptacle	1	9	Std.	1-1F	593007-1
	2	15	Std.	1-2F	593007-2
	3	25	Std.	1-3F	593007-3
	4	37	Std.	1-4F	593007-4
	5	50	Std.	1-5F	593007-5
Receptacle	1	9	F/F	1-12F	593008-1
	2	15	F/F	1-13F	593008-2
	3	25	F/F	1-14F	593008-3
	4	37	F/F	1-15F	593008-4
	5	50	F/F	1-16F	593008-5
Receptacle	1	9	D/F	1-23F	593009-1
	2	15	D/F	1-24F	593009-2
	3	25	D/F	1-25F	593009-3
	4	37	D/F	1-26F	593009-4
	5	50	D/F	1-27F	593009-5
Plug	1	9	Std.	3-1F	593002-1
	2	15	Std.	3-2F	593002-2
	3	25	Std.	3-3F	593002-3
	4	37	Std.	3-4F	593002-4
	5	50	Std.	3-5F	593002-5
Plug	1	9	F/F	3-12F	593004-1
	2	15	F/F	3-13F	593004-2
	3	25	F/F	3-14F	593004-3
	4	37	F/F	3-15F	593004-4
	5	50	F/F	3-16F	593004-5

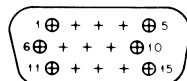
Brass Shells (Non-Magnetic)

Contact Style	Shell Size	No. Pos.	Mount	Military Part No. M24308/	AMP Part No.
Receptacle	1	9	Std.	5-1F	593036-1
	2	15	Std.	5-2F	593036-2
	3	25	Std.	5-3F	593036-3
	4	37	Std.	5-4F	593036-4
	5	50	Std.	5-5F	593036-5
Receptacle	1	9	F/F	5-12F	593037-1
	2	15	F/F	5-13F	593037-2
	3	25	F/F	5-14F	593037-3
	4	37	F/F	5-15F	593037-4
	5	50	F/F	5-16F	593037-5
Receptacle	1	9	D/F	5-23F	593038-1
	2	15	D/F	5-24F	593038-2
	3	25	D/F	5-25F	593038-3
	4	37	D/F	5-26F	593038-4
	5	50	D/F	5-27F	593038-5
Plug	1	9	Std.	7-1F	593057-1
	2	15	Std.	7-2F	593057-2
	3	25	Std.	7-3F	593057-3
	4	37	Std.	7-4F	593057-4
	5	50	Std.	7-5F	593057-5
Plug	1	9	F/F	7-12F	593058-1
	2	15	F/F	7-13F	593058-2
	3	25	F/F	7-14F	593058-3
	4	37	F/F	7-15F	593058-4
	5	50	F/F	7-16F	593058-5

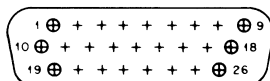
Mounting Abbreviations: Std. = Standard, F/F = Front Float, D/F - Dual Float

Note: The suffix "E" on M24308 part numbers designates cadmium shell plating.

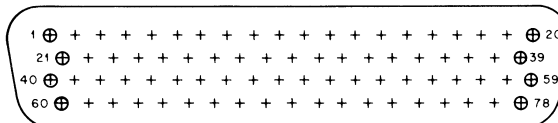
Insert Arrangements



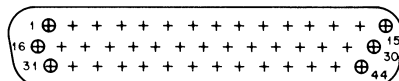
15 Position, Shell Size 1
MS 18273-2



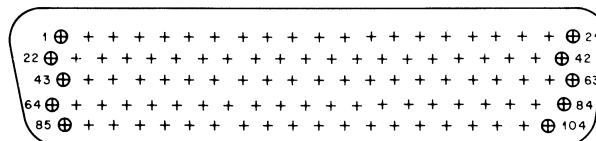
26 Position, Shell Size 2
MS 18274-2



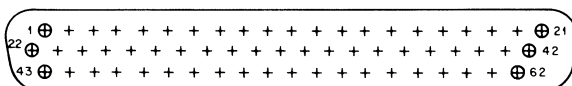
78 Position, Shell Size 5
MS 18277-2



44 Position, Shell Size 3
MS 18275-2



104 Position, Shell Size 6
MS 14004-1



62 Position, Shell Size 4
MS 18276-2

Note: Mating face of plug shown: receptacle is mirror image.

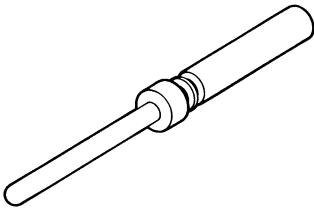


Size 22 Crimp Contacts for Series 90 Connectors (MIL-C-39029)

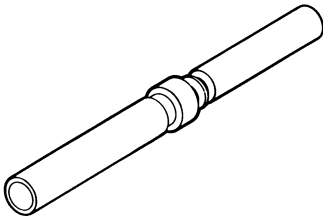
Size 22 Crimp, Snap-In
Contacts .030 [0.76]
Pin Diameter

Material and Finish

Pin, Socket Body — Copper alloy,
plated gold over nickel underplate
Socket Hood — Passivated stainless
steel



Pin
M39029/58-360
(Supersedes M24308/13-1)



Socket
M39029/57-354
(Supersedes M24308/12-1)

Wire Size Range		Ins. Dia. (Max.)	Contact Configuration	Tape Mounted Contacts ¹ AMP Part No.	Loose Piece Contacts		Hand Tool		Contact Color Bands
AWG	[mm ²]				Military Part No. (M39029/)	AMP Part No.	Tool No. (M22520/)	Positioner No. (M22520/)	
22-28	0.4-0.8	.054 1.38	Pin	204370-5	58-360	204370-2	02-01	02-09	orange, blue, black
			Socket	204351-2	57-354	204351-1	02-01	02-06	orange, green, yellow

¹Tape mounted contacts are used in the AMP-TAPEMATIC Stripper/Crimper Machine Part Number **599406-7** (page 5142).
Notes: 1. These contacts are used in Series 90 military connectors.
2. Insertion/Extraction Tool Part Number **91067-1** (Military Part Number **M81969/1-04**) is used to install and remove pin and socket contacts.
3. See AMP Instruction Sheet 408-7516 for wire length, tool and selector settings.
4. Color bands are read in the direction of terminal (wire barrel) end to mating end.



Electronics

Crimp Plugs, Series 90, High Density Connectors

(MIL Qualified)

Material and Finish

Shell — Steel, cadmium plated

Insert — Approved material per MIL-DTL-24308

Retention Clips — Stainless steel or copper alloy

(Industrial Grade)

Material and Finish

Shell — Steel, zinc plated

Insert — Polyphenylene Sulfide (PPS)

Retention Clips — Stainless steel or copper alloy

Related Product Data

Cavity Identification — page 5127

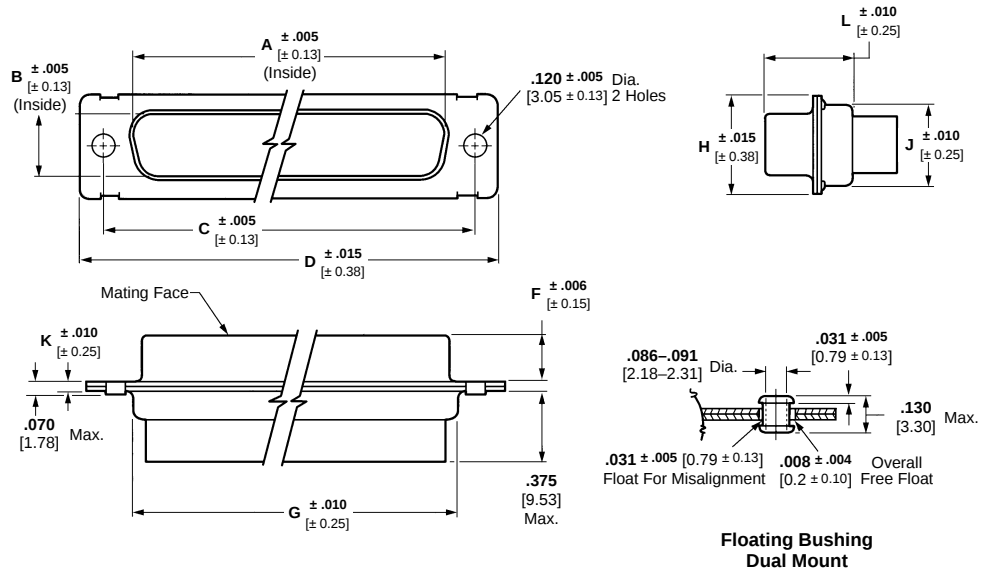
Contacts — pages 5128, 5129

Mounting, Mating Dimensions — page 5143

Accessories — pages 5148-5150

Attention: MIL Qualified Connector marking

Connector marking may differ from package marking. All connectors marked per MIL-DTL-24308.



No. of Contact Pos. (Shell Size)												MIL Qualified				Description	Industrial Grade ³ Standard Mount Part No.
												Standard Mount		Floating Bushing Mount			
	A	B	C	D	F	G	H	J	K	L	Military Part No. ² M24308/	AMP Part No.	Military Part No. M24308/	AMP Part No.			
15 (1)	.666 16.92	.329 8.36	.984 24.99	1.213 30.81	.235 5.97	.759 19.28	.494 12.55	.422 10.72	.030 0.76	.422 10.72	4-264F	204501-1	4-329F	204525-1	Plug only	1218746-1	
											4-11F	204513-2	4-307F	204537-2	Plug with pins ¹	—	
26 (2)	.994 25.25	.329 8.36	1.312 33.32	1.541 39.14	.235 5.97	1.083 27.51	.494 12.55	.422 10.72	.030 0.76	.422 10.72	4-265F	204503-1	4-330F	204527-1	Plug only	1218746-2	
											4-12F	204515-2	4-308F	204539-2	Plug with pins ¹	—	
44 (3)	1.534 38.96	.329 8.36	1.852 47.04	2.088 53.04	.230 5.84	1.625 41.3	.494 12.55	.422 10.72	.039 0.99	.426 10.82	4-266F	204505-1	4-331F	204529-1	Plug only	1218746-3	
											4-13F	204517-2	4-309F	204541-2	Plug with pins ¹	—	
62 (4)	2.182 55.42	.329 8.36	2.500 63.5	2.729 69.32	.230 5.84	2.272 57.7	.494 12.55	.422 10.72	.039 0.99	.426 10.82	4-267F	204507-1	4-332F	204531-1	Plug only	1218746-4	
											4-14F	204519-2	4-310F	204543-2	Plug with pins ¹	—	
78 (5)	2.079 52.81	.441 11.2	2.406 61.11	2.635 66.93	.230 5.84	2.178 55.32	.605 15.37	.534 13.56	.039 0.99	.426 10.82	4-268F	204509-1	4-333F	204533-1	Plug only	1218746-5	
											4-15F	204521-2	4-311F	204545-2	Plug with pins ¹	—	
104 (6)	2.212 56.18	.503 12.78	2.500 63.5	2.729 69.32	.230 5.84	2.302 58.47	.668 16.97	.596 15.14	.039 0.99	.426 10.82	4-269F	204511-1	4-334F	204535-1	Plug only	1218746-6	
											4-16F	204523-2	4-312F	204547-2	Plug with pins ¹	—	

Notes: See pages 5151 through 5155 (military to AMP Part Number cross reference) for additional part numbers.

¹ Size 22 sockets supplied with receptacles are loose piece.

² "F" is stamped on connectors following M24308 part number as required. "F" designates cadmium shell plating.

³ Meets requirements of MIL-DTL-24308.

(MIL Qualified)

Material and Finish

Shell — Steel, cadmium plated

Insert — Approved material per MIL-DTL-24308

Retention Clips — Stainless steel or copper alloy

(Industrial Grade)

Material and Finish

Shell — Steel, zinc plated

Insert — Polyphenylene Sulfide (PPS)

Retention Clips — Stainless steel or copper alloy

Related Product Data

Cavity Identification — page 5127

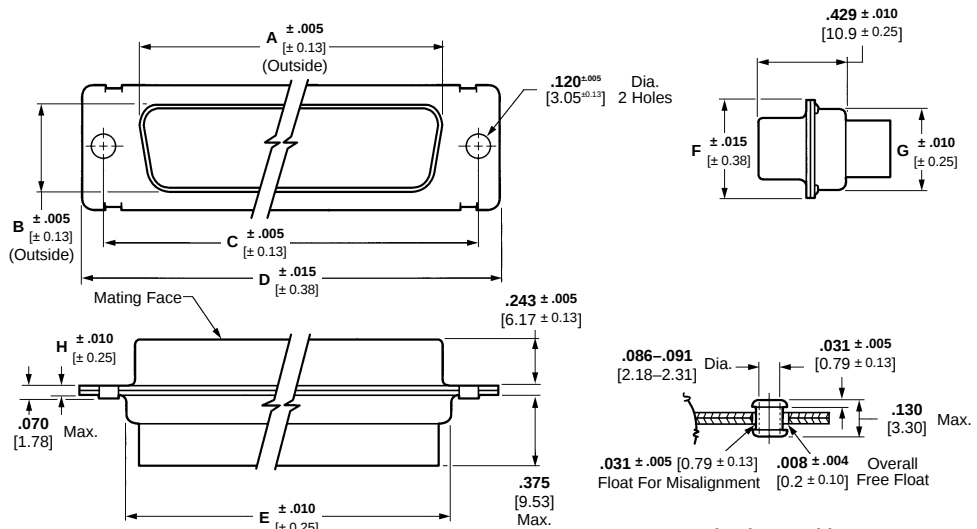
Contacts — pages 5128, 5129

Mounting, Mating Dimensions — page 5143

Accessories — pages 5148-5150

Attention: Connector marking

Connector marking may differ from package marking. All connectors marked per MIL-DTL-24308.



Floating Bushing Dual Mount



Clinch Nut Mount

No. of Contact Pos. (Shell Size)									MIL Qualified				Description	Industrial Grade ³ Clinch Nut Mount Part No.
									Standard Mount		Floating Bushing Mount			
	A	B	C	D	E	F	G	H	Military Part No. ² M24308/	AMP Part No.	Military Part No. M24308/	AMP Part No.		
15 (1)	.643 16.33	.311 7.9	.984 24.99	1.213 30.81	.759 19.28	.494 12.55	.422 10.72	.030 0.76	2-286F	204500-1	2-297F	204524-1	Recept. only	1218747-1
									2-11F	204512-2	2-28F	204536-2	Recept. with sockets ¹	—
26 (2)	.971 24.66	.311 7.9	1.312 33.32	1.541 39.14	1.083 27.51	.494 12.55	.422 10.72	.030 0.76	2-287F	204502-1	2-298F	204526-1	Recept. only	1218747-2
									2-12F	204514-2	2-29F	204538-2	Recept. with sockets ¹	—
44 (3)	1.511 38.38	.311 7.9	1.852 47.04	2.088 53.04	1.625 41.3	.494 12.55	.422 10.72	.039 0.99	2-288F	204504-1	2-299F	204528-1	Recept. only	1218747-3
									2-13F	204516-2	2-30F	204540-2	Recept. with sockets ¹	—
62 (4)	2.159 54.84	.311 8.36	2.500 63.5	2.729 69.32	2.272 57.7	.494 12.55	.422 10.72	.039 0.99	2-289F	204506-1	2-300F	204530-1	Recept. only	1218747-4
									2-14F	204518-2	2-31F	204542-2	Recept. with sockets ¹	—
78 (5)	2.064 52.43	.423 10.74	2.406 61.11	2.635 66.93	2.178 55.32	.605 15.37	.534 13.56	.039 0.99	2-290F	204508-1	2-301F	204532-1	Recept. only	1218747-5
									2-15F	204520-2	2-32F	204544-2	Recept. with sockets ¹	—
104 (6)	2.189 55.6	.485 12.32	2.500 63.5	2.729 69.32	2.302 58.47	.668 16.97	.596 15.14	.039 0.99	2-291F	204510-1	2-302F	204534-1	Recept. only	1218747-6
									2-16F	204522-2	2-33F	204546-2	Recept. with sockets ¹	—

Notes: See pages 5151 through 5155 (military to AMP Part Number cross reference) for additional part numbers.

¹ Size 22 sockets supplied with receptacles are loose piece.

² "F" is stamped on connectors following M24308 part number as required. "F" designates cadmium shell plating.

³ Meets requirements of MIL-DTL-24308.

Application Tools for Series 109 (Size 20) Crimp Contacts



**Pin and Socket
Insertion/Extraction Tool**

MIL Part Number M81969/1-02
Insertion tip, for replacement
Part Number 126195-3
Extraction tip, for replacement
Part Number 126195-4



**AMP-TAPEMATIC Stripper/
Crimper Machine Part Number
599406-7**

**Funnel Part Number 125905-1 for
Size 20 Contacts**

The AMP-TAPEMATIC Stripper/Crimper Machine strips wire and applies an 8-indent crimp termination per MIL-C-22520. The machine terminates pin and socket contacts which are tape mounted and reel fed. It offers production rates of up to 1200 finished leads per hour, provides overall lower applied costs and maintains a high degree of termination reliability.



Hand Crimping Tool

**MIL Part Number M22520/2-01
Positioner**

MIL Part Number M22520/2-08

This standard military-type hand tool terminates pins and sockets to wire with an 8-indent, M22520/2 crimp. It is ideally suited for prototype, field maintenance and other applications where volume production is not a factor.

Application Tools for Series 90 (Size 22) Crimp Contacts



**Pin and Socket
Insertion/Extraction Tool**

MIL Part Number M81969/1-04
Insertion tip, for replacement
Part Number 126237-1
Extraction tip, for replacement
Part Number 126195-2



**AMP-TAPEMATIC Stripper/
Crimper Machine Part Number
599406-7**

**Funnel Part Number 125905-2 for
Size 22 Contacts**

The AMP-TAPEMATIC Stripper/Crimper Machine strips wire and applies an 8-indent crimp termination per MIL-C-22520. The machine terminates pin and socket contacts which are tape mounted and reel fed. It offers production rates of up to 1200 finished leads per hour, provides overall lower applied costs and maintains a high degree of termination reliability.



Hand Crimping Tool

**MIL Part Number M22520/2-01
Positioner (Pin)**

**MIL Part Number M22520/2-09
Positioner (Socket)**

MIL Part Number M22520/2-06

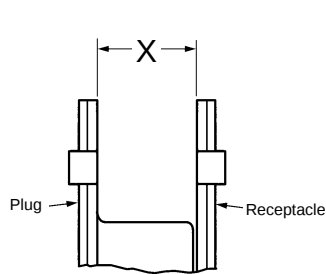
This standard military-type hand tool terminates pins and sockets to wire with an 8-indent, M22520/2 crimp. It is ideally suited for prototype, field maintenance and other applications where volume production is not a factor.



Electronics

Mating and Mounting Specifications for Series 109 and Series 90 Connectors

Plug Receptacle Mating



Shell Sizes 1 and 2 —

x = .280/.250 [7.11/6.35]

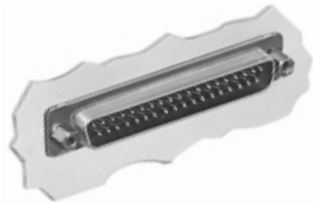
Shell Sizes 3, 4, 5 and 6 —

x = .271/.241 [6.88/6.12]

Blindmate Connectors (all sizes) —

x = .270 [6.86] min.

The X dimension is necessary for full mating of connector halves. This dimension must be taken into consideration when determining the method of mounting, panel thickness, etc.



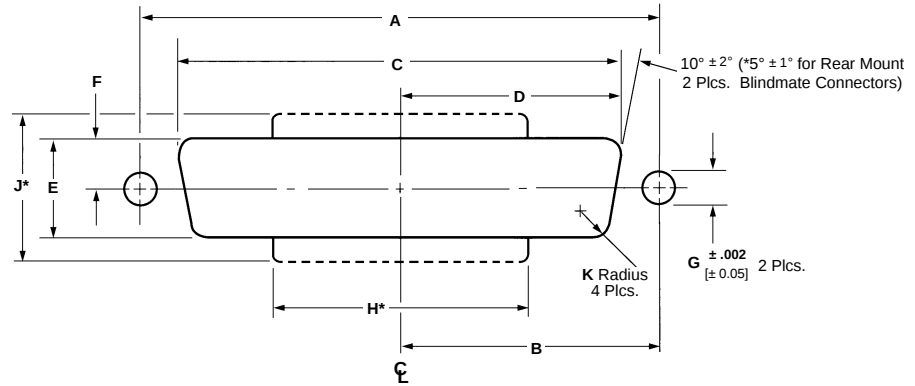
AMPLIMITE Plug,
Front-Panel Mounted



AMPLIMITE Receptacle,
Rear-Panel Mounted

Attention: Front-Panel Mount

When front mounting a MIL-DTL-24308 connector utilizing the tab method of securing shell halves, it is recommended to utilize a .032 [0.81] thick washer (not supplied) to prevent deformation of connector flange.

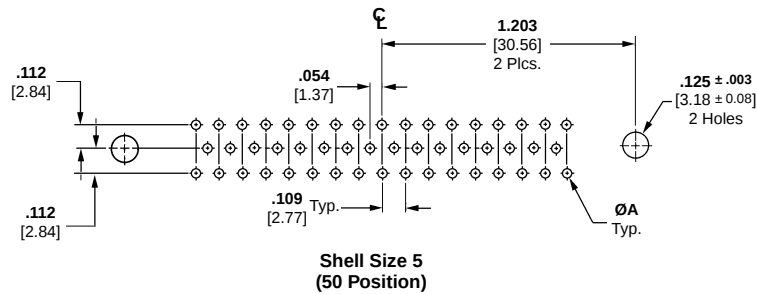
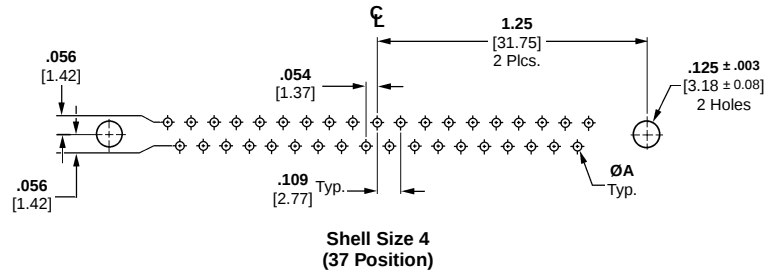
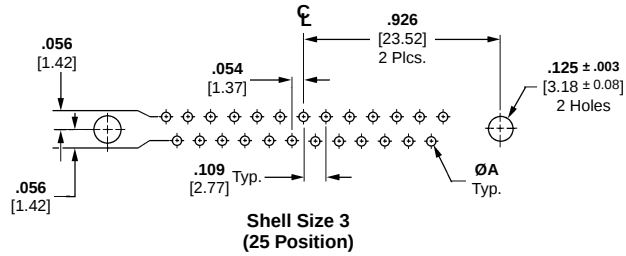
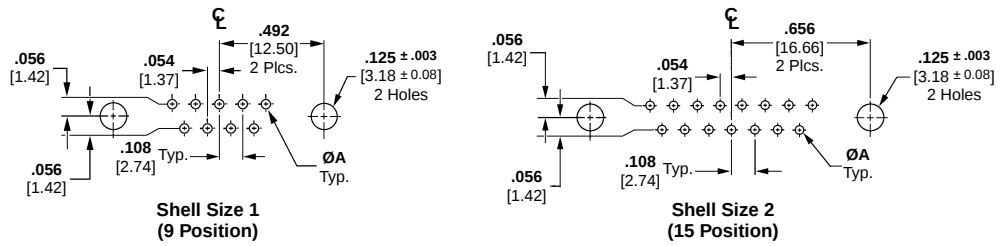


Panel Cutout

Shell Size (No. of Contact Pos.)		Mounting Method		Dimensions											
Series 109 Connectors	Series 90 Connectors	Front/Rear Panel	With/Without Flouting Bushing	A	B	C	D	E	F	G	H*	J*	K		
1 (9 Pos.)	1 (15 Pos.)	Front	With	.984	.492	.906	.453	.545	.273	.088	—	—	.083		
			Without			.874	.437	.513	.257	.120	—	—	2.11		
		Rear	With			24.99	12.5	.838	.419	.481	.241	.088	.332	.662	.132
			Without			21.29	10.64	12.22	6.12	2.24	8.43	16.81	3.35		
2 (15 Pos.)	2 (26 Pos.)	Front	With	1.312	.656	1.234	.617	.545	.273	.088	—	—	.083		
			Without			31.34	15.67	13.84	6.93	2.24	6.64	16.81	2.11		
		Rear	With			33.32	16.66	1.202	.601	.513	.257	.120	—	—	.132
			Without			29.62	14.81	12.22	6.12	2.24	6.64	16.81	3.35		
3 (25 Pos.)	3 (44 Pos.)	Front	With	1.852	.926	1.775	.888	.545	.273	.088	—	—	.083		
			Without			45.09	22.55	13.84	6.93	2.24	—	—	2.11		
		Rear	With			47.04	23.52	1.743	.872	.513	.257	.120	—	—	.132
			Without			44.27	22.15	13.03	6.53	3.05	—	—	3.35		
4 (37 Pos.)	4 (62 Pos.)	Front	With	2.500	1.250	2.423	1.212	.545	.273	.088	—	—	.083		
			Without			61.17	30.78	13.84	6.93	2.24	—	—	2.11		
		Rear	With			63.5	31.75	2.391	1.196	.513	.257	.120	—	—	.132
			Without			60.73	30.38	13.03	6.53	3.05	—	—	3.35		
5 (50 Pos.)	5 (78 Pos.)	Front	With	2.406	1.203	2.354	1.777	.481	.241	.088	1.845	.662	.132		
			Without			59.79	29.9	12.22	6.12	2.24	46.86	16.81		3.35	
		Rear	With			2.326	1.163	.449	.225	.120	1.813	.630	.132		
			Without			59.08	29.54	11.4	5.72	3.05	46.05	16		3.35	
—	6 (104 Pos.)	Front	With	2.500	1.250	2.329	1.165	.655	.328	.088	—	—	.083		
			Without			59.16	29.59	16.64	8.33	2.24	—	—		2.11	
		Rear	With			61.11	30.56	2.297	1.149	.623	.312	.120	—	—	.132
			Without			58.34	29.18	15.82	7.92	3.05	—	—	3.35		
—	6 (104 Pos.)	Front	With	2.500	1.250	2.453	1.227	.717	.359	.088	—	—	.083		
			Without			62.31	31.17	18.21	9.12	2.24	—	—		2.11	
		Rear	With			63.5	31.75	2.421	1.211	.685	.343	.120	—	—	.132
			Without			61.49	30.76	17.4	8.71	3.05	—	—	3.35		

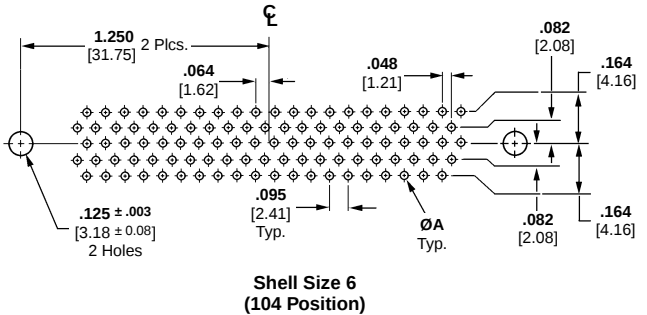
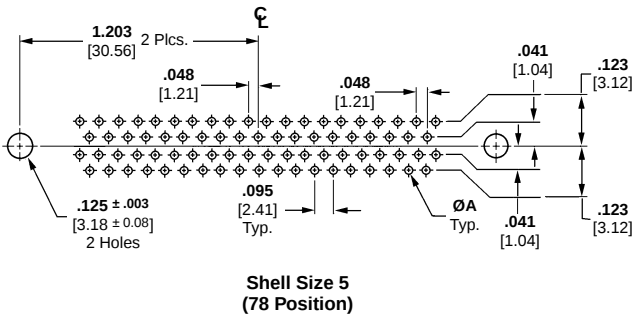
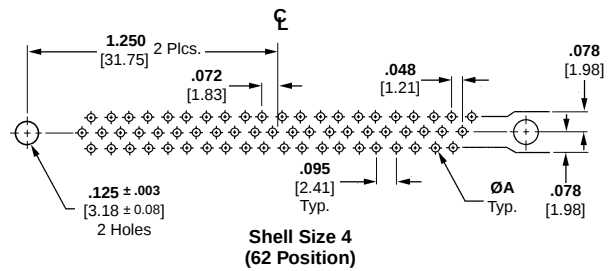
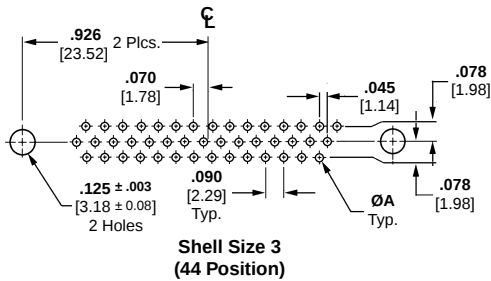
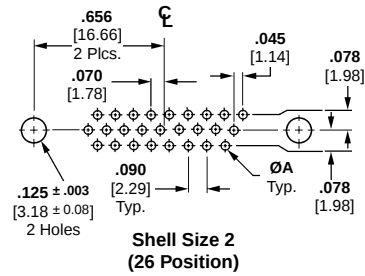
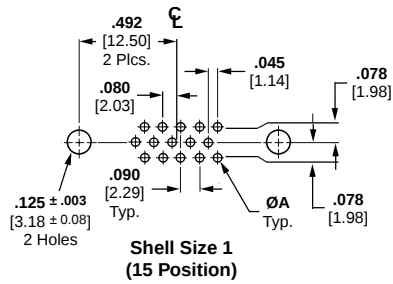
*Panel cutout configuration with these dimensions provides clearance for mounting connectors with cable clamp assemblies.

PCB Layouts—Series 109 (Standard Density)



Post Diameter	$\varnothing A$
.018 [0.46]	.028 [0.71] — .038 [0.96]
.025 [0.64]	.035 [0.89] — .045 [1.14]
.030 [0.76]	.040 [1.02] — .050 [1.27]
.040 [1.02]	.050 [1.27] — .060 [1.52]

- Notes:**
1. Mating face of plug is shown, receptacle is mirror image.
 2. PCB mounting hole diameters are provided for connectors with .120 [3.05] diameter mounting holes. For connectors with .154 [3.91] mounting holes, use PCB mounting hole diameter .160 $\pm$.003 [4.06 $\pm$ 0.08].
 3. PC layouts illustrated above serve as a guide only; they are not to be used for actual design or construction of customer equipment. Consult AMP customer print for detailed PC board layout requirements.



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.040 [1.02]	.050 [1.27] — .060 [1.52]

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