

AMP

**AMPLIMITE Subminiature D
Pin and Socket Connectors
per MIL-C-24308**

Catalog
79-547
Revised 1-85



AMP means productivity/Worldwide

**AMPLIMITE Subminiature D
Pin and Socket Connectors**

AMPLIMITE Military Subminiature 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, AMP 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 seal on the rear.

Series 109 (formerly HDM-20) and Series 90 (formerly HDM-22) military connectors conform to the latest amendments of the MIL-C-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 cable clamps and mating hardware.

Dimensioning:

All dimensions in inches and millimetres. Values in brackets are metric equivalents. Metric symbols used are:
mm² (square millimetre)
N (Newton)
C (Celsius)

Specifications subject to change. Consult AMP Incorporated for latest design specifications.

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Each AMPLIMITE military connector consists of a metal shell with an approved plastic insert. Metal springs retain the pins and sockets after they are loaded into the inserts from the rear. Series 109 (HD-20) connectors accept size 20 contacts in cavities on a .108-.112 centerline. Series 90 connectors accept size 22 contacts in cavities on a .090-.095 centerline. Precise spacing conforms to military specifications.

Size 20 DM and size 22 DM pins and sockets are screw-machined contacts 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 109 connectors preloaded with .026 [0.66] diameter pins are available for printed circuit board mounting.

Special non-magnetic AMPLIMITE Series 109 and Series 90 connectors are similar to their standard military counterparts but housed in brass shells rather than steel. 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.

For applications that do not require military qualified components, precision formed contacts are included in this catalog. A complete range of non-military AMPLIMITE subminiature D connectors, contacts and accessories is shown in catalog 79-546, available on request from AMP Incorporated.

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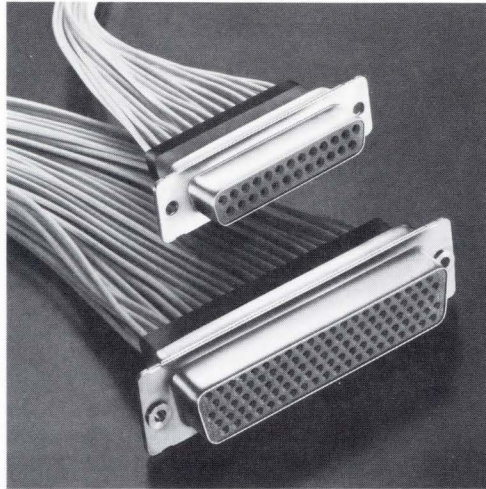
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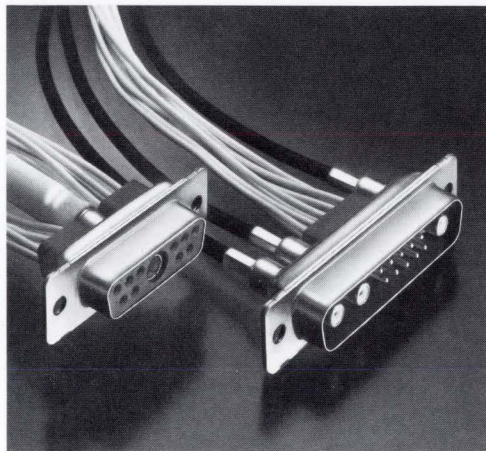
**AMPLIMITE Subminiature D
Military Connectors**

Features

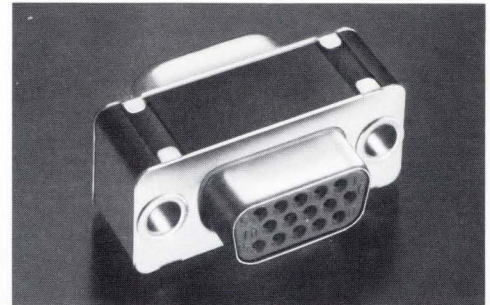
- Military qualified connectors conform to the latest amendments of MIL-C-24308
- Non-magnetic versions available per NASA spec, per MIL spec, or with rubber grommet on rear of NASA-type connector
- Screw-machined contacts and precision formed contacts offer reliability and economies of high speed termination by automatic machine
- Connector savers (feed-through) preserve permanently mounted connectors in high use applications
- Choice of sizes—Shells 1 through 5 for Series 109 with 9, 15, 25, 37 and 50 contacts; Shells 1 through 6 for Series 90 with 15, 26, 44, 62, 78 and 104 contacts
- Series 109 connectors are available with cavities for power or coaxial contacts mixed with size 20 signal contacts
- Right-angle connectors (Series 109) mount on pc boards
- Preloaded, straight-posted connectors available in Series 90



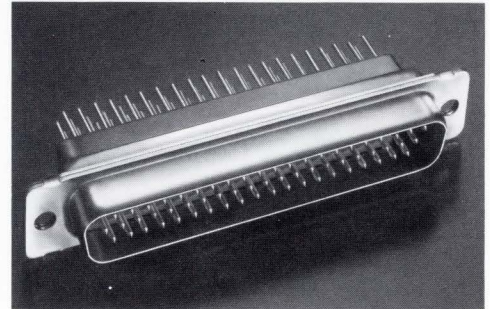
Connectors for crimp, snap-in contacts are available in both series, standard shells and non-magnetic, plus non-magnetic with rear rubber grommet.



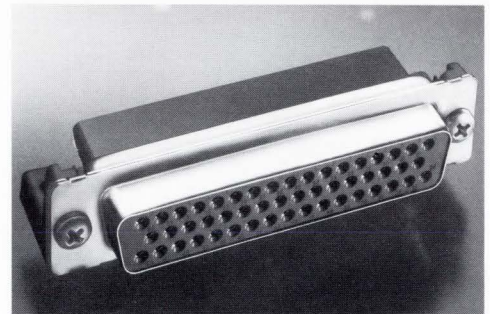
Coax or power contacts can be mixed with signal contacts.



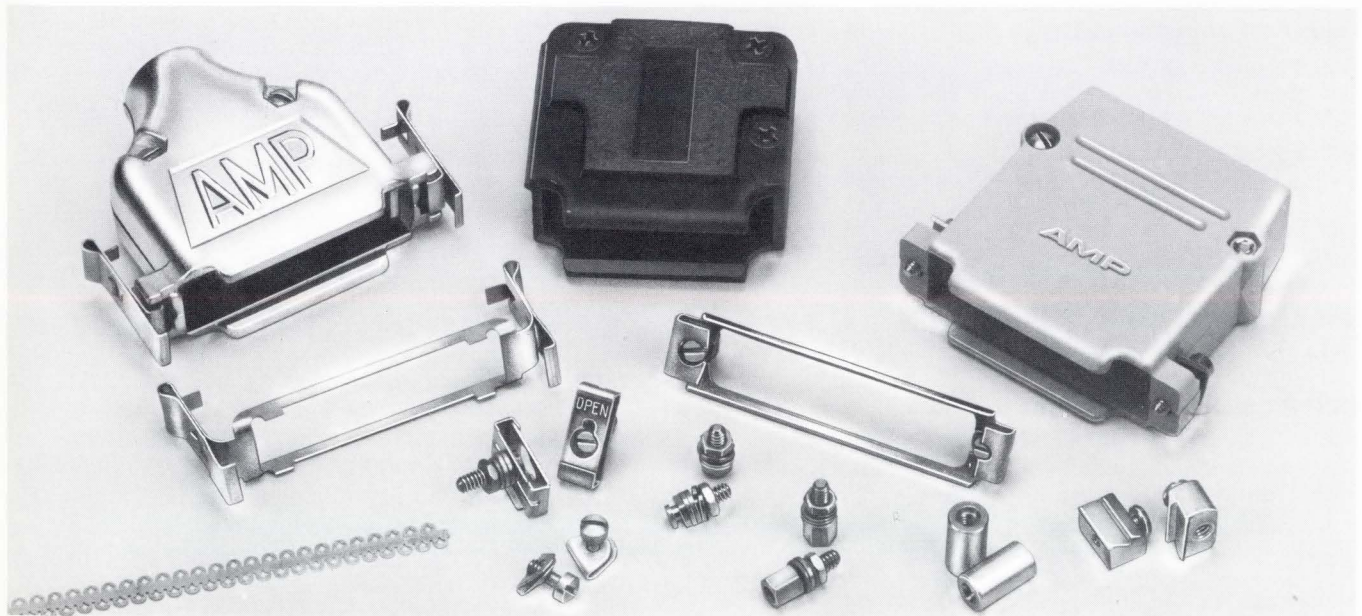
Connector savers extend life in high-use applications.



Posted versions available for Series 90 Connectors.

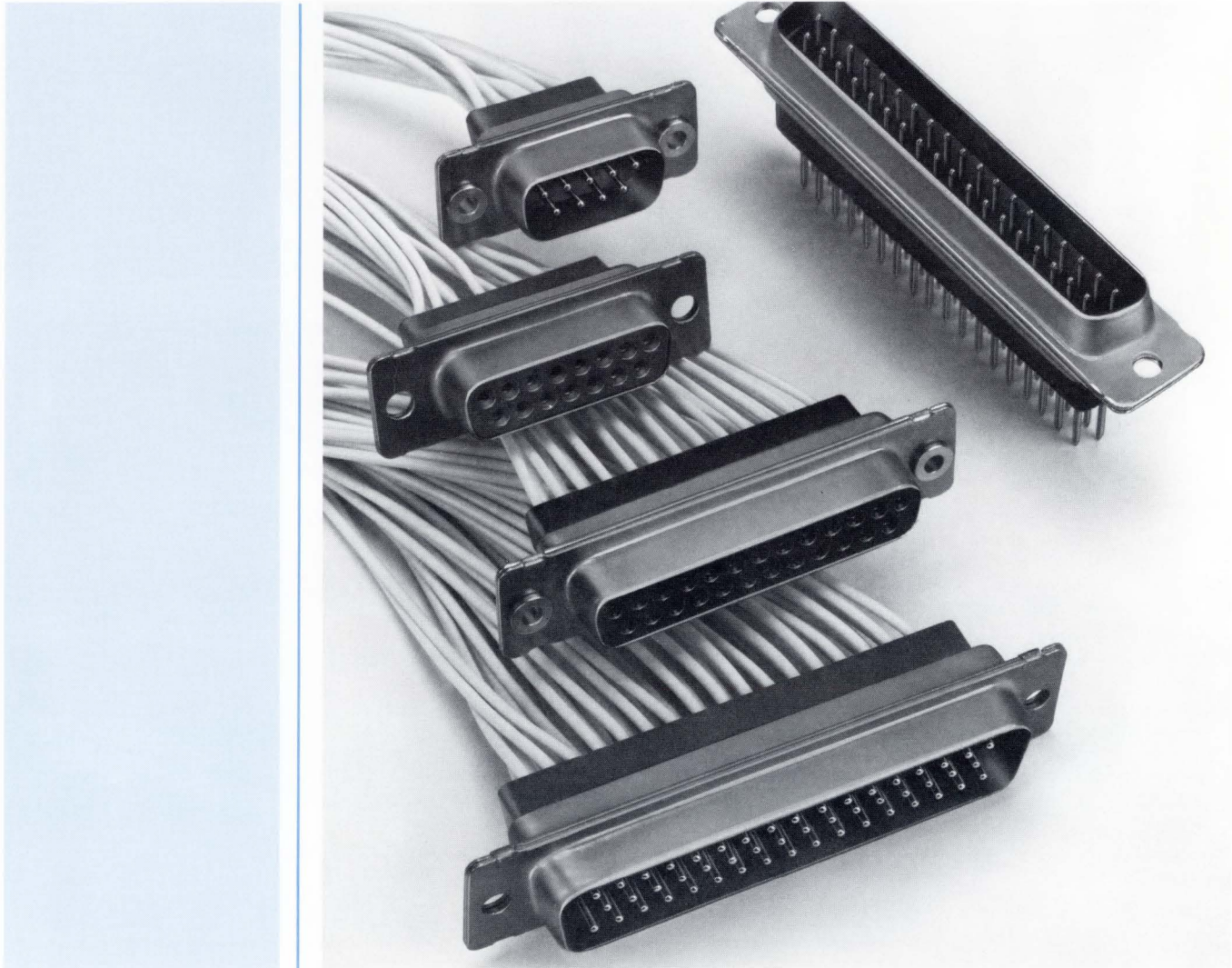


Right-angle connectors board mount for Series 109 connections.



A broad range of accessories accommodate many applications.

**Series 109
AMPLIMITE Connectors**



Technical Documents List

The following technical documents cover the application and performance of AMPLIMITE Series 109 connectors, contacts, tooling and accessories.

Military Specifications

MIL-C-24308 Connectors, Electric, Rectangular, Miniature Polarized Shell, Rack and Panel, General Specifications for

MIL-C-39029 Contacts, Electrical Connector, General Specification for

NASA Specification

GSFC-S-311-P-4/9 Non-Magnetic Connectors, General Specification for

AMP Product Specification

108-10020 AMPLIMITE HD-20 Connectors (Series 109)

AMP Manuals and Instruction Sheets

PM 2-5034-6 Product Manual—AMPLIMITE Connectors

HB 5268 Hand Book—AMPLIMITE HD-20 Connectors (Series 109)

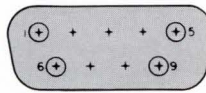
CI 8050-21 Crimp Inspection—AMPLIMITE 20 DM Contacts (Screw-Machined)

- IS 7887 Selection Chart for AMP Tape Mounted Screw-Machine Contacts and Applicable Terminating Machines (Connector Products Division)
- IS 7516 AMP Screw-Machine Contacts and Application Tooling
- IS 7634 Application and Maintenance for AMP Hand Crimping Tool 90302-1
- IS 7694 Application and Maintenance for AMP Hand Crimping Tool 90312-1
- IS 7954 Application and Maintenance for AMP Hand Crimping Tool 90374-1
- IS 7799 AMPLIMITE Solder Cup Contacts (66569-3 and 66570-3)
- IS 7508 AMP Insertion/Extraction Tools 91067-1, 91067-2 and 91067-3
- IS 7613 AMP Insertion/Extraction Tool 91083-2 for AMPLIMITE High Density 20 (HD-20) Connectors
- IS 7837 AMP Female Screwlock Kit 205817-1 and AMP Male Screw/Retainer Kit 205980-1
- IS 6551 AMP Slide Latch Kit and Amp Slide Latch Post Kit
- IS 7885 AMP Slide Latch Post Kit 206514-1 and AMP Slide Latch Clip Kit 206942-1

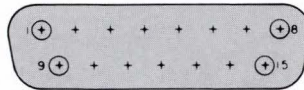
Series 109 AMPLIMITE Connectors

Dimensioning:
All dimensions in inches and millimetres.
Values in brackets are metric equivalents.

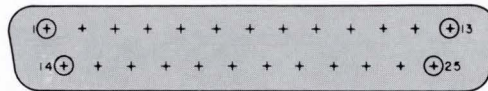
Insert Arrangements



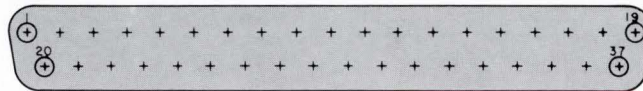
9 Position
(Shell Size 1)



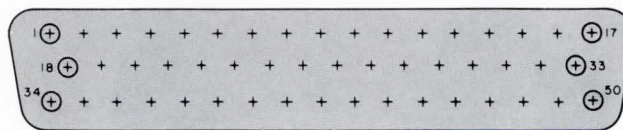
15 Position
(Shell Size 2)



25 Position
(Shell Size 3)



37 Position
(Shell Size 4)



50 Position
(Shell Size 5)

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

Performance Specifications

Note: For more detailed information, request AMP Product Specification No. 108-10020.

All Series 109 AMPLIMITE military (HDM-20) connectors conform to the latest amendments of military specification MIL-C-24308. The electrical and mechanical performance characteristics of equivalent commercial versions, loaded with stamped and formed contacts shown on page 8, are listed here.

Electrical Characteristics

Contact Current Rating (with 20 AWG [0.5-0.6 mm²] wire):
7.5 amperes

Contact Resistance: 5 milliohms (max.), crimp type;
8 milliohms (max.), posted

Dielectric Withstanding Voltage: 1000 VAC (min.)

Insulation Resistance: 5000 megohms

Mechanical Characteristics

Contact Engagement Force: 12 oz. [3.4 N] (max.)

Contact Separation Force: .75 oz. [0.2 N] (Min.)

Contact Retention: 9 pounds [40 N] (min.)

Tensile Strength (crimp):

With 20 AWG [0.5-0.6 mm²] Wire—20 lb. [89 N]

With 22 AWG [0.3-0.6 mm²] Wire—12 lb. [53 N]

With 24 AWG [0.2 mm²] Wire—8 lb. [39 N]

With 26 AWG [0.12-0.15 mm²] Wire—4.5 lb. [20 N]

With 28 AWG [0.08-0.09 mm²] Wire—2.7 lb. [12 N]

Connector Mating Force (per contact): 12 oz. [3.4 N] (max.)

Size 20 DM Screw-Machined Contacts for Series 109 Connectors

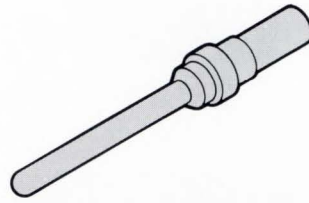
Dimensioning:
All dimensions in inches and millimetres. Values in brackets are metric equivalents.
Chart contains dimensions in inches over millimetres.

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

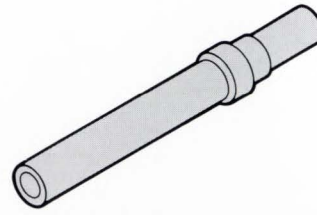
Material and Finish

Pin Contact—Copper alloy per ASTM B301, gold plated per MIL-G-45204 .000050-.0001000 [0.00127-0.00254] thick, over copper per MIL-C-14550 .000100-.000150 [0.00254-0.00381]

Socket Body—Beryllium copper per QQ-C-530, gold plated per MIL-G-45204 .000050-.000100 [0.00127-0.00254] thick, over copper per MIL-C-14550 .000100-.000150 [0.00254-0.00381]



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



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

Wire Size Range ¹		Ins. Dia. (Max.)	Contact Configuration	Tape Mounted Contacts ²	Loose Piece Contacts		Hand Tool	
AWG	[mm ²]			AMP Part No.	Military Part No. (M39029/)	AMP Part No.	Tool No. (M22520/)	Positioner No. (M22520/)
24-20	0.2-0.6	.068 1.73	Pin	205089-2	64-369	205089-1	02-01	02-08
			Socket	205090-2	63-368	205090-1		

¹Wire Strip Length—,140 [3.56]

²Tape mounted contacts are reeled for the AMP-TAPEMATIC Stripper/Crimper Machine No. 599406-6 (below).

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

2. Insertion/Extraction Tool No. 91067-2 (Military No. M81969/1-02) is used to install and remove pin and socket contacts.



Pin and Socket Insertion/Extraction Tool

AMP part number 91067-2 or
Mil number M81969/1-02

Insertion tip, for replacement
Part number 126195-3

Extraction tip, for replacement
Part number 126195-4

Application Tools for Screw-Machined Contacts



AMP-TAPEMATIC Stripper/
Crimper Machine No. 599406-6

Funnel No. 125905-1 for Size
20 DM Contacts

Funnel No. 125905-2 for Size
22 DM Contacts

The AMP-TAPEMATIC Stripper/Crimper Machine strips wire and applies an 8-indent crimp termination per MIL-C-22520. The machine terminates screw-machined 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 the highest degree of termination reliability.



Hand Crimping Tool
No. M22520/2-01

This standard military-type hand tool terminates screw-machined 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.

AMP Incorporated does not sell hand tool M22520/2-01. However, it can be purchased from either one of the following companies:

Buchanan Electrical
Products Corp.
1065 Floral Avenue
Union, NJ 07083
Phone: (201) 289-8200

Daniels Manufacturing
Corp.
6103 Anno Ave.
Orlando, FLA 32809
800-327-2432

**Size 20 Posted Contacts and
Size 20 Solder Cup Contacts for
Series 109 Connectors**

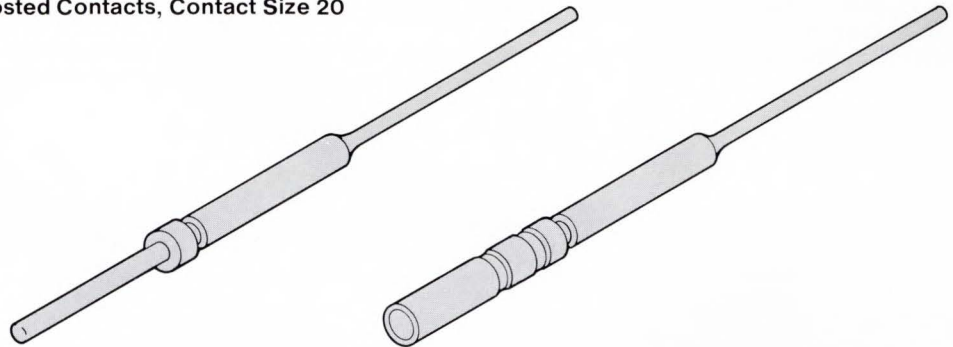
Dimensioning:
All dimensions in inches and millimetres.
Values in brackets are metric equivalents.

**Size 20
Posted Contacts with
.018 [0.46] Diameter
Post**

Post extends .300 [7.62] min. from rear of connector housing.

Material and Finish
Beryllium copper per QQ-B-626, gold plated per Mil-G-45204 .000050-.000100 [0.00127-.000254] thick, over copper per Mil-C-14550 .000100-.000150 [0.00254-0.00381]

Posted Contacts, Contact Size 20



Pin
Part Number 1-212565-0

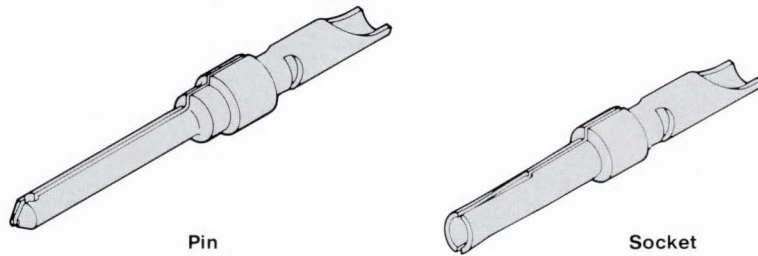
Socket
Part Number 1-208778-0

**Size 20 Solder Cup
Snap-In Contacts
for Wire
18 AWG [0.9 mm²] max.**

Material
Pin—Brass per Mil-C-50
Socket—Phosphor Bronze per QQ-B-750

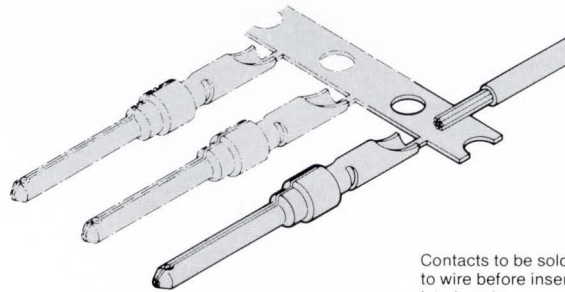
Finish
Gold flash over .000050 [0.00127] nickel on entire contact, with additional .000030 [0.00076] gold on mating end for length of .150 [3.81] min. (pin); .100 [2.54] min. (socket)

Gold plating per Mil-G-45204;
Nickel plating per QQ-N-290



Pin

Socket



Contacts to be soldered to wire before insertion into housing



Pin and Socket
Insertion/Extraction Tool
AMP part number 91067-2
Mil number M81969/1-02

Insertion tip, for replacement
Part number 126195-3

Extraction tip, for replacement
Part number 126195-4

Strip Form Contact No.		Loose Piece Contact No.	
Pin	Socket	Pin	Socket
66570-2	66569-2	66570-3	66569-3

Note: Insertion/Extraction Tool No. 91067-2 (Military Number **M81969/1-02**) is used to install and remove pin and socket contacts.

Size 20 DF Precision-Formed Contacts for Series 109 Connectors

Dimensioning:
All dimensions in inches and millimetres. Values in brackets are metric equivalents. Chart contains dimensions in inches over millimetres.

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

Materials

Pin—Brass per Mil-C-50
Socket—Phosphor bronze per QQ-B-750

Finish

A—Gold flash over .000050 [0.00127] nickel on entire contact with additional .000030 [0.00076] gold extending .150 [3.81] min. from mating end of pin, .100 [2.54] min. from mating end of socket
B—Gold flash over .000030 [0.00076] nickel
C—.000050 [0.00127] gold over .000100 [0.00254] copper
Gold plating per Mil-G-45204; nickel plating per QQ-N-290; copper plating per Mil-C-14550



Pin and Socket Insertion/Extraction Tools for Precision-Formed Contacts

28-24 AWG [0.08-0.2mm²]
AMP part number 91067-3

Insertion Replacement Tip
Number 126195-3

Extraction Replacement Tip
Number 126195-5

24-20 AWG [0.02-0.6 mm²]
AMP part number 91067-2 or Mil number M81969/1-02



Single-Ended Insertion Tool
28-18 AWG [0.08-0.9mm²]
Part number 91234-1

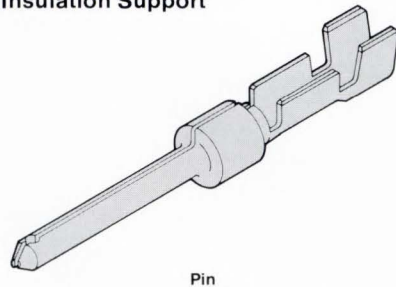


Single-Ended Extraction Tools

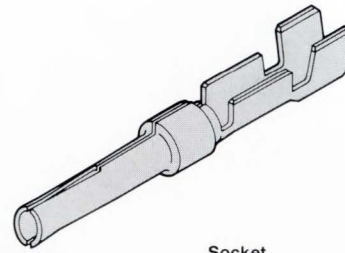
28-24 AWG [0.08-0.2mm²]
Part number 91235-2

24-20 AWG [0.02-0.6mm²]
Part number 91235-1

With Insulation Support



Pin



Socket

Wire Size Range ¹	Ins. Dia. (Max.)	Contact Finish (Plating Code)	Strip Form Contact No. ²		Loose Piece Contact No.		Tooling No.		Color Code (Loose Piece)	
			Pin	Socket	Pin	Socket	Strip Form Miniature Applicator	Loose Piece Hand Tool		
28-24	0.08-0.2	.040 1.02	C	66507-2	66505-2	66507-8	66505-8	466423* or 466901-1**	90302-1 or 90312-1	Blue Dot
			A	66507-3	66505-3	66507-9	66505-9			
26-22	0.12-0.4	.060 1.52	A	66682-2	66683-2	66682-4	66683-4	Special	90374-1	Black Dot
			B	66507-4	66505-4	1-66507-0	1-66505-0	466423 or 466901-1**	90302-1 or 90312-1	Blue Dot
24-20	0.2-0.6	.060 1.52	A	745254-2	745253-2	745254-6	745253-6	567036*	90406-1	Yellow Dot
			B	745254-3	745253-3	745254-7	745253-7			
			C	66506-2	66504-2	66506-8	66504-8	466423* or 466901-1**	90302-1 or 90312-1	Red Dot

¹Wire Strip Length—.100 [2.54] for Hand Tool Number **90302-1** and **90374-1**; .078 [1.98] for Hand Tool Number **90312-2**.

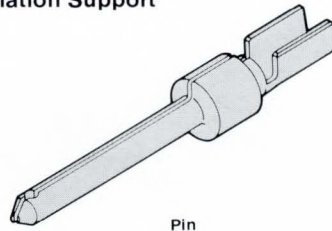
²Strip form contacts are reeled for AMP miniature applicators and the AMP-O-MATIC Side Feed Stripper/Crimper Machine.

*These miniature applicators may be used in any AMP machine shown on page 9, as well as the heavy-duty AMP-O-LECTRIC Machine Number **565435-5**.

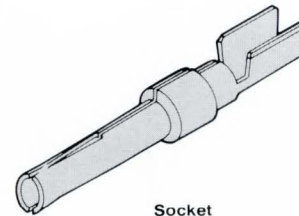
These miniature applicators can be used only in the AMP-O-MATIC Side Feed Stripper/Crimper Machine Number **463345-1.

Note: Insertion/Extraction Tools Number **91067-3** and Number **91067-2** (Military Number **M81969/1-02**) are used to install and remove pin and socket contacts.

Without Insulation Support



Pin



Socket

Wire Size Range	Ins. Dia. (Max.)	Contact Finish (Plating Code)	Strip Form Contact No. ²		Loose Piece Contact No.		Tooling No.		Color Code (Loose Piece)	
			Pin	Socket	Pin	Socket	Strip Form Miniature Applicator	Loose Piece Hand Tool		
28-24	0.08-0.2	.068 1.73	A	205310-2	206311-3	205310-8	205311-9	466506* or 466903-1**	90265-1	Blue Dot
			B	205310-4	205311-4	1-205310-0	1-205311-0			
24-20	0.02-0.6	.068 1.73	A	205202-2	205201-3	205202-8	205201-5	466505* or 466902-1**	90265-1	Red Dot
			B	205202-6	205201-6	205202-7	205201-7			
22-18	0.03-0.9	.068 1.73	A	745229-2	745230-5	745229-4	745230-4	567033*	90405-1	Green Dot
			B	745229-5	745230-5	745229-7	745230-7			

¹ Wire Strip Length—.109 [2.77] for Hand Tool Number **90265-1**

² Strip form contacts are reeled for AMP miniature applicators and the AMP-O-MATIC Side Feed Stripper/Crimper Machine.

*The -1 miniature applicators are for use in AMPOMATOR and Mini-SELM machines, -2 for AMP-O-LECTRIC Machine Number **565435-5**.

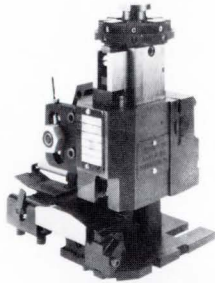
These miniature applicators are for use in the AMP-O-MATIC Stripper/Crimper Machine Number **463345-1.

Note: Insertion/Extraction Tools are used to install and remove pin and socket contacts. However, when using wire which exceeds the maximum insulation size recommended, extraction of contacts from the connector is not possible without damaging the retention system of the connector.

Application Tooling for Precision-Formed Contacts

Dimensioning:
All dimensions in inches and millimetres.
Values in brackets are metric equivalents.

This tooling is used for terminating crimp snap-in contacts shown on pages 46, 47 and 49.



Quick-Change Miniature Applicators

provide flexible operation for the AMPOMATOR and AMP-O-LECTRIC Machines. These applicators can be changed rapidly, with the crimping height on both terminal barrel and insulation support for a given wire size simply "dialed in". All adjustments are made rapidly, with no major interruptions in production.



The AMP-O-MATIC Side Feed Stripper/Crimper Machine

automatically strips and terminates wire in a single operation. The machine is a bench-mounted unit which can apply a wide range of open barrel, side-feed strip contacts. Minimum lead length is only 1.5 [38] and wire sizes from 28-14 AWG [0.08-2 mm²] may be terminated in this machine at production rates of 1200 terminations per hour.

Hand Tools

AMP hand tools are ideal for small production, prototype and experimental applications. They are used for terminating precision formed pins and sockets to wire and feature the CERTI-CRIMP ratchet device to assure perfectly formed crimps, time after time.



Part No. 90312-1 Utility tool for size 20 DF Contacts with Insulation Support

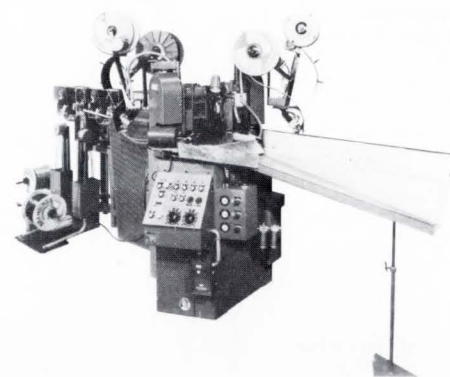


Part Nos. 90302-1 and 90406-1 for Size 20 DF Contacts with Insulation Support

Part Nos. 90265-1 and 90405-1 for Size 20 DF Contacts without Insulation Support

Part No. 90374-1 (Special) for Size 20 DF Contacts with Insulation Support

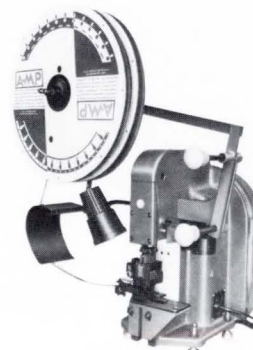
Part Nos. 90398-1 and 90399-1 for Interchangeable, Crimp Snap-In Contacts



The AMPOMATOR Automatic Lead Making Machine

not only crimps contacts to wire, but handles the wire every step of the way—from reel to finished lead.

With the AMPOMATOR Machine, you can produce up to 5,700 doubly terminated leads per hour—1,400 terminations in all—depending on lead length and wire size. Lead and strip length are completely adjustable, as is operating speed. Quick-change, miniature applicators with dial type settings facilitate wire and contact changeover with no significant production downtime. In addition, the machine is fully protected against malfunction damage by fail-safe control circuitry.



The AMP-O-LECTRIC Terminating Machine

is capable of applying contacts at rates to 1,500 per hour and more depending on operator dexterity.

This machine is electrically powered and bench mounted.

Series 109 Connectors (HDM-20) per Mil-C-24308

Dimensioning:
All dimensions in inches and millimetres. Values in brackets are metric equivalents. Charts contain dimensions in inches over millimetres.

Materials and Finish:

Shell—Steel, class G, zinc plated per ASTM B-633

Insert—Approved material per Mil-C-24308 specification

Retention Springs—Stainless steel

Reference Information

Cavity identification—page 5

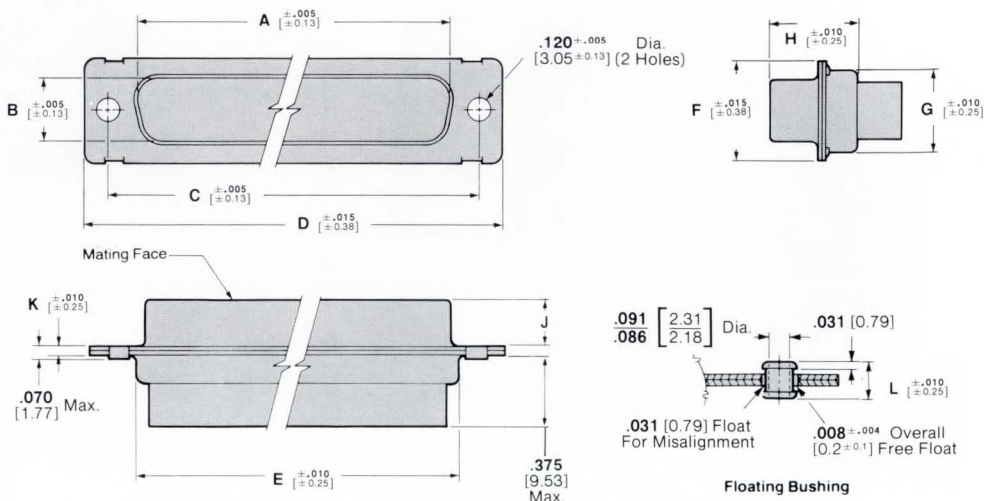
Contacts—pages 6-8

Mounting, mating specifications—page 31

Accessories—pages 32-37

Attention: Connectors labels

Regardless of the number of the kit ordered, each connector housing is ink stamped with the Military part number of the kit which includes a housing and contacts.



Series 109 Plugs per Mil-C-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 $\pm .006$ [±0.15]	K	L	Military Part No. M24308/	AMP Part No.	Military Part No. M24308/	AMP Part No.	
9 (1)	.666	.329	.984	1.213	.759	.494	.422	.422	.235	.030	.120	4-259	205162-1	4-324	205412-1	Plug only
	16.92	8.36	24.99	30.81	19.28	12.55	10.72	10.72	5.97	0.76	3.05	4-1	205556-2	4-302	205486-2	Plug with pins
												4-6	205556-3	4-313	205486-3	Plug with pins and tool
15 (2)	.994	.329	1.312	1.541	1.083	.494	.422	.422	.235	.030	.120	4-260	205164-1	4-325	205408-1	Plug only
	25.25	8.36	22.32	39.14	27.51	12.55	10.72	10.72	5.97	0.76	3.05	4-2	205558-2	4-303	205409-2	Plug with pins
												4-7	205558-3	4-314	205409-3	Plug with pins and tool
25 (2)	1.534	.329	1.852	2.088	1.625	.494	.422	.426	.230	.039	.129	4-261	205166-1	4-326	205413-1	Plug only
	38.96	8.36	47.04	53.04	41.3	12.55	10.72	10.82	5.84	0.99	3.28	4-3	205560-2	4-304	205487-2	Plug with pins
												4-8	205560-3	4-315	205487-3	Plug with pins and tool
37 (4)	2.182	.329	2.500	2.729	2.272	.494	.422	.426	.230	.039	.129	4-262	205168-1	4-327	205414-1	Plug only
	55.42	8.36	63.5	69.32	57.71	12.55	10.72	0.82	5.84	0.99	3.28	4-4	205562-2	4-305	205488-2	Plug with pins
												4-9	205562-3	4-316	205488-3	Plug with pins and tool
50 (5)	2.079	.441	2.406	2.635	2.178	.605	.534	.426	.230	.039	.129	4-263	205170-1	4-328	205415-1	Plug only
	52.81	11.20	61.11	66.93	55.32	15.37	13.56	0.82	5.84	0.99	3.28	4-5	205564-2	4-306	205431-2	Plug with pins
												4-10	205564-3	4-317	205431-3	Plug with pins and tool

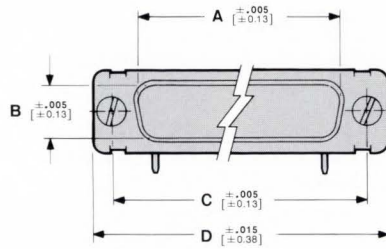
Series 109 Receptacles per Mil-C-24308

No. of Contact Pos. (Shell Size)	Dimensions											Standard Mount		Floating Bushing Mount		Description
	A (Outside)	B (Outside)	C	D	E	F	G	H	J $\pm .005$ [±0.13]	K	L	Military Part No. M24308/	AMP Part No.	Military Part No. M24308/	AMP Part No.	
9 (1)	.643	.311	.984	1.213	.759	.494	.422	.429	.243	.030	.120	2-281	205161-1	2-292	205416-1	Recept. only
	16.33	7.9	24.99	30.81	19.28	12.55	10.72	10.9	6.17	0.76	3.05	2-1	205555-2	2-23	205483-2	Recept. with sockets
												2-6	205555-3	2-34	205483-3	Recept. with sockets and tool
15 (2)	.971	.311	1.312	1.541	1.083	.494	.422	.429	.243	.030	.120	2-282	205163-1	2-293	205417-1	Recept. only
	24.66	7.9	22.32	39.14	27.51	12.55	10.72	10.9	6.17	0.76	3.05	2-2	205557-2	2-24	205433-2	Recept. with sockets
												2-7	205557-3	2-35	205433-3	Recept. with sockets and tool
25 (3)	1.511	.311	1.852	2.088	1.625	.494	.422	.429	.243	.030	.120	2-283	205165-1	2-294	205418-1	Recept. only
	38.38	7.9	47.04	53.04	41.3	12.55	10.72	10.9	6.17	0.76	3.05	2-3	205559-2	2-25	205484-2	Recept. with sockets
												2-8	205559-3	2-36	205484-3	Recept. with sockets and tool
37 (4)	2.159	.311	2.500	2.729	2.272	.494	.422	.429	.243	.030	.120	2-284	205167-1	2-295	205419-1	Recept. only
	54.84	7.9	63.5	69.32	57.71	12.55	10.72	10.9	6.17	0.76	3.05	2-4	205561-2	2-26	205485-2	Recept. with sockets
												2-9	205561-3	2-37	205485-3	Recept. with sockets and tool
50 (5)	2.064	.423	2.406	2.635	2.178	.605	.534	.429	.243	.030	.120	2-285	205169-1	2-296	205420-1	Recept. only
	52.43	10.74	61.11	66.93	55.32	15.37	13.56	10.9	6.17	0.76	3.05	2-5	205563-2	2-27	205432-2	Recept. with sockets
												2-10	205563-3	2-38	205432-3	Recept. with sockets and tool

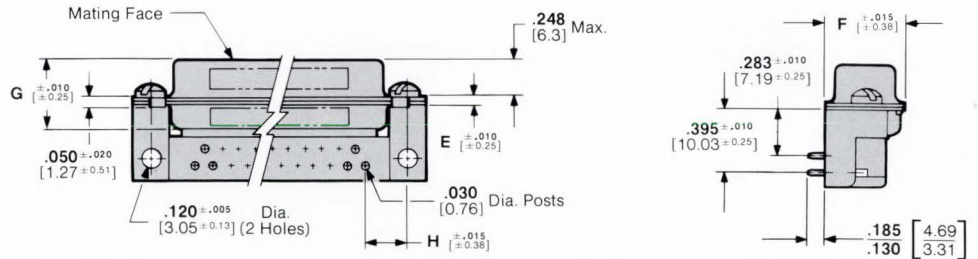
Notes: 1. Size 20 DM contacts supplied with connectors are loose piece. Refer to page 6 for ordering loose piece and/or tape mounted contacts separately.
 2. Tool supplied with connectors is Insertion/Extraction Tool, AMP No. 91067-2; Military No. M81969/1-02.

Right-Angle, Posted, Series 109 Connectors (HDM-20) Preloaded with .030 [0.76] dia. Posted Contacts for .094 [2.39] max. Thick PC Board

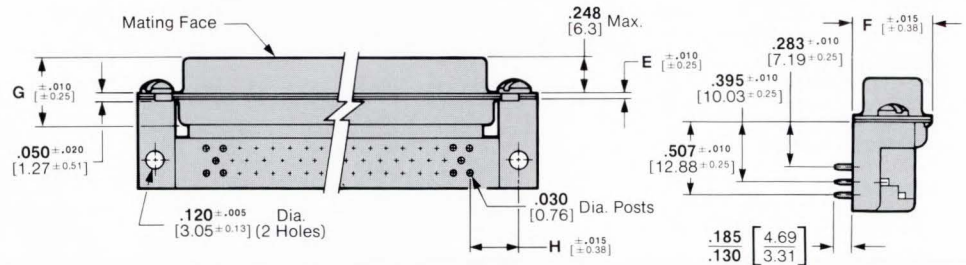
Dimensioning:
All dimensions in inches and millimetres.
Values in brackets are metric equivalents.
Charts contain dimensions in inches over
millimetres.



9, 15, 25 and 37 Positions



50 Positions



Materials and Finish:
Shell—Steel, class G, zinc plated per ASTM B-633
Insert and post spacer—Blue Polyester per Mil-M-24519
Contacts—Copper alloy duplex plated with tin-lead .000150 [0.00381] min. thick on posts and with gold .000050 [0.00127] min. thick extending .260/210 [6.60-5.33] from mating end of pin, .150-.100 [3.81-2.54] from mating end of socket. Entire contact is underplated with .000100 [0.00254] min. copper

Reference Information
Cavity identification—page 5
Mounting, mating specifications—page 31
Accessories—pages 32-37

Plug Assemblies

No. of Contact Pos. (Shell Size)	Dimensions								Part Numbers		
									Connector only		With Female Screwlocks
	A (Inside)	B (Inside)	C	D	E	F	G	H	AMP Part Number	Military* Part No. M24308/	AMP Part Number
9 (1)	.666 16.92	.329 8.36	.984 24.99	1.213 30.81	.030 0.76	.494 12.55	.422 10.72	.276 7.01	208407-1	24-31	208932
15 (2)	.994 25.25	.329 8.36	1.312 33.32	1.541 39.14	.030 0.76	.494 12.55	.422 10.72	.278 7.06	208412-1	24-32	208934
25 (3)	1.534 38.96	.329 8.36	1.852 47.04	2.088 53.04	.039 0.99	.494 12.55	.426 10.82	.274 6.96	208379-1	24-33	208936
37 (4)	2.182 55.42	.329 8.36	2.500 63.5	2.729 69.32	.039 0.99	.494 12.55	.426 10.82	.272 6.91	208417-1	24-34	208938
50 (5)	2.079 52.81	.441 11.20	2.406 61.11	2.635 66.93	.039 0.99	.605 15.37	.426 10.72	.333 8.46	208422-1	24-35	208940

Receptacle Assemblies

No. of Contact Pos. (Shell Size)	Dimensions								Part Numbers		
									Connector only		With Female Screwlocks
	A (Outside)	B (Outside)	C	D	E	F	G	H	AMP Part Number	Military* Part No. M24308/	AMP Part Number
9 (1)	.643 16.33	.311 7.9	.984 24.99	1.213 30.81	.030 0.76	.494 12.55	.429 10.97	.276 7.01	208408-1	23-31	208933
15 (2)	.971 24.66	.311 7.9	1.312 22.32	1.541 39.14	.030 0.76	.494 12.55	.429 10.97	.278 7.06	208413-1	23-32	208935
25 (3)	1.511 38.38	.311 7.9	1.852 47.04	2.088 53.04	.030 0.76	.494 12.55	.429 10.97	.274 6.96	208380-1	23-33	208937
37 (4)	2.159 54.84	.311 7.9	2.500 63.5	2.729 69.32	.030 0.76	.494 12.55	.429 10.97	.272 6.91	208418-1	23-34	208939
50 (5)	2.064 52.43	.423 10.74	2.406 61.11	2.635 66.93	.030 0.76	.605 15.37	.429 10.97	.333 8.46	208423-1	23-35	208941

Notes: All assemblies are preloaded with special posted contacts.

*Qualification in process

Series 109 Non-Magnetic Plugs per NASA spec GSFC-S-311-P-4/9 and NASA-type with rear grommet

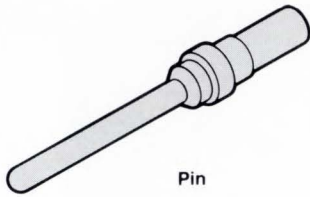
Dimensioning:
All dimensions in inches and millimetres.
Values in brackets are metric equivalents.
Charts contain dimensions in inches over millimetres.

Material and Finish

Shell—Brass, gold plated per Mil-G-45204
Insert—Blue diallyl phthalate per Mil-M-14, Type SDG-F
Retention springs—Beryllium copper

Reference Information

Cavity identification—page 5
Mounting, mating specifications—page 31
Accessories—pages 32-37



Pin Contact

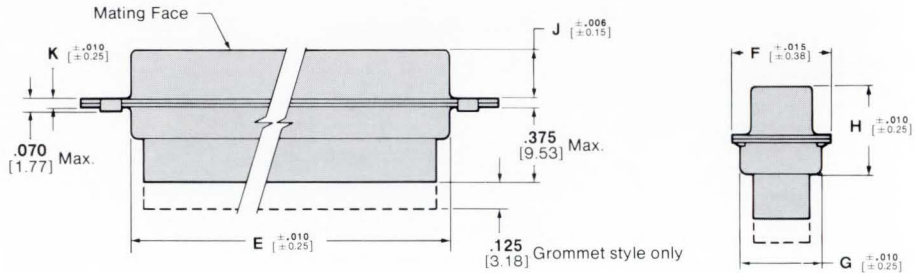
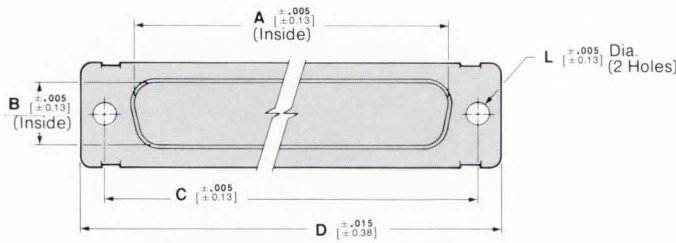
Wire Size Range	AMP Part Number NASA Number
28-26	206794-4
0.08-0.15	—
24-20	205089-1
0.2-0.6	G-10-P1

Strip length .140 [3.56]
Max. insulation diameter .068 [1.73]

Hand tool M22520/2-01
Positioner M22520/2-08

Material and Finish

Copper alloy per ASTM B301 plated with .000050-.000100 [0.00127-0.00254] gold over .000100-.000150 [0.00254-0.00381] copper



Non-Magnetic Plugs per NASA Specification

No. of Contact Pos. (Shell Size)	Dimensions											NASA Number	AMP Part Number
	A	B	C	D	E	F	G	H	J	K	L		
9 (1)	.666	.329	.984	1.213	.759	.494	.422	.422	.235	.030	.154	311P409-1P-B-15	207252-1
	16.92	8.36	24.99	30.81	19.28	12.55	10.72	10.72	5.97	0.76	3.91		
15 (2)	.994	.329	1.312	1.541	1.083	.494	.422	.422	.235	.030	.154	311P409-2P-B-15	206798-1
	25.25	8.36	33.32	39.14	27.51	12.55	10.72	10.72	5.97	0.76	3.91		
25 (3)	1.534	.329	1.852	2.088	1.625	.494	.422	.426	.230	.039	.154	311P409-3P-B-15	206798-2
	38.96	8.36	47.04	53.04	41.3	12.55	10.72	10.82	5.84	0.99	3.91		
37 (4)	2.182	.329	2.500	2.729	2.272	.494	.422	.426	.230	.039	.154	311P409-4P-B-15	206800-1
	55.42	8.36	63.5	69.32	57.71	12.55	10.72	10.82	5.84	0.99	3.91		
50 (5)	2.079	.441	2.406	2.635	2.178	.605	.534	.426	.230	.039	.154	311P409-5P-B-15	206800-2
	52.81	11.20	61.11	66.93	55.32	15.37	13.56	10.82	5.84	0.99	3.91		

Non-Magnetic Plugs With Silicone Rubber Rear Grommet

No. of Contact Pos. (Shell Size)	Dimensions											Part Number
	A	B	C	D	E	F	G	H	J	K	L	
9 (1)	.666	.329	.984	1.213	.759	.494	.422	.422	.235	.030	.120	211638-4
	16.92	8.36	24.99	30.81	19.28	12.55	10.72	10.72	5.97	0.76	3.05	
15 (2)	.994	.329	1.312	1.541	1.083	.494	.422	.422	.235	.030	.120	211639-4
	25.25	8.36	33.32	39.14	27.51	12.55	10.72	10.72	5.97	0.76	3.05	
25 (3)	1.534	.329	1.852	2.088	1.625	.494	.422	.426	.230	.039	.120	211640-4
	38.96	8.36	47.04	53.04	41.3	12.55	10.72	10.82	5.84	0.99	3.05	
37 (4)	2.182	.329	2.500	2.729	2.272	.494	.422	.426	.230	.039	.120	211641-4
	55.42	8.36	63.5	69.32	57.71	12.55	10.72	10.82	5.84	0.99	3.05	
50 (5)	2.079	.441	2.406	2.635	2.178	.605	.534	.426	.230	.039	.120	211642-4
	52.81	11.20	61.11	66.93	55.32	15.37	13.56	10.82	5.84	0.99	3.05	



Pin and Socket
Insertion/Extraction Tool
AMP part number 91067-2 or
Mil number M81969/1-02

Insertion tip, for replacement
Part number 126195-3

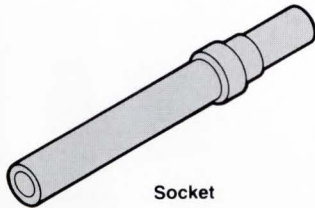
Extraction tip, for replacement
Part number 126195-4

Series 109 Non-Magnetic Receptacles per NASA spec GSFC-S-311-P-4/9 and NASA-type with rear grommet

Dimensioning:
All dimensions in inches and millimetres. Values in brackets are metric equivalents. Charts contain dimensions in inches over millimetres.

Materials and Finish:
Shell—Brass, gold plated per Mil-G-45204
Insert—Blue diallyl phthalate per Mil-M-14, Type SDG-F
Retention Springs—Beryllium copper

Reference Information:
Cavity identification—page 5
Mounting, mating specifications—page 31
Accessories—pages 32-37



Socket

Socket Contact

Wire Size Range	AMP Part Number NASA Number
28-26 0.08-0.15	206795-3
24-20 0.2-0.6	206793-1 G-10-S1

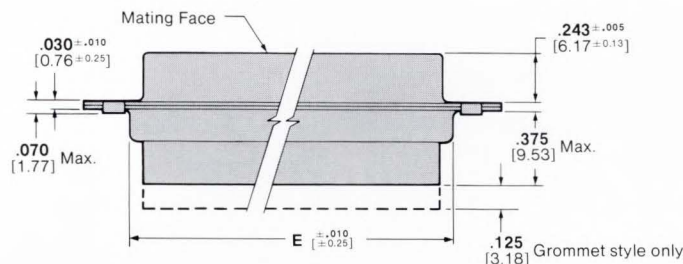
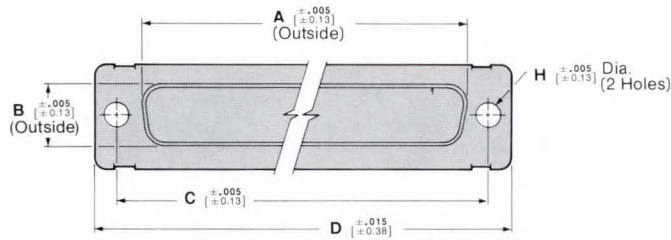
Strip length .140 [3.56]
Max. insulation diameter .068 [1.73]

Hand tool M22520/2-01
Positioner M22520/2-08

Materials and Finish:
Body—Beryllium copper per QQ-C-530, plated with .000050-.000100 [0.00127-0.00254] gold over .000100-.000150 [0.00254-0.00381] copper
Sleeve—Copper alloy per QQ-B-613, gold plated
Gold plating per Mil-G-45204; copper plating per Mil-C-14550



Pin and Socket
Insertion/Extraction Tool
AMP part number 91067-2 or
Mil number M81969/1-02
Insertion tip, for replacement
Part number 126195-3
Extraction tip, for replacement
Part number 126195-4



Non-Magnetic Receptacles per NASA Specification

No. of Contact Pos. (Shell Size)	Dimensions								NASA Number	AMP Part Number
	A	B	C	D	E	F	G	H		
9 (1)	.643	.311	.984	1.213	.759	.494	.422	.154 3.91	311P409-1S-B-15	207253-1
	16.33	7.9	24.99	30.81	19.28	12.55	10.72	.120 3.05	311P409-1S-B-12	207253-2
15 (2)	.971	.311	1.312	1.541	1.083	.494	.422	.154 3.91	311P409-2S-B-15	206799-2
	24.66	7.9	33.32	39.14	27.51	12.55	10.72	.120 3.05	311P409-2S-B-12	206799-2
25 (3)	1.511	.311	1.852	2.088	1.625	.494	.422	.154 3.91	311P409-3S-B-15	206801-1
	38.38	7.9	47.04	53.04	41.3	12.55	10.72	.120 3.05	311P409-3S-B-12	206801-2
37 (4)	2.159	.311	2.500	2.729	2.272	.494	.422	.154 3.91	311P409-4S-B-15	206803-1
	54.84	7.9	63.5	69.32	57.71	12.55	10.72	.120 3.05	311P409-4S-B-12	206803-2
50 (5)	2.064	.423	2.406	2.635	2.178	.605	.534	.154 3.91	311P409-5S-B-15	206805-1
	52.43	10.74	61.11	66.93	55.32	15.37	13.56	.120 3.05	311P409-5S-B-12	206805-2

Non-Magnetic Receptacles With Silicone Rubber Rear Grommet

No. of Contact Pos. (Shell Size)	Dimensions								Part Numbers
	A	B	C	D	E	F	G	H	
9 (1)	.643	.311	.984	1.213	.759	.494	.422	.120	211633-4
	16.33	7.9	24.99	30.81	19.28	12.55	10.72	3.05	
15 (2)	.971	.311	1.312	1.541	1.083	.494	.422	.120	211634-4
	24.66	7.9	33.32	39.14	27.51	12.55	10.72	3.05	
25 (3)	1.511	.311	1.852	2.088	1.625	.494	.422	.120	211635-4
	38.38	7.9	47.04	53.04	41.3	12.55	10.72	3.05	
37 (4)	2.159	.311	2.500	2.729	2.272	.494	.422	.120	211636-4
	54.84	7.9	63.5	69.32	57.71	12.55	10.72	3.05	
50 (5)	2.064	.423	2.406	2.635	2.178	.605	.534	.120	211637-4
	52.43	10.74	61.11	66.93	55.32	15.37	13.56	3.05	

Series 109 Non-Magnetic Connectors per Mil-C-24308

Dimensioning:
All dimensions in inches and millimetres. Values in brackets are metric equivalents. Charts contain dimensions in inches over millimetres.

Materials and Finish:

Shell—Brass, zinc plated per ASTM-B-633

Insert—Approved material per Mil-C-24308 specification

Retention Springs—Stainless steel

Size 20 DM contacts, shown on page 6, are supplied loose-piece with those kits which include contacts.

Attention: Connector marking

All connector housings are ink stamped with the Mil number of the kit which includes a housing and contacts, whether ordered by that number or by another description.

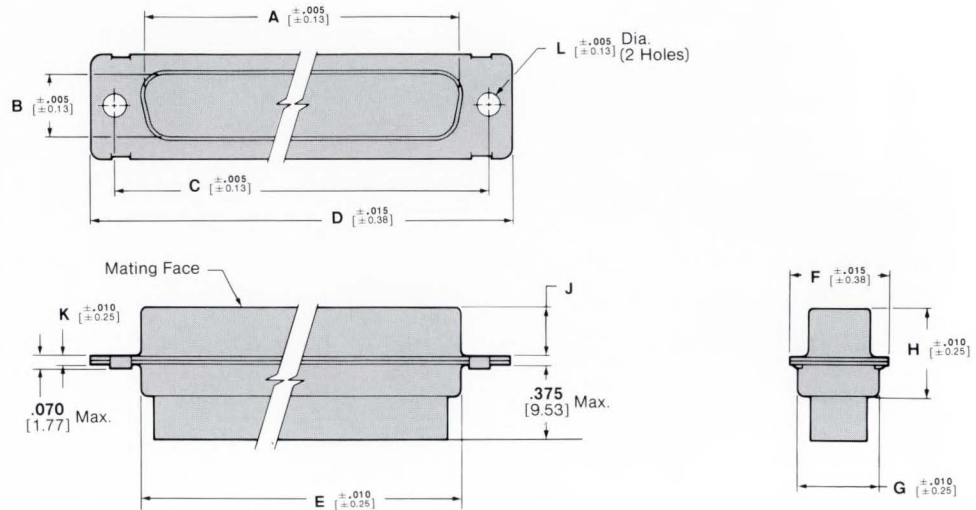
Reference Information

Cavity identification—page 5

Contacts—pages 6-9

Mounting, mating specifications—page 31

Accessories—pages 32-37



Non-Magnetic Plugs per Mil-C-24308

No. of Contact Pos. (Shell Size)	Dimensions											Military Part No. M24308/	AMP Part No.	Description
	A (Inside)	B (Inside)	C	D	E	F	G	H	J $\begin{smallmatrix} \pm .006 \\ [\pm 0.15] \end{smallmatrix}$	K	L			
9 (1)	.666	.329	.984	1.213	.759	.494	.422	.422	.235	.030	.120	8-259	205162-2	Plug only
	16.92	8.36	24.99	30.81	19.28	12.55	10.72	10.72	5.97	0.76	3.05	8-1	205556-4	Plug with pins
												8-6	205556-5	Plug with pins and tool
15 (2)	.994	.329	1.312	1.541	1.083	.494	.422	.422	.235	.030	.120	8-260	205164-2	Plug only
	25.25	8.36	33.32	39.14	27.51	12.55	10.72	10.72	5.97	0.76	3.05	8-2	205558-4	Plug with pins
												8-7	205558-5	Plug with pins and tool
25 (3)	1.534	.329	1.852	2.088	1.625	.494	.422	.426	.230	.039	.120	8-261	205166-2	Plug only
	38.96	8.36	47.04	53.04	41.3	12.55	10.72	10.82	5.84	0.99	3.05	8-3	205560-4	Plug with pins
												8-8	205560-5	Plug with pins and tool
37 (4)	2.182	.329	2.500	2.729	2.272	.494	.422	.426	.230	.039	.120	8-262	205168-2	Plug only
	55.42	8.36	63.5	69.32	57.71	12.55	10.72	10.82	5.84	0.99	3.05	8-4	205562-4	Plug with pins
												8-9	205562-5	Plug with pins and tool
50 (5)	2.079	.441	2.406	2.635	2.178	.605	.534	.426	.230	.039	.120	8-263	205170-2	Plug only
	52.81	11.20	61.11	66.93	55.32	15.37	13.56	10.82	5.84	0.99	3.05	8-5	205564-4	Plug with pins
												8-10	205564-5	Plug with pins and tool

Notes: 1. Size 20 DM contacts, shown on page 6, are supplied loose-piece in kits which include contacts.
2. Tool supplied with connectors is Insertion/Extraction Tool, AMP number 91067-2, Military number M81969/1-02.

Non-Magnetic Receptacles per Mil-C-24308

No. of Contact Pos. (Shell Size)	Dimensions											Military Type Connectors		
	A (Outside)	B (Outside)	C	D	E	F	G	H	J $\begin{smallmatrix} \pm .005 \\ [\pm 0.13] \end{smallmatrix}$	K	L	Military Part No. M24308/	AMP Part No.	Description
9 (1)	.643	.311	.984	1.213	.759	.494	.422	.429	.243	.030	.120	6-281	205161-2	Recept. only
	16.33	7.9	24.99	30.81	19.28	12.55	10.72	10.9	6.17	0.76	3.05	6-1	205555-4	Recept. with sockets
												6-6	205555-5	Recept. with sockets and tool
15 (2)	.971	.311	1.312	1.541	1.083	.494	.422	.429	.243	.030	.120	6-282	205163-2	Recept. only
	24.66	7.9	33.32	39.14	27.51	12.55	10.72	10.9	6.17	0.76	3.05	6-2	205557-4	Recept. with sockets
												6-7	205557-5	Recept. with sockets and tool
25 (3)	1.511	.311	1.852	2.088	1.625	.494	.422	.429	.243	.030	.120	6-283	205165-2	Recept. only
	38.38	7.9	47.04	53.04	41.3	12.55	10.72	10.9	6.17	0.76	3.05	6-3	205559-4	Recept. with sockets
												6-8	205559-5	Recept. with sockets and tool
37 (4)	2.159	.311	2.500	2.729	2.272	.494	.422	.429	.243	.030	.120	6-284	205167-2	Recept. only
	54.84	7.9	63.5	69.32	57.71	12.55	10.72	10.9	6.17	0.76	3.05	6-4	205561-4	Recept. with sockets
												6-9	205561-5	Recept. with sockets and tool
50 (5)	2.064	.423	2.406	2.635	2.178	.605	.534	.429	.243	.030	.120	6-285	205169-2	Recept. only
	52.43	10.74	61.11	66.93	55.32	15.37	13.56	10.9	6.17	0.76	3.05	6-5	205563-4	Recept. with sockets
												6-10	205563-5	Recept. with sockets and tool

Notes: 1. Size 20 DM contacts shown on page 6, are supplied loose-piece in kits which include contacts.
2. Tool supplied with connectors is Insertion/Extraction Tool, AMP Number 91067-2; Military Number M81969/1-02.

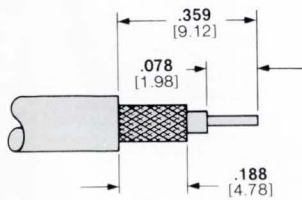
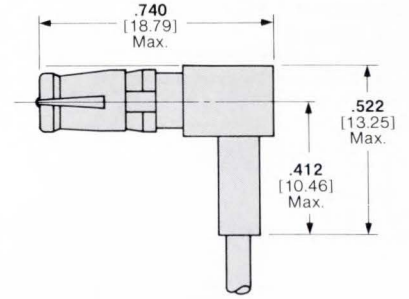
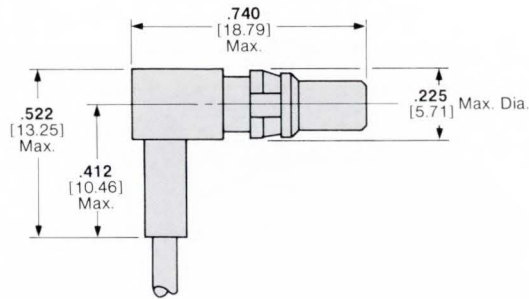
Coaxial and Power Contacts for Series 109 Housings with Power/Coax and Signal Mix

Dimensioning:
All dimensions in inches and millimetres.
Values in brackets are metric equivalents.

Coaxial Contacts for RG/U 174, 188A, 316

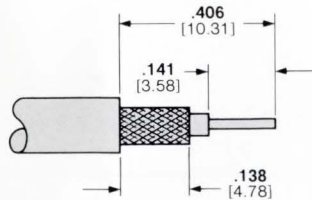
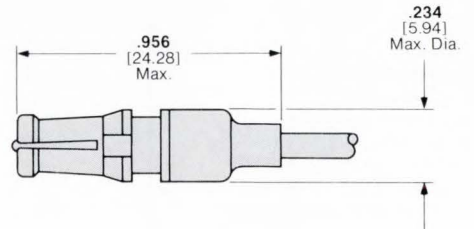
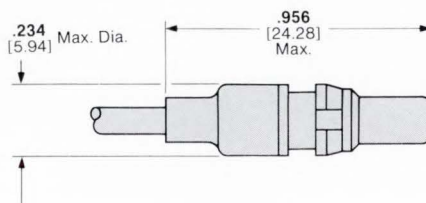
Right-Angle Contacts

Pin
Part Number 228611-1
Use crimping die 58093-1
Receptacle
Part Number 228604-1
Use crimping die 58094-1



Straight Contacts

Use crimping die 59993-1
Part Numbers
Pin 228618-1
Receptacle 228596-1

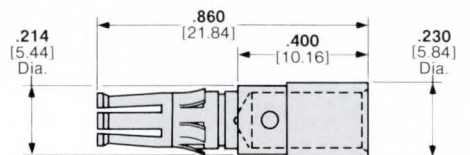
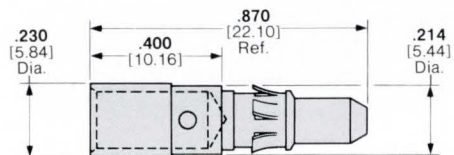


All Coaxial Contacts

Hand Tool 69710-2
Pneumatic Tool 69365-4
Extraction Tool 58095-1

Power Contacts Size 8

45 amperes, free-air test current rating.



Designed for Daniels crimp tool M300-BT with Positive-SP689

Wire Size Range		Part Numbers	
AWG	mm ²	Pin	Socket
8-10	5-8	211159-1	211161-1
12-14	2-3	212007-1	212008-1
16-18	0.8-1.4	212013-1	212014-1

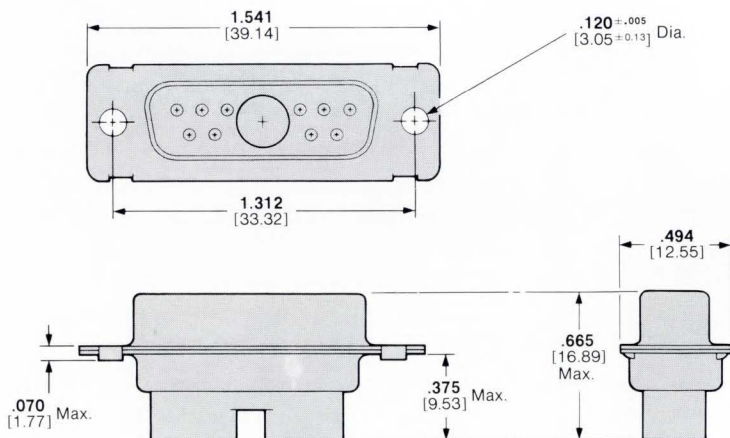
Series 109 Housings for Power/Coax and Size 20 Signal Contacts

Dimensioning:
All dimensions in inches and millimetres.
Values in brackets are metric equivalents.

Connector 11C1

Insert Material:
Blue diallyl phthalate per Mil-M-14, Type SDG-F; or blue polyester per Mil-M-24519
Shell Size 2
1: Power/Coax Contacts
10: Size 20 Signal Contacts

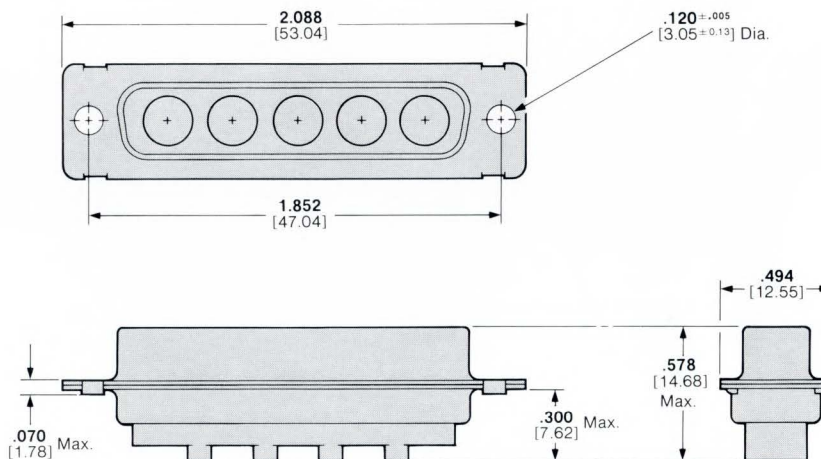
Part Numbers
Plug 211111-1
Receptacle 211112-1



Connector 5C5

Insert Material:
Blue diallyl phthalate per Mil-M-14, Type SDG-F; or blue polyester per Mil-M-24519
Shell Size 3
5: Power/Coax Contacts

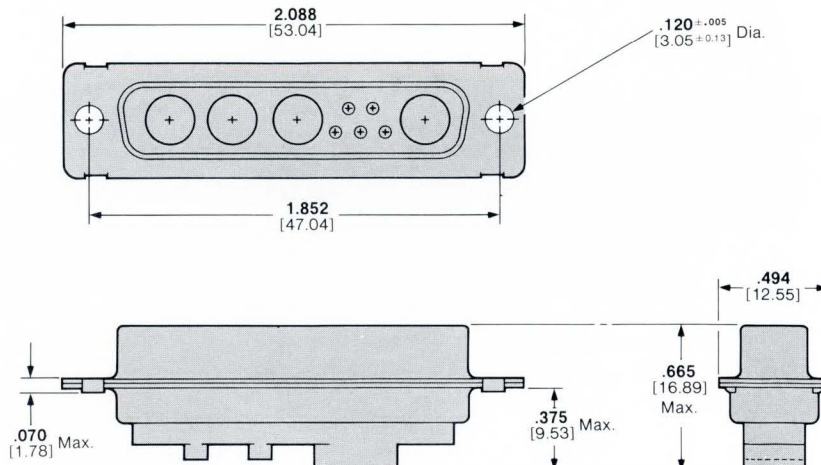
Part Numbers
Plug 212491-1
Receptacle 212059-1



Connector 9C4

Insert Material:
Blue diallyl phthalate per Mil-M-14, Type SDG-F; or blue polyester per Mil-M-24519
Shell Size 3
4: Power/Coax Contacts
5 Size 20 Signal Contacts

Part Numbers
Plug 212498-1
Receptacle 212502-1



Signal contacts shown on pages 6-8.

**Series 109 Housings for
Power/Coax and Size 20 Signal Contacts**

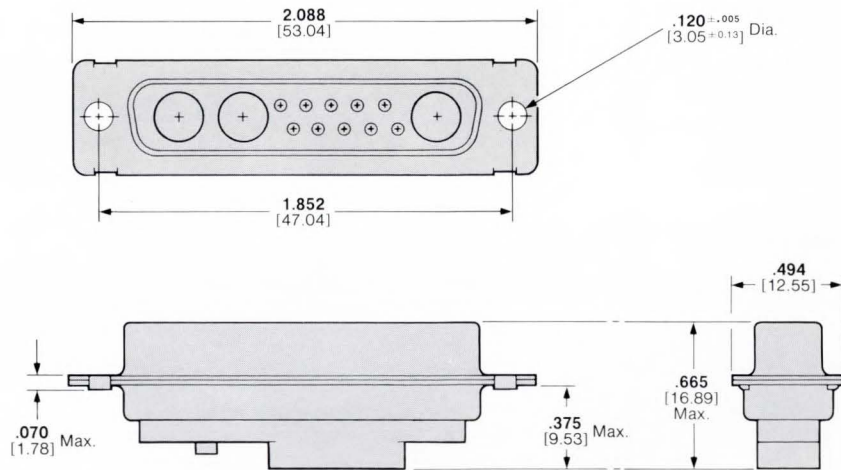
Dimensioning:
All dimensions in inches and millimetres.
Values in brackets are metric equivalents.

Connector 13C3

Insert Material:
Blue diallyl phthalate per
Mil-M-14, Type SDG-F; or blue
polyester per Mil-M-24519

Shell Size 3
3: Power/Coax Contacts
22: Size 20 Signal Contacts

Part Numbers
Plug **208810-1**
Receptacle **208811-1**

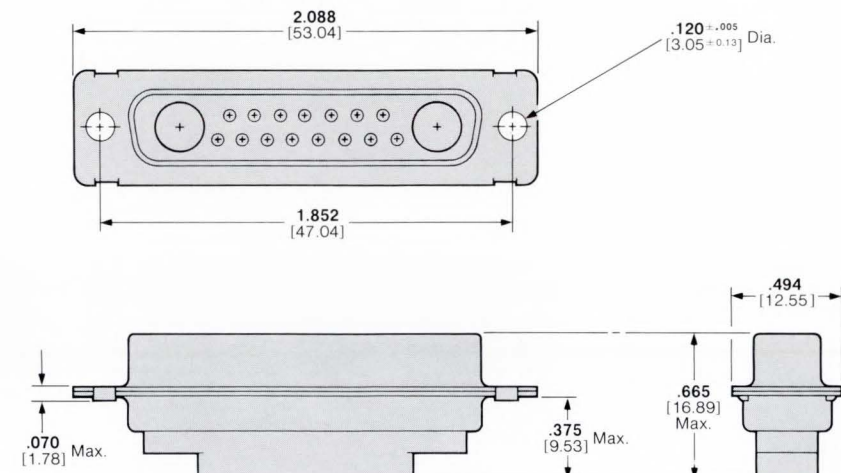


Connector 17C2

Insert Material:
Blue diallyl phthalate per
Mil-M-14, Type SDG-F; or blue
polyester per Mil-M-24519

Shell Size 3
2: Power/Coax Contacts
15: Size 20 Signal Contacts

Part Numbers
Plug **212506-1**
Receptacle **212510-1**

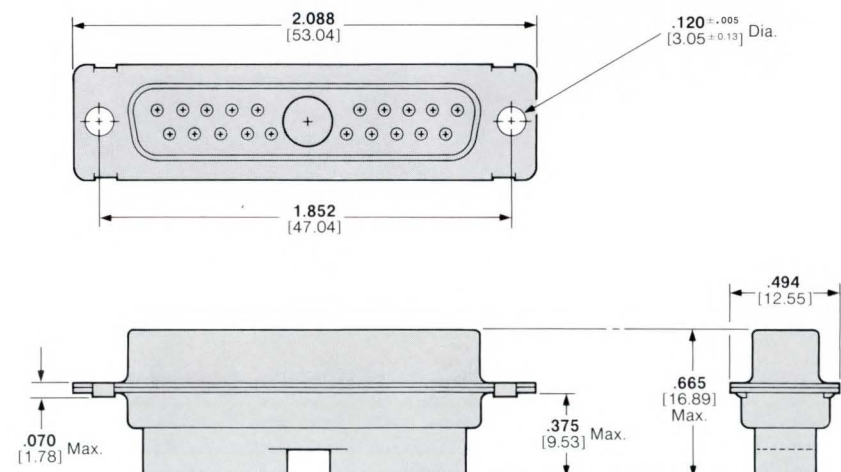


Connector 21C1

Insert Material:
Blue diallyl phthalate per
Mil-M-14, Type SDG-F; or blue
polyester per Mil-M-24519

Shell Size 3
1: Power/Coax Contacts
20: Size 20 Signal Contacts

Part Numbers
Plug **212522-1**
Receptacle **212526-1**



Signal contacts shown on
pages 6-8.

Series 109 Connectors for
Coax/Power & Signal Contacts

Series 109 Housings for Power/Coax and Size 20 Signal Contacts

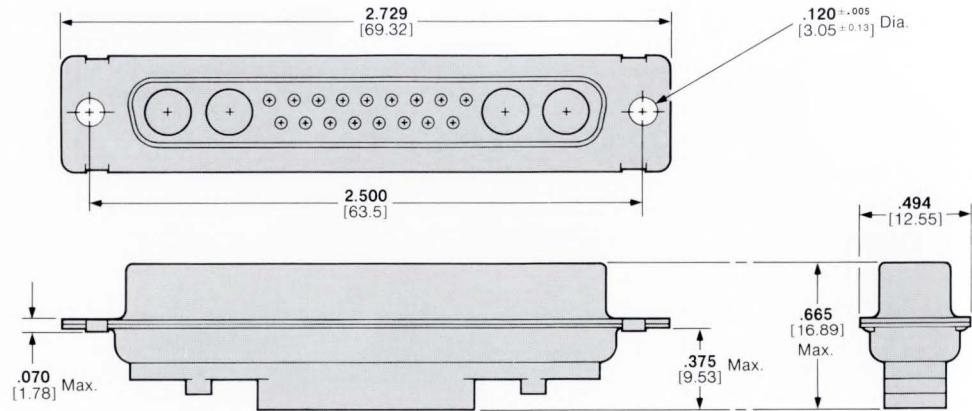
Dimensioning:
All dimensions in inches and millimetres.
Values in brackets are metric equivalents.

Connector 25C3

Insert Material:
Blue diallyl phthalate per Mil-M-14, Type SDG-F; or blue polyester per Mil-M-24519
Shell Size 4

3: Power/Coax Contacts
10: Size 20 Signal Contacts

Part Numbers
Plug **208742-1**
Receptacle **208551-1**

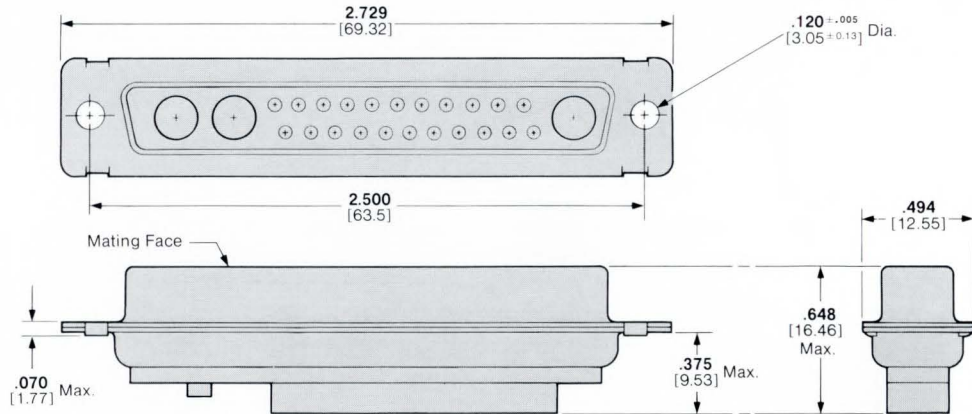


Connector 21C4

Insert Material:
Blue diallyl phthalate per Mil-M-14, Type SDG-F; or blue polyester per Mil-M-24519
Shell Size 4

4: Power/Coax Contacts
17: Size 20 Signal Contacts

Part Numbers
Plug **212530-1**
Receptacle **212534-1**



Signal contacts shown on pages 6-8.

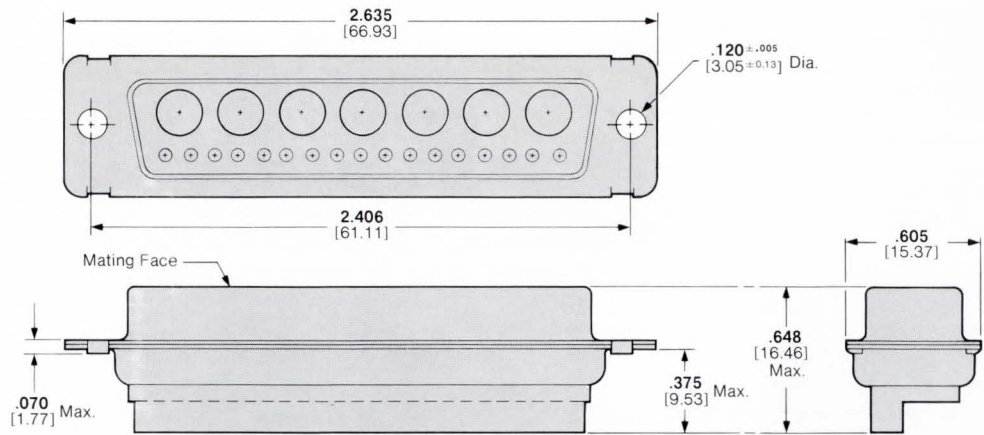
Series 109 Housings for Power/Coax and Size 20 Signal Contacts

Dimensioning:
All dimensions in inches and millimetres.
Values in brackets are metric equivalents.

Connector 24C7

Insert Material:
Blue diallyl phthalate per Mil-M-14, Type SDG-F; or blue polyester per Mil-M-24519
Shell Size 5
7: Power/Coax Contacts
17: Size 20 Signal Contacts

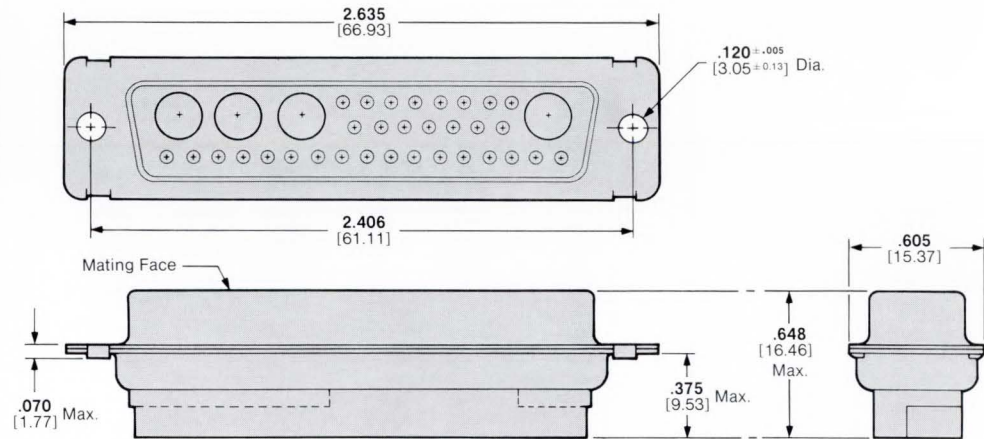
Part Numbers
Plug **208743-1**
Receptacle **208552-1**



Connector 36C4

Insert Material:
Blue diallyl phthalate per Mil-M-14, Type SDG-F; or blue polyester per Mil-M-24519
Shell Size 5
4: Power/Coax Contacts
32: Size 20 Signal Contacts

Part Numbers
Plug **208744-1**
Receptacle **208550-1**



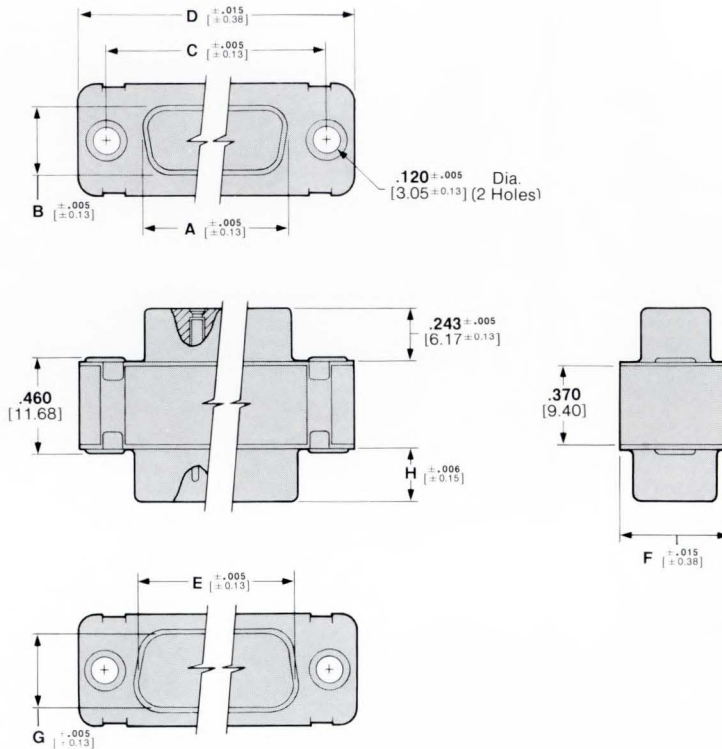
Signal contacts shown on pages 6-8.

Series 109 Connector Savers

Connector savers prolong the life of permanently installed connectors which would otherwise be subjected to repeated cycles of mating and unmating, in applications such as test interfaces or on testing devices.

Materials and Finish:
 Shell—Steel, class G, zinc plated per ASTM B-633
 Inserts—Blue diallyl phthalate
 Spacer—Black thermoplastic
 Contacts—Beryllium copper and passivated stainless steel, gold-over-nickel plated.

Dimensioning:
 All dimensions in inches and millimetres. Values in brackets are metric equivalents. Chart contains dimensions in inches over millimetres.

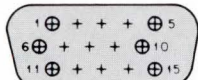


No. of Contact Pos. (Shell Size)	Dimensions								Part Numbers
	A	B	C	D	E	F	G	H	
9 (1)	.643 16.33	.311 7.9	.984 24.99	1.213 30.81	.666 16.92	.494 12.55	.329 8.36	.235 5.97	212559-1
15 (2)	.971 24.66	.311 7.9	1.312 33.32	1.541 39.14	.994 25.25	.494 12.55	.329 8.36	.235 5.97	212560-1
25 (3)	1.511 38.38	.311 7.9	1.852 47.04	2.088 53.04	1.534 38.96	.494 12.55	.329 8.36	.230 5.84	212561-1
37 (4)	2.159 54.84	.311 7.9	2.500 63.5	2.729 69.32	2.182 55.42	.494 12.55	.329 8.36	.230 5.84	212562-1
50 (5)	2.064 52.43	.423 10.74	2.406 61.11	2.635 66.93	2.079 52.81	.605 15.37	.441 11.20	.230 5.84	212563-1

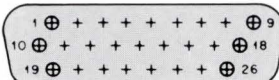
Series 90 (HDD-22) Military Connectors

Dimensioning:
All dimensions in inches and millimetres.
Values in brackets are metric equivalents.

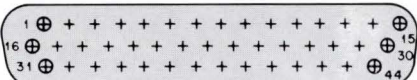
Insert Arrangements



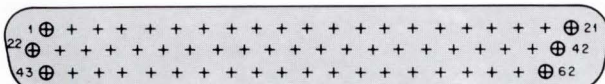
15 Position, Shell Size 1



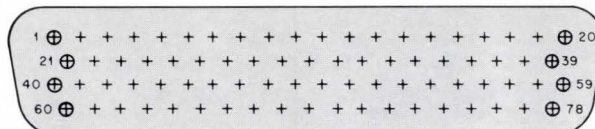
26 Position, Shell Size 2



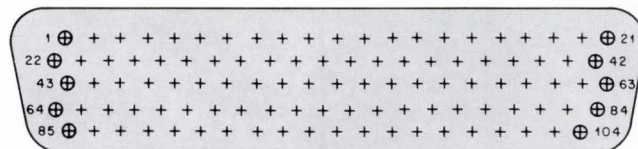
44 Position, Shell Size 3



62 Position, Shell Size 4



78 Position, Shell Size 5



104 Position, Shell Size 6

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

Performance Specifications

The electrical and mechanical performance of Series 90 (HDD-22) connector contacts conform to the latest amendments of MIL-C-24308. Their performance characteristics are listed here.

Mechanical Characteristics

Tensile Strength (Crimp):
With 32 AWG [0.03 mm²] wire—
1 lb. [4.5 N]
With 28 AWG [0.08-0.09 mm²] wire—
3 lb. [13 N]
With 22 AWG [0.03-0.04 mm²] wire—
12 lb. [53 N]

Loded Connector Mating/Unmating Forces:

No. of Contact Pos. (Shell Size)	Unmating Force (Min./Max.)		Mating Force (Max.)	
	Lb.	N	Lb.	N
15 (1)	.75/6.01	3.3/26.6	10	45
26 (2)	1/10	4.4/45	17	76
44 (3)	1.75/17	7.7/76	28	125
62 (4)	2.5/24	11.1/107	39	174
78 (5)	3.25/30	14.4/134	49	218
104 (6)	4.5/30	20/174	65	289

Contact Engagement Force:
12 oz. [3.4 N] (max.)
Contact Separation Force:
.7 oz. [0.2 N] (min.)

Electrical Characteristics

Contact Current Rating:
With 32 AWG [0.03 mm²] wire—
.5 amperes
With 28 AWG [0.08-0.09 mm²] wire—
1.5 amperes
With 22 AWG [0.03-0.4 mm²] wire—
5 amperes
Contact Resistance:
12 milliohms (max.)

Technical Documents List

The following is a list of technical documents that cover the application and performance of AMPLIMITE Series 90 (HDD-22) military connectors, contacts, tooling and accessories.

Military Specifications

Mil-C-24308 Connectors, Electric, Rectangular, Miniature Polarized Shell, Rack and Panel, General Specification for

MIL-C-39029 Contacts, Electrical Connector, General Specifications for

AMP Product Specification

114-10001 Contacts, 22 DF, Application of

NASA Specification

GSFC-S-311-P-4/7 Non-Magnetic Connectors, General Specification for

AMP Manuals and Instruction Sheets

PM 2-5034-6 Product Manual—AMPLIMITE Connectors
CI 8050-20 Crimp Inspection—AMPLIMITE 22 DM Contacts (Screw-Machined)

IS 7747 AMPLIMITE High Density 22 (HD-22) Connectors (Series 90)
IS 7701 AMPLIMITE Non-Magnetic High Density 22 (HD-22) Connectors (Series 90)
IS 7887 Selection Chart for AMP Tape Mounted Screw-Machine Contacts and Applicable Terminating Machines (Connector Products Division)
IS 7516 AMP Screw-Machine Contacts and Application Tooling
IS 7610 Application and Maintenance for AMP Hand Crimping Tool 90294-1
IS 7508 AMP Insertion/Extraction Tools 91067-1, 91067-2 and 91067-3
IS 7837 AMP Female Screwlock Kit 205817-1 and AMP Male Screw Retainer Kit 205980-1
IS 6551 AMP Slide Latch Kit and AMP Slide Latch Post Kit
IS 7785 AMP Slide Latch Post Kit 206514-1 and AMP Slide Latch Clip Kit 206942-1

Size 22 DM Screw-Machined Contacts for Series 90 Connectors

Dimensioning:
All dimensions in inches and millimetres. Values in brackets are metric equivalents. Chart contains dimensions in inches over millimetres.

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

Material and Finish:

Pin, socket body—Beryllium copper per QQ-C-530, gold plated per Mil-G-45204 .000050-.000100 [0.00127-0.00254] thick, over nickel per QQ-N-290 .000100-.000150 [0.00254-0.00381]

Socket sleeve—Passivated stainless steel per QQ-S-766

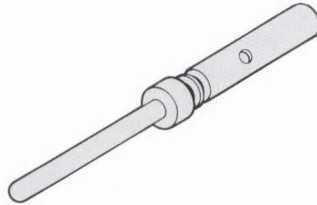


Pin and Socket Insertion/Extraction Tool
AMP part number 91067-1 or
Mil number M81969/1-04

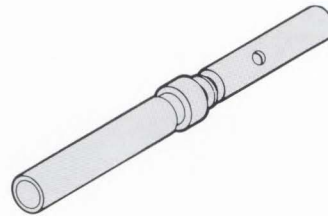
Insertion tip, for replacement
Part number 126237-1

Extraction tip, for replacement
Part number 126195-2

Crimp Type, Snap-in Contacts, Size 22 DM



Pin
M39029/58-360



Socket
M39029/57-354

Wire Size Range ¹		Ins. Dia. (Max.)	Contact Configuration	Tape Mounted Contacts ²	Loose Piece Contacts		Hand Tool	
AWG	[mm ²]			AMP Part No.	Military Part No. M39029/	AMP Part No.	Tool No. M22520/	Positioner No. M22520/
28-22	0.8-0.4	.054 1.38	Pin	204370-5	58-360	204370-2	2-01	2-09
			Socket	204351-2	57-354	204351-1	2.01	2.06

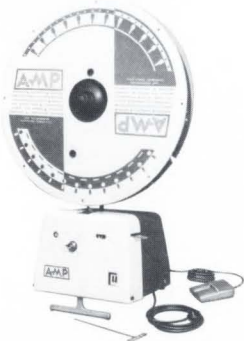
¹Wire Strip Length—.156 [3.96]

²Tape mounted contacts are reeled for the AMP-TAPEMATIC Stripper/Crimper Machine Number **599406-6**.

Notes: 1. These contacts are used only in Series 90 (HDD-22) military connectors.

2. Insertion/Extraction Tool Number **91067-1** (Military Number **M81969/1-04**) is used to install and remove pin and socket contacts.

Application Tools for Screw-Machined Contacts



AMP-TAPEMATIC Stripper/Crimper Machine Number **599406-6**
Funnel Number **125905-1** for Size 20 DM Contacts
Funnel Number **125905-2** for Size 22 DM Contacts

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



Hand Crimping Tool
Military Number **M22520/2-01**

AMP Incorporated does not sell hand tool M22520/2-01. However, it can be purchased from either one of the following companies:

Buchanan Electrical Products Corp.
1065 Floral Avenue
Union, NJ 07083
Phone: (201) 289-8200

Daniels Manufacturing Corp.
6103 Anno Ave.
Orlando, FLA 32809
800-327-2432

Size 22 Contacts, for Series 90 Connectors

Dimensioning:
All dimensions in inches and millimetres.
Values in brackets are metric equivalents.
Charts contain dimensions in inches over millimetres.

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

Material:

Pin—Brass per Mil-C-50
Socket—Phosphor bronze per QQ-B-750

Finish:

A—Gold flash over .000050 [0.00127] nickel on entire contact with additional .000030 [0.00076] gold extending .150 [3.81] min. from mating end of pin, .100 [2.54] min. from mating end of socket

B—Gold flash over .000030 [0.00076] nickel

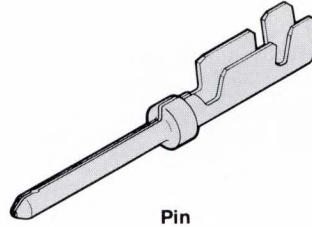
C—.000050 [0.00127] gold over .000100 [0.00254] copper
Gold plating per Mil-G-45204; nickel plating per QQ-N-290; copper plating per Mil-C-14550



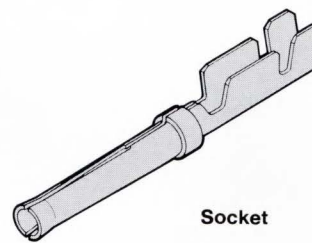
Material and Finish:

—Beryllium copper per QQ-B-626, gold plated per Mil-G-45302 .000050-.000100 [0.00127-0.00254] thick, over copper per Mil-C-14550 .000100-.000150 [0.00254-0.00381] thick, or over nickel per QQ-N-290 .000050-.000100 [0.00127-0.00254] thick

With Insulation Support



Pin



Socket

Wire Size Range ¹		Ins. Dia. Range	Contact Finish (Plating Code)	Strip Form Contact No. ²		Loose Piece Contact No.		Tooling No.	
AWG	[mm ²]			Pin	Socket	Pin	Socket	Strip Form Miniature Applicator	Loose Piece Hand Tool
32-28	0.03-0.09	.020-.040 .051-.102	C	66718-2	66717-2	66718-3	66717-3	567007-1	90358-1
			A	66718-4	66717-4	66718-5	66717-5		
28-22 or Two 28's	0.08-0.4 or Two 0.08-0.09	.030-.040 0.77-1.02	C	66556-2	66493-2	66556-8	66493-8	466538-*	90294-1
			A	66556-3	66493-3	66556-9	66493-9		
			B	66556-4	66493-4	1-66556-0	1-66493-0		

¹ Wire Strip Length—.156 [3.96]

² Strip form contacts are reeled for AMP miniature applicator and the AMP-O-MATIC Side Feed Stripper/Crimper Machine. (page 9).

³ Loose piece contacts are identified by a green dot.

Notes: 1. These contacts may be used in HDD-22 military connectors

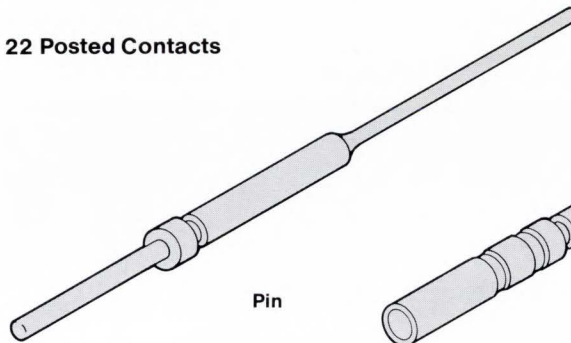
2. Application tooling for 22 DF pin and socket contacts is presented on page 9.

3. Insertion/Extraction Tools Number **91067-1** (Military Number **M81969/1-04**) are used to install and remove pin and socket contacts.

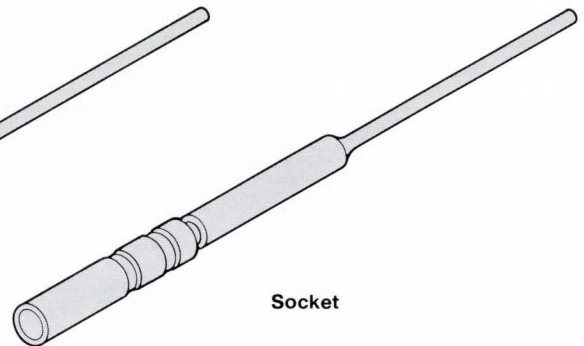
*Use -1 Miniature Applicator for "T" Terminating Unit; -2 for "K" AMP-O-LECTRIC Machine

**For AMPOMATIC Stripper-Crimper Machine

Size 22 Posted Contacts



Pin



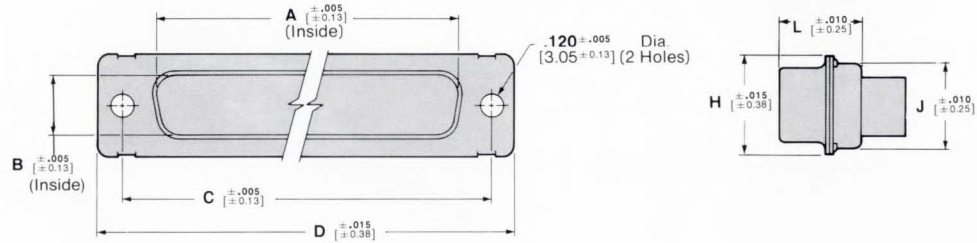
Socket

Post Diameter Max.	Post Extension Min.	Part numbers		Contact Plating
		Pin	Socket	
.020 0.51	.150 3.81	207683-6	207684-3	Gold over copper
	.250 6.35	207683-2	207684-1	
	.500 12.7	207683-4	207684-2	
.027 0.69	.250 6.35	207683-8	207684-4	Gold over nickel

Series 90 Plugs (HDD-22) per Mil-C-24308

Dimensioning:
All dimensions in inches and millimetres.
Values in brackets are metric equivalents.
Chart contains dimensions in inches over millimetres.

Plugs



Material and Finish:

Shell—Steel, class G, zinc plated per ASTM B-633

Insert—Approved material per Mil-C-24308 specification

Retention springs—Stainless steel

Reference information

Cavity identification—page 21

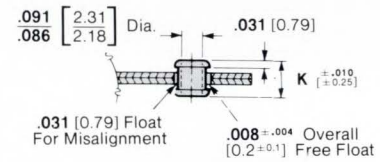
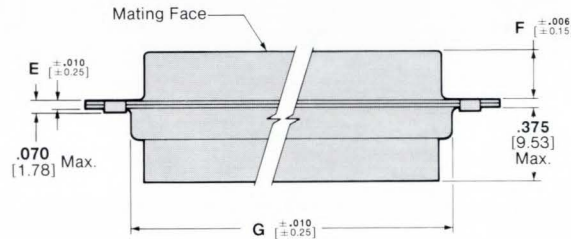
Contacts—pages 22, 23

Mounting, mating dimensions—page 31

Accessories—pages 32-37

Attention: Connector labels

Regardless of the number of the kit ordered, each connector housing is ink stamped with the Military part number of the kit which includes a housing and contacts.



Floating Bushing

No. of Contact Pos. (Shell Size)	Dimensions											Standard Mount		Floating Bushing Mount		Description
	A	B	C	D	E	F	G	H	J	K	L	Military Part No. 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	.030 0.76	.235 5.97	.759 19.28	.494 12.55	.422 10.72	.120 3.05	.422 10.72	4-264	204501-1	4-329	204525-1	Plug only
												—	204513-1*	—	204537-1*	Plug with tool
												4-11	204513-2	4-307	204537-2	Plug with pins
												4-17	204513-3	4-318	204537-3	Plug with pins and tool
26 (2)	.994 25.25	.329 8.36	1.312 33.32	1.541 39.14	.030 0.76	.235 5.97	1.083 27.51	.494 12.55	.422 10.72	.120 3.05	.422 10.72	4-265	204503-1	4-330	204527-1	Plug only
												—	204515-1*	—	204539-1*	Plug with tool
												4-12	204515-2	4-308	204539-2	Plug with pins
												4-18	204515-3	4-319	204539-3	Plug with pins and tool
44 (3)	1.534 38.96	.329 8.36	1.852 47.04	2.088 53.04	.039 0.99	.230 5.84	1.625 4.13	.494 12.55	.422 10.72	.129 3.28	.426 10.82	4-266	204505-1	4-331	204529-1	Plug only
												—	204517-1*	—	204541-1*	Plug with tool
												4-13	204517-2	4-309	204541-2	Plug with pins
												4-19	204517-3	4-320	204541-3	Plug with pins and tool
62 (4)	2.182 55.42	.329 8.36	2.500 63.5	2.729 69.32	.039 0.99	.230 5.84	2.272 57.7	.494 12.55	.422 10.72	.129 3.28	.426 10.82	4-267	204507-1	4-332	204531-1	Plug only
												—	204519-1*	—	204543-1*	Plug with tool
												4-14	204519-2	4-310	204543-2	Plug with pins
												4-20	204519-3	4-321	204543-3	Plug with pins and tool
78 (5)	2.079 52.81	.441 11.20	2.406 61.11	2.635 66.93	.039 0.99	.230 5.84	2.178 55.32	.605 15.37	.534 13.56	.129 3.28	.426 10.82	4-268	204509-1	4-333	204533-1	Plug only
												—	204521-1*	—	204545-1*	Plug with tool
												4-15	204521-2	4-311	204545-2*	Plug with pins
												4-21	204521-3	4-322	204545-3	Plug with pins and tool
104 (6)	2.212 56.18	.503 12.78	2.500 63.5	2.729 69.32	.039 0.99	.230 5.84	2.302 58.47	.668 16.97	.596 15.14	.129 3.28	.426 10.82	4-269	204511-1	4-334	204535-1	Plug only
												—	204523-1*	—	204547-1*	Plug with tool
												4-16	204523-2	4-312	204547-2	Plug with pins
												4-422	204523-3	4-323	204547-3	Plug with pins and tool

*No specific military no. assigned. May be quoted and/or purchased using similar military part no.—state variation from the military part—or AMP part number only.

Note: Size 22 DM pins supplied with plugs are loose piece. Refer to page 22 for ordering loose piece and/or tape mounted pins separately. Tool supplied with plugs is Insertion/Extraction Tool AMP Number **91067-1**; Military Number **M81969/1-04**.

Series 90 Connectors for Crimp, Snap-In Contacts

Series 90 Receptacles (HDD-22) per Mil-C-24308

Dimensioning:
All dimensions in inches and millimetres. Values in brackets are metric equivalents. Chart contains dimensions in inches over millimetres.

Receptacles

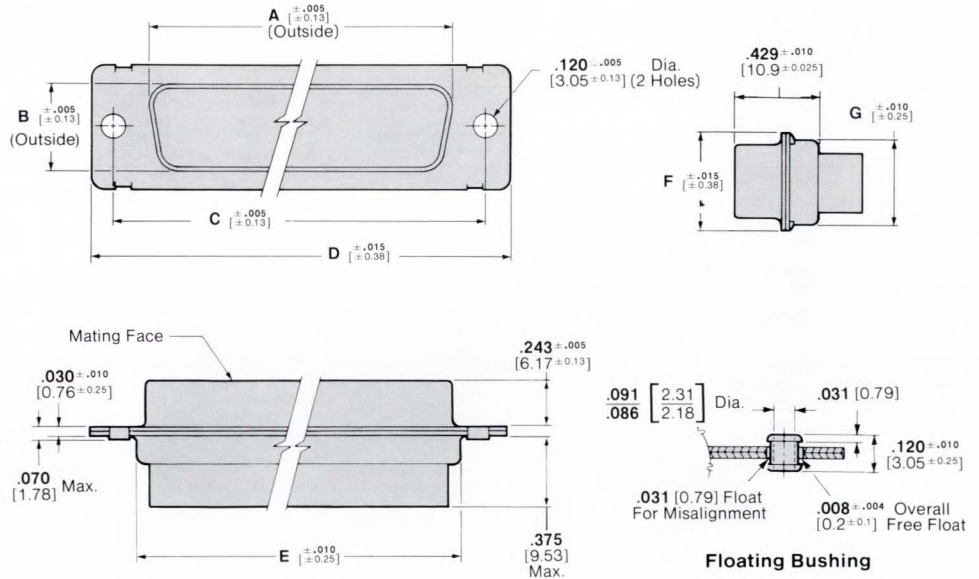


Material and Finish:
Shell—Steel, class G, zinc plated per ASTM B-633
Insert—Approved material per Mil-C-24308 specification
Retention springs—Stainless steel

Reference information
Cavity identification—page 21
Contacts—pages 22, 23
Mounting, mating dimensions—page 31
Accessories—pages 32-37

Attention: Connectors labels
Regardless of the number of the kit ordered, each connector housing is ink stamped with the Military part number of the kit which includes a housing and contacts.

15, 26, 44 and 62 Positions



No. of Contact Pos. (Shell Size)	Dimensions							Standard Mount		Floating Bushing Mount		Description
	A	B	C	D	E	F	G	Military Part No. 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]	2-286	204500-1	2-297	204524-1	Receptacle only
								—	204512-1*	—	204536-1*	Receptacle with tool
								2-11	204512-2	2-28	204536-2	Receptacle with sockets
								2-17	204512-3	2-39	204536-3	Receptacle with sockets and tool
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]	2-287	204502-1	2-298	204526-1	Receptacle only
								—	204514-1*	—	204538-1*	Receptacle with tool
								2-12	204514-2	2-29	204538-2	Receptacle with sockets
								2-18	204514-3	2-40	204538-3	Receptacle with tool and sockets
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]	2-288	204504-1	2-299	204528-1	Receptacle only
								—	204516-1*	—	204540-1*	Receptacle with tool
								2-13	204516-2	2-30	204540-2	Receptacle with sockets
								2-19	204516-3	2-41	204540-3	Receptacle with tool and sockets
62 (4)	2.159 [54.84]	.311 [7.96]	2.500 [63.5]	2.729 [69.32]	2.272 [57.7]	.494 [12.55]	.422 [10.72]	2-289	204506-1	2-300	204530-1	Receptacle only
								—	204518-1*	—	204542-1*	Receptacle with tool
								2-14	204518-2	2-31	204542-2	Receptacle with sockets
								2-20	204518-3	2-42	204542-3	Receptacle with tool and sockets
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]	2-290	204508-1	2-301	204532-1	Receptacle only
								—	204520-1*	—	204544-1*	Receptacle with tool
								2-15	204520-2	2-32	204544-2	Receptacle with sockets
								2-21	204520-3	2-43	204544-3	Receptacle with tool and sockets
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]	2-291	204510-1	2-302	204534-1	Receptacle only
								—	204522-1*	—	204546-1*	Receptacle with tool
								2-16	204522-2	2-33	204546-2	Receptacle with sockets
								2-22	204522-3	2-44	204546-3	Receptacle with tool and sockets

*No specific military no. assigned. May be used and/or purchased using similar military part no.—state variation from the military part— or AMP part number only.

Notes: 1. Size 22 DM sockets supplied with receptacles are loose piece. Refer to page 22 for ordering loose piece and/or tape mounted sockets separately. Tool supplied with receptacles is Insertion/Extraction Tool AMP Number 91067-1; Military Number M81969/1-04.

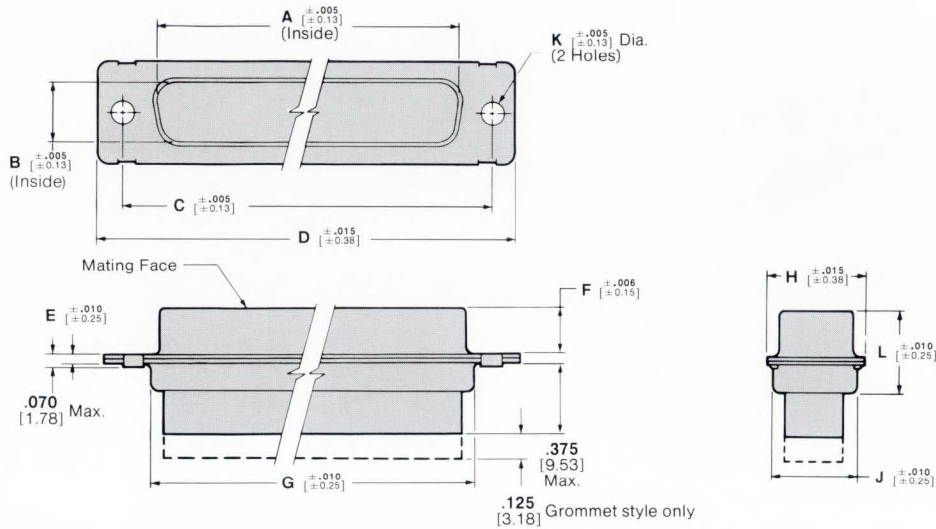
Series 90 Non-Magnetic Plugs per NASA spec GSFC-S-311-P-4/7 and NASA-type with rear grommet

Dimensioning:
All dimensions in inches and millimetres. Values in brackets are metric equivalents. Charts contain dimensions in inches over millimetres.

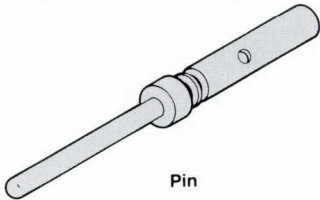


Materials and Finish:
Shell—Brass, gold plated per Mil-G-45204
Insert—Blue diallyl phthalate per Mil-M-14, Type SDG-F
Retention Springs—Beryllium copper

Reference Information:
Cavity identification—page 21
Mounting, mating specifications—page 31
Accessories—pages 32-37



Series 90 NASA Non-Magnetic Connectors



Pin

Wire Size Range	AMP Part Number NASA Number
28-22 0.08-0.4	204370-8 G-08-P1
28-26 0.08-0.15	206495-3 —

Strip length .156 [3.96]
Max. insulation diameter .054 [1.38]

Hand tool M22520/2-01
Positioner M22520/2-09

Materials and Finish:
—Beryllium copper per QQ-C-530, plated with .000050-.000100 [0.00127-0.00254] gold over .000100-.000150 [0.00254-0.00381] copper



Pin and Socket
Insertion/Extraction Tool
AMP part number 91067-1
Mil number M81969/1-04
Insertion tip, for replacement
Part number 126237-1
Extraction tip, for replacement
Part number 126195-2

Non-Magnetic Plugs per NASA Specification

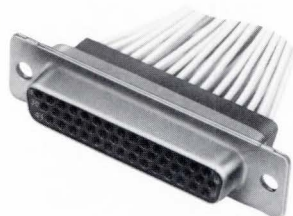
No. of Contact Pos. (Shell Size)	Dimensions											NASA No.	AMP Part Number
	A	B	C	D	E	F	G	H	J	L	K*		
15 (1)	.666	.329	.984	1.213	.030	.235	.759	.494	.422	.422	.154	311P407-1P-B-15	206498-1
	16.92	8.36	24.99	30.81	0.76	5.97	19.28	12.55	10.72	10.72	3.91		
26 (2)	.994	.329	1.312	1.541	.030	.235	1.083	.494	.422	.422	.154	311P407-2P-B-15	206500-1
	25.25	8.36	33.32	39.14	0.76	5.97	27.51	12.55	10.72	10.72	3.91		
44 (3)	1.534	.329	1.852	2.088	.039	.230	1.625	.494	.422	.426	.154	311P407-3P-B-15	206063-2
	38.96	8.36	47.04	53.04	0.99	5.84	41.3	12.55	10.72	10.82	3.91		
62 (4)	2.182	.329	2.500	2.729	.039	.230	2.272	.494	.422	.426	.154	311P407-4P-B-15	206502-1
	55.42	8.36	63.5	69.32	0.99	5.84	57.7	12.55	10.72	10.82	3.91		
78 (5)	2.079	.441	2.406	2.635	.039	.230	2.178	.605	.534	.426	.154	311P407-5P-B-15	206504-1
	52.81	11.20	61.11	66.93	0.99	5.84	57.7	15.37	13.56	10.82	3.91		
104 (6)	2.212	.503	2.500	2.729	.039	.230	2.302	.668	.596	.426	.154	311P407-6P-B-15	206066-2
	56.18	12.78	63.5	69.32	0.99	5.84	58.47	16.97	15.14	10.82	3.91		

Non-Magnetic Plugs With Silicone Rubber Rear Grommet

No. of Contact Pos. (Shell Size)	Dimensions											Part Numbers
	A	B	C	D	E	F	G	H	J	K	L	
15 (1)	.666	.329	.984	1.213	.030	.235	.759	.494	.422	.120	.422	211673-4
16.92	8.36	24.99	30.81	0.76	5.97	19.28	12.55	10.72	3.05	10.72		
26 (2)	.994	.329	1.312	1.541	.030	.235	1.083	.494	.422	.120	.422	211674-4
25.25	8.36	33.32	39.14	0.76	5.97	27.51	12.55	10.72	3.05	10.72		
44 (3)	1.534	.329	1.852	2.088	.039	.230	1.625	.494	.422	.120	.426	211675-4
38.96	8.36	47.04	53.04	0.99	5.84	41.3	12.55	10.72	3.05	10.82		
62 (4)	2.182	.329	2.500	2.729	.039	.230	2.272	.494	.422	.120	.426	211676-4
55.42	8.36	63.5	69.32	0.99	5.84	57.7	12.55	10.72	3.05	10.82		
78 (5)	2.079	.441	2.406	2.635	.039	.230	2.178	.605	.534	.120	.426	211677-4
52.81	11.20	61.11	66.93	0.99	5.84	55.32	15.27	13.56	3.05	10.82		
104 (6)	2.212	.503	2.500	2.729	.039	.230	2.302	.668	.596	.120	.426	211678-4
56.18	12.78	63.5	69.32	0.99	5.84	58.47	16.97	15.14	3.05	10.82		

Series 90 Non-Magnetic Receptacles per NASA spec GSFC-S-311-P-4/7 and NASA-type with rear grommet

Dimensioning:
All dimensions in inches and millimetres. Values in brackets are metric equivalents. Charts contain dimensions in inches over millimetres.



Materials and Finish:

Shell—Brass, gold plated per Mil-G-45204

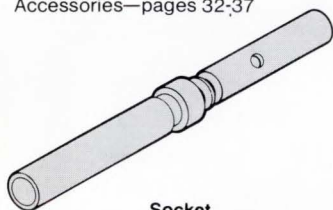
Insert—Blue diallyl phthalate per Mil-M-14, Type SDG-F

Retention Springs—Beryllium copper

Reference Information:

Cavity identification—page 21
Mounting, mating specifications—page 31

Accessories—pages 32-37



Socket

Wire Size Range	AMP Part Number NASA Number
28-22 0.08-0.4	206071-1 G-08-S1
28-26 0.08-0.15	206496-1 —

Strip length .156 [3.96]

Max. insulation diameter .054 [1.38]

Hand tool M22520/2-01
Positioner M22520/2-06

Materials and Finish:

—Beryllium copper per QQ-C-530, plated with .000050-.000100 [0.00127-0.00254] gold over .000100-.000150 [0.00254-0.00381] copper; socket sleeve is copper alloy per QQ-B-613, gold plated

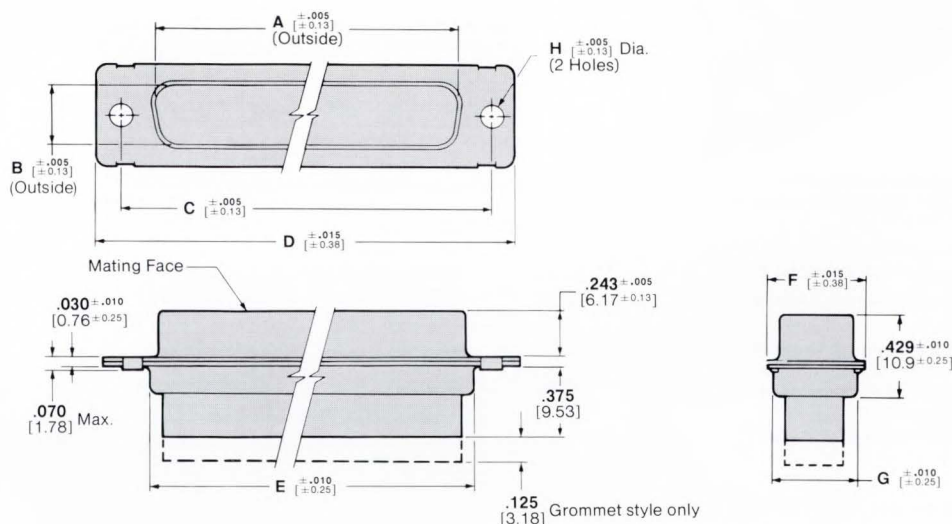


Pin and Socket
Insertion/Extraction Tool

AMP part number 91067-1
Mil number M81969/1-04

Insertion tip, for replacement
Part number 126237-1

Extraction tip, for replacement
Part number 126195-2



Non-Magnetic Receptacles per NASA Specification

No. of Contact Pos. (Shell Size)	Dimensions								NASA No.	AMP Part Number
	A	B	C	D	E	F	G	H		
15 (1)	.643	.311	.984	1.213	.759	.494	.422	.154	311P407-1S-B-15	206499-1
	16.33	7.9	24.99	30.81	19.28	12.55	10.72	3.91	311P407-1S-B-12	205499-4
26 (2)	.971	.311	1.312	1.541	1.083	.494	.422	.154	311P407-2S-B-15	206501-1
	24.66	7.9	33.32	39.14	27.51	12.55	10.72	3.91	311P407-2S-B-12	206501-4
44 (3)	1.511	.311	1.852	2.088	1.625	.494	.422	.154	311P407-3S-B-15	206064-2
	38.38	7.9	47.04	53.04	41.3	12.55	10.72	3.91	311P407-3S-B-12	206064-4
62 (4)	2.159	.311	2.500	2.729	2.272	.494	.422	.154	311P407-4S-B-15	206503-1
	54.84	7.9	63.5	69.32	57.7	12.55	10.72	3.91	311P407-4S-B-12	206503-4
78 (5)	2.064	.423	2.406	2.635	2.178	.605	.534	.154	311P407-5S-B-15	206505-1
	52.43	10.74	61.11	66.93	55.32	15.37	13.56	3.91	311P407-5S-B-12	206505-4
104 (6)	2.189	.485	2.500	2.729	2.302	.668	.596	.154	311P407-6S-B-15	206065-2
	55.6	12.32	63.5	69.32	58.47	16.97	15.14	3.91	311P407-6S-B-12	206065-4

Non-Magnetic Receptacles With Silicone Rubber Rear Grommet

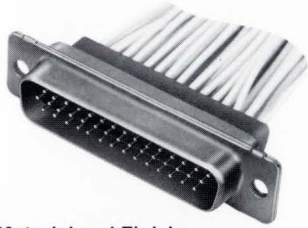
No. of Contact Pos. (Shell Size)	Dimensions								Part Numbers
	A	B	C	D	E	F	G	H	
15 (1)	.643	.311	.984	1.213	.759	.494	.422	.120	211667-4
	16.33	7.9	24.99	30.81	19.28	12.55	10.72	3.05	211668-4
26 (2)	.971	.311	1.312	1.541	1.083	.494	.422	.120	211669-4
	24.66	7.9	33.32	39.14	27.51	12.55	10.72	3.05	211670-4
44 (3)	1.511	.311	1.852	2.088	1.625	.494	.422	.120	211671-4
	38.38	7.9	47.04	53.04	41.3	12.55	10.72	3.05	211672-4
62 (4)	2.159	.311	2.500	2.729	2.272	.494	.422	.120	211673-4
	54.84	7.9	63.5	69.32	57.7	12.55	10.72	3.05	211674-4
78 (5)	2.064	.423	2.406	2.635	2.178	.605	.534	.120	211675-4
	52.43	10.74	61.11	66.93	55.32	15.37	13.56	3.05	211676-4
104 (6)	2.189	.485	2.500	2.729	2.302	.668	.596	.120	211677-4
	55.6	12.32	63.5	69.32	58.47	16.97	15.14	3.05	211678-4

Series 90 Non-Magnetic Connectors per Mil-C-24308

Dimensioning:

All dimensions in inches and millimetres. Values in brackets are metric equivalents. Charts contain dimensions in inches over millimetres.

Attention: Connectors labels
Regardless of the number of the kit ordered, each connector housing is ink stamped with the Military part number of the kit which includes a housing and contacts.



Material and Finish:

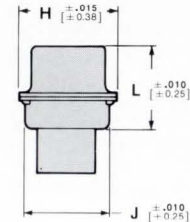
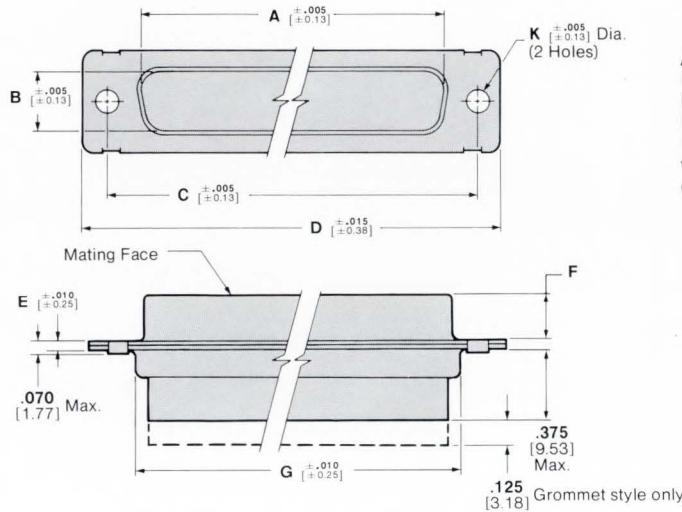
Shell—Brass, zinc plated per ASTM B366

Insert—Approved material per Mil-C-24308 specification.

Retention springs—Stainless steel

Reference Information:

Cavity identification—page 21
Mounting, mating specifications—page 31
Accessories—pages 32-37



Plugs per Mil-C-24308

No. of Contact Pos. (Shell Size)	Dimensions											Military Type Plugs		
	A (Inside)	B (Inside)	C	D	E	F $\left[\begin{smallmatrix} \pm .006 \\ \pm 0.15 \end{smallmatrix} \right]$	G	H	J	K	L	Military Part No. M24308/	AMP Part No.	Description
15 (1)	.666	.329	.984	1.213	.030	.235	.759	.494	.422	.120	.422	8-264	204501-2	Plug only
	16.92	8.36	24.99	30.81	0.76	5.97	19.28	12.55	10.72	3.05	10.72	8-11	204513-5	Plug with pins
												8-17	204513-6	Plug with pins and tool
26 (2)	.994	.329	1.312	1.541	.030	.235	1.083	.494	.422	.120	.422	8-265	204503-2	Plug only
	25.25	8.36	33.32	39.14	0.76	5.97	27.51	12.55	0.72	3.05	10.72	8-12	204515-5	Plug with pins
												8-18	204515-6	Plug with pins and tool
44 (3)	1.534	.329	1.852	2.088	.039	.230	1.625	.494	.422	.120	.426	8-266	204505-2	Plug only
	38.96	8.36	47.04	53.04	0.99	5.84	41.3	12.55	10.72	3.05	10.82	8-13	204517-5	Plug with pins
												8-19	204517-6	Plug with pins and tool
62 (4)	2.182	.329	2.500	2.729	.039	.230	2.272	.494	.422	.120	.426	8-267	204507-2	Plug only
	55.42	8.36	63.5	69.32	0.99	5.84	57.7	12.55	10.72	3.05	10.82	8-14	204519-5	Plug with pins
												8-20	204519-6	Plug with pins and tool
78 (5)	2.079	.441	2.406	2.635	.039	.230	2.178	.605	.534	.120	.426	8-268	204509-2	Plug only
	52.81	11.20	61.11	66.93	0.99	5.84	55.32	15.37	13.56	3.05	10.82	8-15	204521-5	Plug with pins
												8-21	204521-6	Plug with pins and tool
104 (6)	2.212	.503	2.500	2.729	.039	.230	2.302	.668	.596	.120	.426	8-269	204511-2	Plug only
	56.18	12.78	63.5	69.32	0.99	5.84	58.47	16.97	15.14	3.05	10.82	8-16	204523-5	Plug with pins
												8-22	204523-6	Plug with pins and tool

Receptacles per Mil-C-24308

No. of Contact Pos. (Shell Size)	Dimensions											Military Type Receptacles		
	A (Outside)	B (Outside)	C	D	E	F $\left[\begin{smallmatrix} \pm .005 \\ \pm 0.13 \end{smallmatrix} \right]$	G	H	J	K	L	Military Part No. M24308/	AMP Part No.	Description
15 (1)	.643	.311	.984	1.213	.030	.243	.759	.494	.422	.120	.429	6-286	204500-2	Recept. only
	16.33	7.9	24.99	30.81	0.76	6.17	19.28	12.55	10.72	3.05	10.9	6-11	204512-5	Recept. with sockets
												6-17	204512-6	Recept. with sockets and tool
26 (2)	.971	.311	1.312	1.541	.030	.243	1.083	.494	.422	.120	.429	6-287	204502-2	Recept. only
	24.66	7.9	33.32	39.14	0.76	6.17	27.51	12.55	10.72	3.05	10.9	6-12	204514-5	Recept. with sockets
												6-18	204514-6	Recept. with sockets and tool
44 (3)	1.511	.311	1.852	2.088	.030	.243	1.625	.494	.422	.120	.429	6-288	204504-2	Recept. only
	38.38	7.9	47.04	53.04	0.76	6.17	41.3	12.55	10.72	3.05	10.9	6-13	204516-5	Recept. with sockets
												6-19	204516-6	Recept. with sockets and tool
62 (4)	2.159	.311	2.500	2.729	.030	.243	2.272	.494	.422	.120	.429	6-289	204506-2	Recept. only
	54.84	7.9	63.5	69.32	0.76	6.17	57.7	12.55	10.72	3.05	10.9	6-14	204518-5	Recept. with sockets
												6-20	204518-6	Recept. with sockets and tool
78 (5)	2.064	.423	2.406	2.635	.030	.243	2.178	.605	.534	.120	.429	6-290	204508-2	Recept. only
	52.43	10.74	61.11	66.93	0.76	6.17	55.32	15.37	13.56	3.05	10.9	6-15	204520-5	Recept. with sockets
												6-21	204520-6	Recept. with sockets and tool
104 (6)	2.189	.485	2.500	2.729	.030	.243	2.302	.668	.596	.120	.429	6-291	204510-2	Recept. only
	55.6	12.32	63.5	69.32	0.76	6.17	58.47	16.97	15.14	3.05	10.9	6-16	204522-5	Recept. with sockets
												6-22	204522-6	Recept. with sockets and tool

Series 90 Military Non-Magnetic Connectors

Series 90 (HDD-22) Posted Connectors with .025 [0.64] Diameter Posts

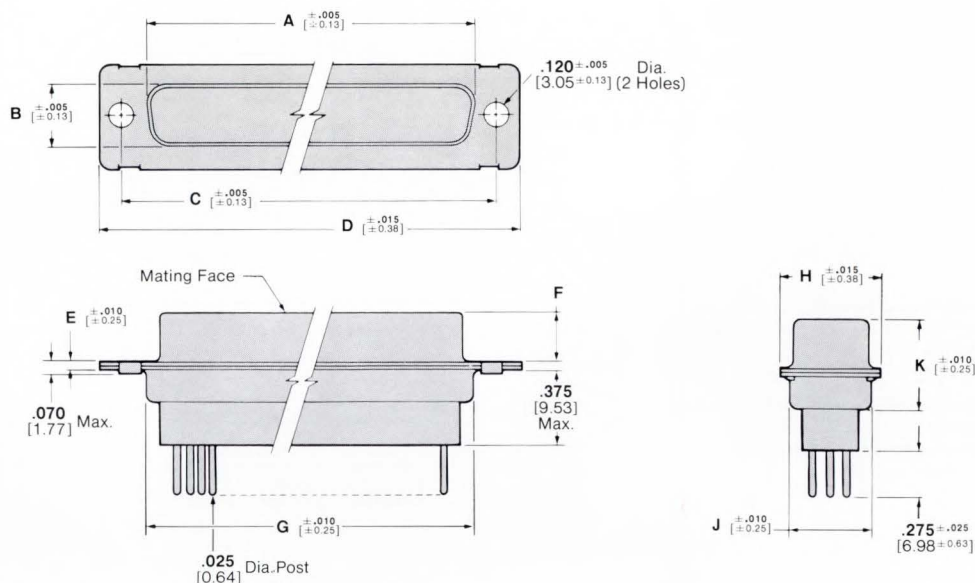
Dimensioning:
All dimensions in inches and millimetres. Values in brackets are metric equivalents. Charts contain dimensions in inches over millimetres.

Plugs



Material and Finish:
Shell—Steel, class G zinc plated per ASTM B-633
Insert—Blue diallyl phthalate per Mil-M-14, Type SDG-F; or blue polyester per Mil-M-24519
Retention springs—Stainless steel

Reference Information:
Cavity identification—page 21
Contacts—page 23
Mounting, mating specifications—page 31
Accessories—pages 32-37



Plugs

No. of Contact Pos. (Shell Size)	Dimensions										Part Numbers
	A (Inside)	B (Inside)	C	D	E	F $\begin{matrix} \pm .006 \\ [\pm 0.15] \end{matrix}$	G	H	J	K	
15 (1)	.666	.329	.984	1.213	.030	.235	.759	.494	.422	.422	208866-1
26 (2)	.994	.329	1.312	1.541	.030	.235	1.083	.494	.422	.422	208867-1
44 (3)	1.534	.329	1.852	2.088	.039	.230	1.625	.494	.422	.426	208868-1
62 (4)	2.182	.329	2.500	2.729	.039	.230	2.272	.494	.422	.426	208869-1
78 (5)	2.079	.441	2.406	2.635	.039	.230	2.178	.605	.534	.426	208870-1
104 (6)	2.212	.503	2.500	2.729	.039	.230	2.302	.668	.596	.426	208871-1

Receptacles

No. of Contact Pos. (Shell Size)	Dimensions										Part Numbers
	A (Outside)	B (Outside)	C	D	E	F $\begin{matrix} \pm .006 \\ [\pm 0.13] \end{matrix}$	G	H	J	K	
15 (1)	.643	.311	.984	1.213	.030	.243	.759	.494	.422	.429	208872-1
26 (2)	.971	.311	1.312	1.541	.030	.243	1.083	.494	.422	.429	208873-1
44 (3)	1.511	.311	1.852	2.088	.030	.243	1.625	.494	.422	.429	208874-1
62 (4)	2.159	.311	2.500	2.729	.030	.243	2.272	.494	.422	.429	208875-1
78 (5)	2.064	.423	2.406	2.635	.030	.243	2.178	.605	.534	.429	208876-1
104 (6)	2.189	.485	2.500	2.729	.030	.243	2.302	.668	.596	.429	208877-1

Replacement Pin Contact
Part Number 207683-8

Replacement Socket Contact
Part Number 207684-4

Series 90 Connector Savers

Connector savers prolong the life of permanently installed connectors which otherwise would be subjected to repeated cycles of mating and unmating, in applications such as test interfaces and testing devices.

Materials and Finish:

Shell—Steel, class G, zinc plated per ASTM B-633

Insert—Blue diallyl phthalate

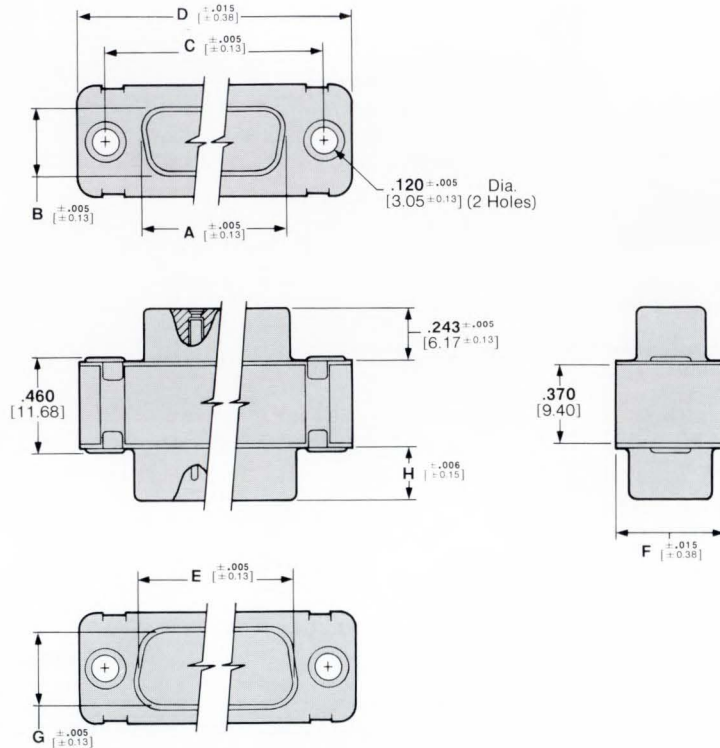
Spacer—Black thermoplastic

Contacts—Beryllium copper and passivated stainless steel, gold-over-nickel plated

Dimensioning:

All dimensions in inches and millimetres. Values in brackets are metric equivalents.

Chart contains dimensions in inches over millimetres.

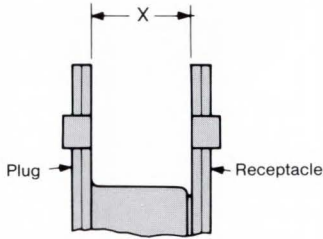


No. of Contact Pos. (Shell Size)	Dimensions								Part Number
	A	B	C	D	E	F	G	H	
15 (1)	.643 16.33	.311 7.9	.984 24.99	1.213 30.81	.666 16.92	.494 12.55	.329 8.36	.235 5.97	211010-1
26 (2)	.971 24.66	.311 7.9	1.312 33.32	1.541 39.14	.994 25.25	.494 12.55	.329 8.36	.235 5.97	211011-1
44 (3)	1.511 38.38	.311 7.9	1.852 47.04	2.088 53.04	1.534 38.96	.494 12.55	.329 8.36	.230 5.84	211012-1
62 (4)	2.159 54.84	.311 7.9	2.500 63.5	2.729 69.32	2.182 55.42	.494 12.55	.329 8.36	.230 5.84	211013-1
78 (5)	2.064 52.43	.423 10.74	2.406 61.11	2.635 66.93	2.079 52.81	.605 15.37	.441 11.20	.230 5.84	211014-1
104 (6)	2.189 55.6	.485 12.32	2.500 63.5	2.729 69.32	2.212 56.18	.668 16.97	.503 12.78	.230 5.84	211015-1

Mating and Mounting Specifications for Series 109 and Series 90 Connectors

Dimensioning:
All dimensions in inches and millimetres.
Values in brackets are metric equivalents.
Chart contains dimensions in inches over millimetres.

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]

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

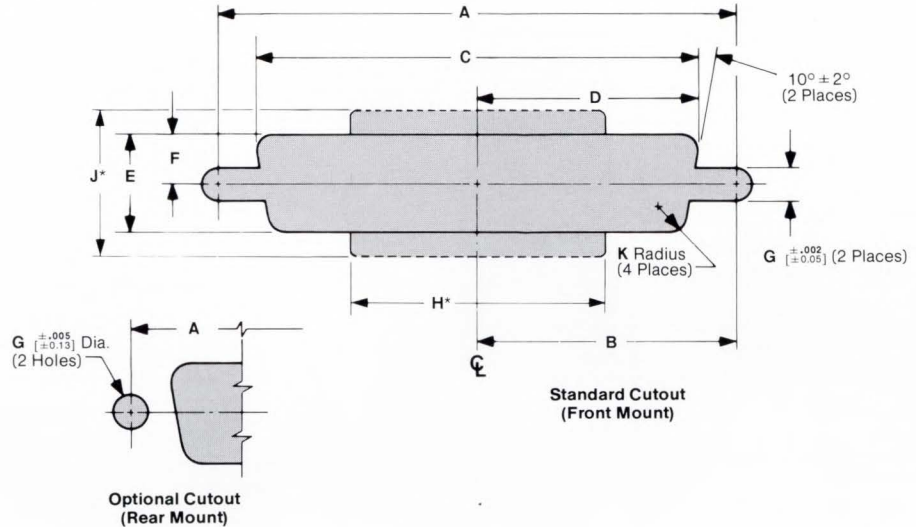


**AMPLIMITE Plug
Front-Panel Mounted**



**AMPLIMITE Receptacle,
Rear-Panel Mounted**

Panel Cutouts



Shell Size (No. of Contact Pos.)		Mounting Method		Dimensions										
Series 109 Connectors	Series 90 Connectors	Front/Rear Panel	With/Without Floating Bushing	A	B	C	D	E	F	G	H*	J*	K	
1 (9 Pos.)	1 (15 Pos.)	Front	With			.906 23.01	.453 11.51	.545 13.84	.273 6.93	.088 2.24			.083 2.11	
			Without	.984 24.99	.492 12.5	.874 22.2	.437 11.1	.513 13.03	.257 6.53	.120 3.05				
		Rear	With			.838 21.29	.419 10.64	.481 12.22	.241 6.12	.088 2.24	.332 8.43	.662 16.81		.132 3.35
			Without			.806 20.47	.403 10.24	.449 11.4	.225 5.72	.120 3.05	.300 7.62	.630 16		
2 (15 Pos.)	2 (26 Pos.)	Front	With			1.234 31.34	.617 15.67	.545 13.84	.273 6.93	.088 2.24			.083 2.11	
			Without	1.312 33.32	.656 16.66	1.202 30.53	.601 15.27	.513 13.03	.257 6.53	.120 3.05				
		Rear	With			1.166 29.62	.583 14.81	.481 12.22	.241 6.12	.088 2.24	.655 16.64	.662 16.81		.132 3.35
			Without			1.134 28.8	.567 14.4	.449 11.4	.225 5.72	.120 3.05	.623 15.82	.630 16		
3 (25 Pos.)	3 (44 Pos.)	Front	With			1.775 45.09	.888 22.55	.545 13.84	.273 6.93	.088 2.24			.083 2.11	
			Without	1.852 47.04	.926 23.52	1.743 44.27	.872 22.15	.513 13.03	.257 6.53	.120 3.05				
		Rear	With			1.706 43.33	.853 21.67	.481 12.22	.241 6.12	.088 2.24	1.197 30.4	.662 16.81		.132 3.35
			Without			1.674 45.52	.837 21.26	.449 11.4	.225 5.72	.120 3.05	1.165 29.59	.630 16		
4 (37 Pos.)	4 (62 Pos.)	Front	With			2.423 61.17	1.212 30.78	.545 13.84	.273 6.93	.088 2.24			.083 2.11	
			Without	2.500 63.5	1.250 31.75	2.391 60.73	1.196 30.38	.513 13.03	.257 6.53	.120 3.05				
		Rear	With			2.354 59.79	1.177 29.9	.481 12.22	.241 6.12	.088 2.24	1.845 46.86	.662 16.81		.132 3.35
			Without			2.326 59.08	1.163 29.54	.449 11.4	.225 5.72	.120 3.05	1.813 46.05	.630 16		
5 (50 Pos.)	5 (78 Pos.)	Front	With			2.329 59.16	1.165 29.59	.655 16.64	.328 8.33	.088 2.24			.083 2.11	
			Without	2.406 61.11	1.203 30.56	2.297 58.34	1.149 29.18	.623 15.82	.312 7.92	.120 3.05				
		Rear	With			2.250 57.15	1.125 28.58	.587 14.91	.294 7.47	.088 2.24	1.740 44.2	.772 19.61		.132 3.35
			Without			2.218 56.34	1.109 28.17	.555 14.1	.278 7.06	.120 3.05	1.708 43.38	.740 18.8		
— (104 Pos.)	6 (104 Pos.)	Front	With			2.453 62.31	1.227 31.17	.717 18.21	.359 9.12	.088 2.24			.083 2.11	
			Without	2.500 63.5	1.250 31.75	2.421 61.49	1.211 30.76	.685 17.4	.343 8.71	.120 3.05				
		Rear	With			2.388 60.66	1.194 30.33	.654 16.61	.327 8.31	.088 2.24	1.875 47.62	.835 21.21		.132 3.35
			Without			2.356 59.84	1.179 29.92	.622 15.8	.311 7.9	.120 3.05	1.843 46.81	.803 20.4		

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

Accessories

One-Piece Cable Clamp Assemblies

One-piece cable clamp assemblies can be used on plugs and receptacles, without preventing the use of common retention hardware such as screwlocks or spring latches. Kits including hardware are shown on the facing page.

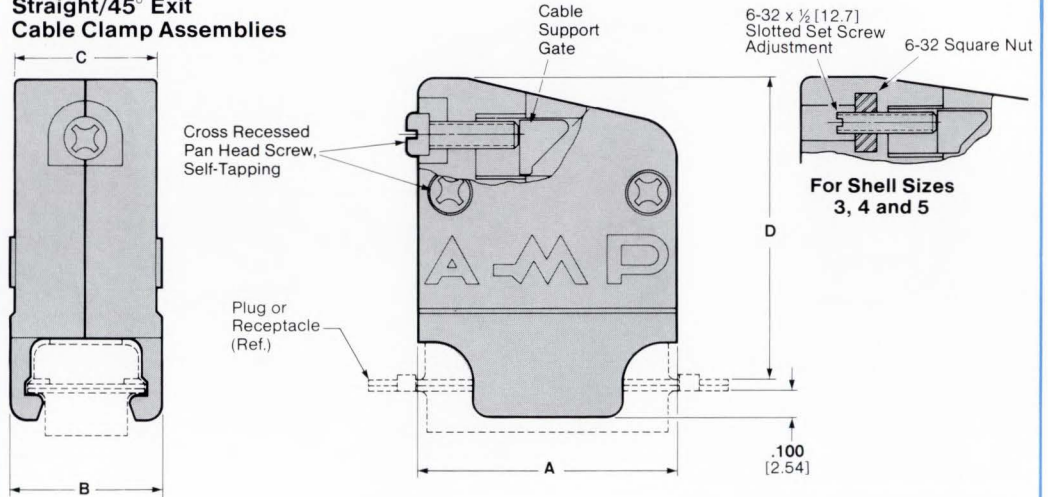
Hinged construction of the cable clamps makes it easy to apply them to harnesses. Simple adjustment of cable support gates determines the cable exit angle.

Materials

Housings and gates—Black Polypropylene
 Hardware—Zinc or cadmium plated steel

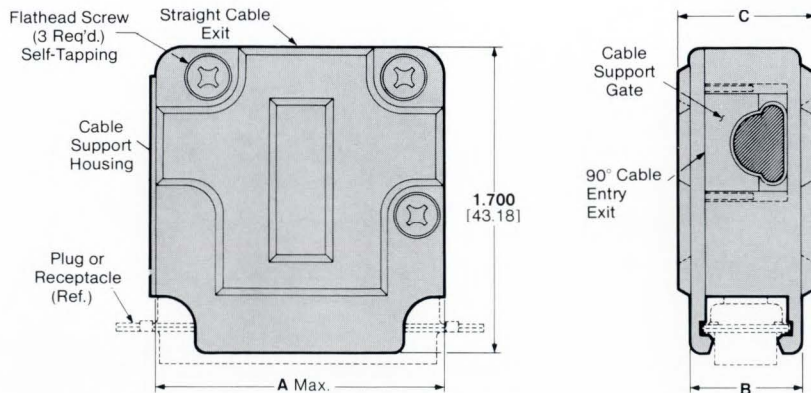
Dimensioning:
 All dimensions in inches and millimetres. Values in brackets are metric equivalents. Charts contain dimensions in inches over millimetres.

Straight/45° Exit Cable Clamp Assemblies



Shell Size (No. of Contact Pos.)		Dimensions				Cable Dia. (Max.)	Short Assembly Part No.		Standard Assembly Part No.	
Series 109 Connectors	Series 90 Connectors	A	B	C	D		Individual	Bulk Packed*	Individual	Bulk Packed*
1 (9)	1 (15)	.750 19.05	.620 15.75	.580 14.73	1.625 41.28	.256 6.5	—	—	205729-1	205729-3
2 (15)	2 (26)	1.073 27.25	.620 15.75	.580 14.73	1.250 31.75	.320 8.13	206393-1	206393-3	—	—
					1.625 41.28	.320 8.13	—	—	205730-1	205730-3
3 (25)	3 (44)	1.615 41.02	.620 15.75	.580 14.73	1.250 31.75	.420 10.67	206390-1	206390-3	—	—
					1.625 41.28	.420 10.67	—	—	205718-1	205718-4
4 (37)	4 (62)	2.263 57.48	.620 15.75	.620 15.75	1.625 41.28	.490 12.45	—	—	205731-1	205731-3
5 (50)	5 (78)	2.168 55.07	.730 18.54	.730 18.54	1.625 41.28	.600 15.24	—	—	205732-1	205732-3

Straight/90° Exit Cable Clamp Assemblies



Shell Size (No. of Contact Pos.)		Dimensions			Cable Dia. (Max.)	Assembly Part No.	
Series 109 Connectors	Series 90 Connectors	A	B	C		Individual	Bulk Packed*
1 (9)	1 (15)	.755 19.18	.620 15.75	.620 15.75	.250 6.35	207467-1	207467-2
2 (15)	2 (26)	1.073 27.25	.620 15.75	.620 15.75	.325 8.26	207470-1	207470-2
3 (25)	3 (44)	1.615 41.02	.620 15.75	.750 19.05	.500 12.7	207345-1	207345-2
4 (37)	4 (62)	2.263 57.48	.620 15.75	.750 19.05	.500 12.7	207473-1	207473-2
5 (50)	5 (78)	2.173 55.19	.730 18.54	.860 21.84	.500 12.7	207476-1	207476-2
—	6 (104)	2.342 59.49	.793 20.14	.930 23.62	.625 15.88	207503-1	207503-2

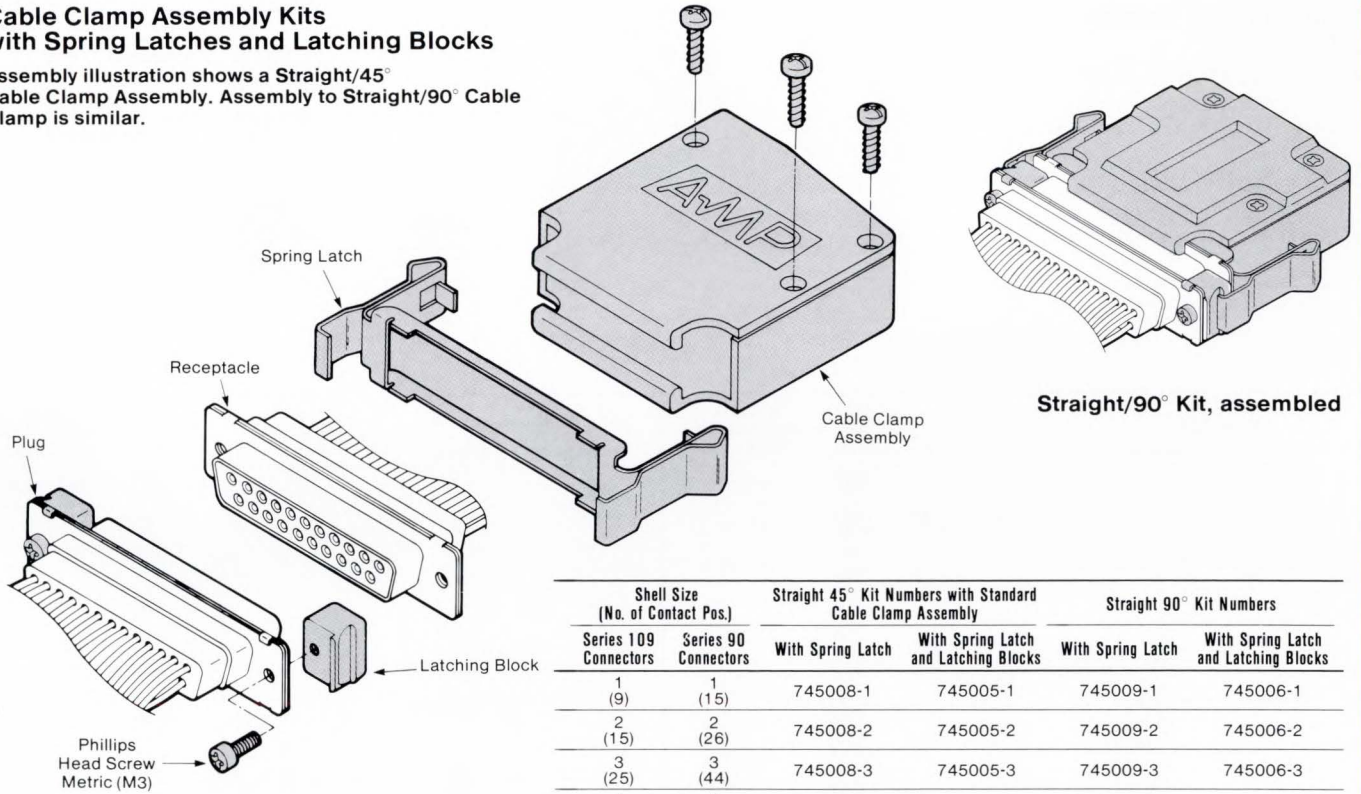
*Each part is individually bulk packed for multiple assembly orders.

Accessories

Dimensioning:
All dimensions in inches and millimetres.
Values in brackets are metric equivalents.
Charts contain dimensions in inches over millimetres.

Cable Clamp Assembly Kits with Spring Latches and Latching Blocks

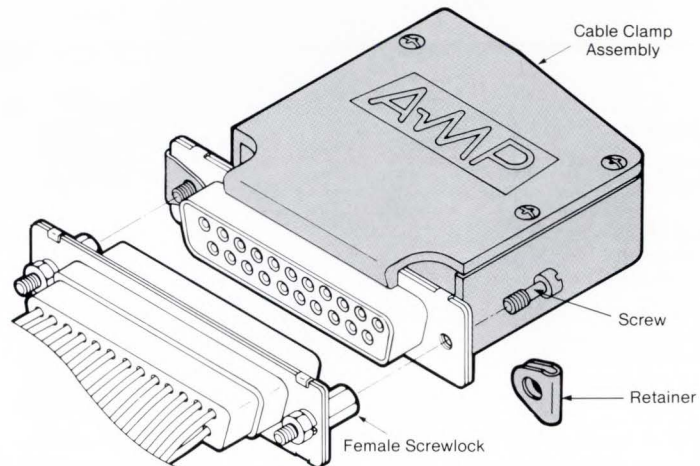
Assembly illustration shows a Straight/45° Cable Clamp Assembly. Assembly to Straight/90° Cable Clamp is similar.



Shell Size (No. of Contact Pos.)		Straight 45° Kit Numbers with Standard Cable Clamp Assembly		Straight 90° Kit Numbers	
Series 109 Connectors	Series 90 Connectors	With Spring Latch	With Spring Latch and Latching Blocks	With Spring Latch	With Spring Latch and Latching Blocks
1 (9)	1 (15)	745008-1	745005-1	745009-1	745006-1
2 (15)	2 (26)	745008-2	745005-2	745009-2	745006-2
3 (25)	3 (44)	745008-3	745005-3	745009-3	745006-3
4 (37)	4 (62)	745008-4	745005-4	745009-4	745006-4
5 (50)	5 (78)	745008-5	745005-5	745009-5	745006-5

Cable Clamp Assembly Kits with Male Screw/Retainer

Illustration shows a Straight/45° Cable Clamp Assembly; Straight/90° Cable Clamp Assembly is similar



Shell Size (No. of Contact Pos.)		Straight 45° Kit Numbers with Short Cable Clamp Assembly		Straight 45° Kit Numbers with Standard Cable Clamp Assembly		Straight 90° Kit Numbers	
Series 109 Connectors	Series 90 Connectors	Individual	Bulk Packed*	Individual	Bulk Packed*	Individual	Bulk Packed*
1 (9)	1 (15)	—	—	206478-1	2-206478-0	207908-1	207908-2
2 (15)	2 (26)	1-206478-1	2-206478-5	206478-2	2-206478-1	207908-4	207908-5
3 (25)	3 (44)	1-206478-2	2-206478-6	206478-3	2-206478-2	207908-7	207908-8
4 (37)	4 (62)	—	—	206478-4	2-206478-3	1-207908-0	1-207908-1
5 (50)	5 (78)	—	—	206478-5	2-206478-4	1-207908-3	1-207908-4
—	6 (104)	—	—	—	—	1-207906-6	1-207908-7

*Each part is individually bulk packed for multiple assembly orders.

RFI/EMI Shields for AMPLIMITE Connectors

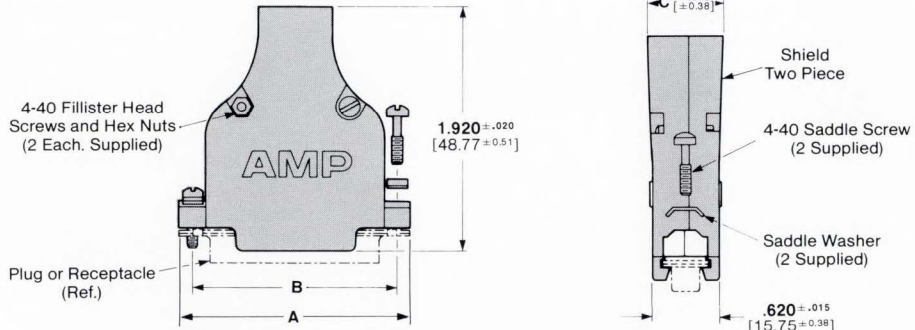
Dimensioning:
All dimensions in inches and millimetres. Values in brackets are metric equivalents. Charts contain dimensions in inches over millimetres.

Straight Exit Shields All Metal

Split-ring ferrules and crimp ferrules for these connectors are shown on page 10.

Materials and Finish

Metal shield—Nickel
Fillister head screws—Stainless steel
Saddle washers, screws and hex nuts—Zinc plated steel



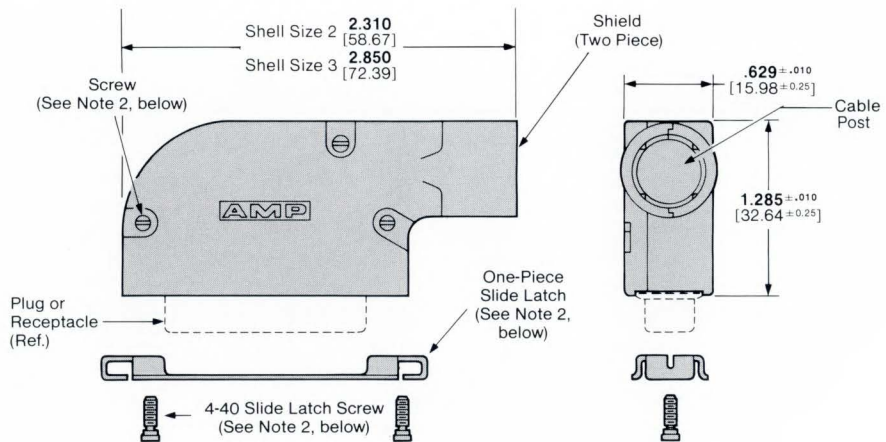
Shell Size (Contact Pos.)		Dimensions			Cable Dia. (Max.)	All-Metal Shield Assembly Part Number
Series 109	Series 90	A	B	C		
1 (9)	1 (15)	1.215 30.86	.984 24.99	.550 13.97	.200 5.08	745171-2
					.250 6.35	745171-1
					.370 9.4	745171-5
					.225 5.72	745172-3
2 (15)	2 (26)	1.545 39.24	1.312 33.32	.620 15.75	.300 7.62	745172-2
					.375 9.53	745172-1
					.430 10.92	1-745172-3
					.280 7.11	745173-5
3 (25)	3 (44)	2.090 53.09	1.852 47.04	.660 17.27	.350 8.89	745173-4
					.430 10.92	745173-3
					.480 12.19	745173-2
					.530 13.46	745173-1

Shell Size (Contact Pos.)		Dimensions			Cable Dia. (Max.)	All-Metal Shield Assembly Part Number
Series 109	Series 90	A	B	C		
4 (37)	4 (62)	2.738 69.55	2.500 63.5	.800 20.32	.350 8.89	745174-5
					.425 10.8	745174-4
					.500 12.7	745174-3
					.575 14.61	745174-2
5 (50)	5 (78)	2.644 67.16	2.406 61.11	.900 22.86	.650 16.51	745174-1
					.375 9.53	745175-6
					.450 11.43	745175-5
					.525 13.34	745175-4
3 (18)	3 (54)	2.644 67.16	2.406 61.11	.900 22.86	.600 15.24	745175-3
					.675 17.15	745175-2
					.750 19.05	745175-1

90° Metal Shields

Materials and Finish

Metal shield—Clear zinc chromate
Pan head screws and slide latch screws—Zinc plated steel
One-piece slide latch—Stainless steel



Shell Size (Contacts)	Cable Dia. (Max.)	Shield Kit No.
2 (15)	.225 5.72	745652-4
	.300 7.62	745652-3
	.375 9.53	745652-2
	.430 10.92	745652-1
3 (25)	.280 7.11	745653-5
	.350 8.89	745653-4
	.430 10.92	745653-3
	.480 12.19	745653-2
	.530 13.46	745653-1

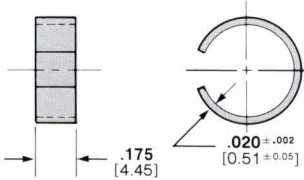
Notes: 1. All parts are packaged unassembled.
2. Each kit includes a two-piece shield, three 4-40 pan head screws for assembly and a one-piece slide latch with two 4-40 slide latch screws.

Ferrules for AMPLIMITE Shields

Dimensioning:
All dimensions in inches and millimetres.
Values in brackets are metric equivalents.

Split-Ring Ferrules for use with foil or braided shield

Materials—Aluminum



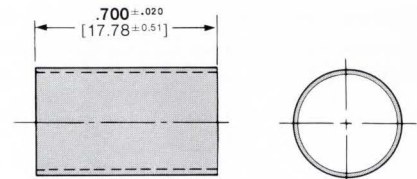
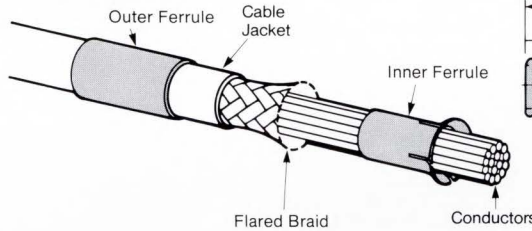
Note: Split-ring ferrules cannot be used with outer and inner ferrules; split rings are suitable for foil or braided shields. Crimp ferrules are for use with braided shields only.

Crimp Ferrules for use with braided shield

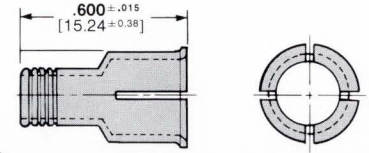
Materials and Finish:

Outer ferrule—Copper, plated .000100 [0.00254] min., bright tin

Inner ferrule—Brass, .023 [0.58] thick, plated .000050 [0.00127] bright tin over .000030 [0.00076] bright nickel



Outer Ferrule



Inner Ferrule

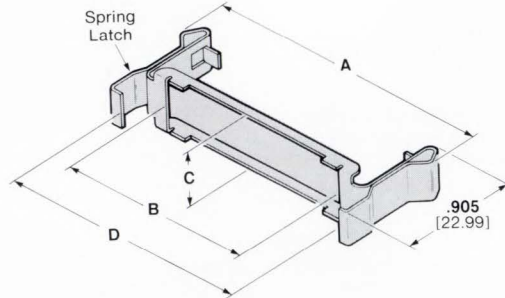
Shell Size (No. of Contact Pos.)	Cable Diameter Max.*	Straight Exit Shield Kits All-Metal	90° All-Metal Shield Kit	Ferrules (See Note)			Inner-Outer Ferrule Dies	
				Split Ring Ferrules	Crimp Ferrules Inner	Outer	For Hand Tool 91238-1	For Applicator 812407-1
1 (9)	.200 [5.08]	745171-2	—	745508-2	—	—	—	—
	.240 [6.09]	745171-5	—	—	1-745129-8	745130-8	543013-2	813809-1
	.280 [7.11]	745171-1	—	745508-3	1-745129-6	745130-8	543013-1	813809-1
	.370 [9.39]	745171-5	—	—	3-745129-4	1-745130-6	1-543013-7	813809-7
2 (15)	.225 [5.71]	745172-3	745652-4	745508-3	—	—	—	—
	.240 [6.09]	745172-1	745652-2	—	1-745129-8	745130-8	543013-2	813809-1
	.280 [7.11]	1-745172-3	745652-1	—	2-745129-1	745130-8	543013-3	813809-1
	.300 [7.62]	1-745172-3	745652-1	—	3-745129-2	1-745130-6	1-543013-6	813809-7
	.350 [8.89]	745172-2	745652-3	745508-4	—	—	—	—
	.365 [9.27]	1-745172-3	745652-1	—	2-745129-0	745130-9	543013-4	813809-2
	.375 [9.52]	745172-1	745652-2	—	1-745129-7	1-745130-0	543013-6	813809-5
	.430 [10.92]	1-745172-3	745652-1	745508-1	1-745129-9	1-745130-1	543013-7	813809-3
	.240 [6.09]	745173-3	745653-3	—	2-745129-1	745130-8	543013-3	813809-1
	.280 [7.11]	745173-5	745652-5	745508-4	—	—	—	—
3 (25)	.240 [6.09]	745173-3	745653-3	—	3-745129-2	1-745130-6	1-543013-6	813809-7
	.350 [8.89]	745173-4	745653-4	745508-5	—	—	—	—
	.430 [10.92]	745173-3	745653-3	—	2-745129-0	745130-9	543013-4	813809-2
	.480 [12.29]	745173-1	745653-1	—	2-745129-4	745130-9	543013-5	813809-2
	.530 [10.92]	745173-3	745653-3	745508-1	1-745129-9	1-745130-1	543013-7	813809-3
	.430 [10.92]	745173-1	745653-1	—	2-745129-3	1-745130-1	543013-8	813809-3
	.480 [12.29]	745173-2	745653-2	745508-8	—	—	—	—
	.530 [10.92]	745173-1	745653-1	745508-9	2-745129-2	1-745130-2	1-543013-0	813809-4
	.240 [6.09]	745174-4	—	—	2-745129-1	745130-8	543013-3	813809-1
	.280 [7.11]	745174-4	—	—	3-745129-2	1-745130-6	1-543013-6	813809-7
4 (37)	.350 [8.89]	745174-5	—	745508-5	—	—	—	—
	.430 [10.92]	745174-4	—	—	2-745129-0	745130-9	543013-4	813809-2
	.430 [10.92]	745174-4	—	745508-1	1-745129-9	1-745130-1	543013-7	813809-3
	.500 [12.7]	745174-1	—	—	2-745129-7	1-745130-1	543013-9	813809-3
	.525 [13.33]	745174-3	—	745508-8	—	—	—	—
	.575 [14.60]	745174-1	—	—	2-745129-6	1-745130-2	1-543013-1	813809-4
	.650 [16.51]	745174-2	—	1-745508-0	—	—	—	—
	.240 [6.09]	745174-1	—	1-745508-1	2-745129-5	1-745130-3	1-543013-3	813809-6
	.350 [8.89]	745175-6	—	—	1-745129-8	745130-8	543013-2	813809-1
	.365 [9.27]	745175-4	—	—	2-745129-4	745130-9	543013-5	813809-2
5 (50)	.375 [9.52]	745175-6	—	—	1-745129-7	1-745130-0	543013-6	813809-5
	.430 [10.92]	745175-6	—	745508-6	—	—	—	—
	.430 [10.92]	745175-4	—	—	2-745129-3	1-745130-1	543013-8	813809-3
	.450 [11.43]	745175-5	—	745508-7	—	—	—	—
	.525 [13.33]	745175-4	—	745508-9	—	—	—	—
	.530 [13.46]	745175-4	—	—	2-745129-2	1-745130-2	1-543013-0	813809-4
	.600 [15.24]	745175-1	—	—	3-745129-0	1-745130-2	1-543013-2	813809-4
	.650 [16.51]	745175-3	—	1-745508-0	—	—	—	—
	.675 [17.14]	745175-1	—	—	2-745129-9	1-745130-3	1-543013-4	813809-6
	.750 [9.05]	745175-2	—	1-745508-1	—	—	—	—
	.750 [9.05]	745175-1	—	1-745508-2	2-745129-8	1-745130-4	1-543013-5	813809-8

*Min. OD is .040 [1.02] smaller than Max. for split ring ferrules; Min. OD is .050 [1.27] smaller than Max. for inner and outer ferrules.

Accessories

Spring Latches

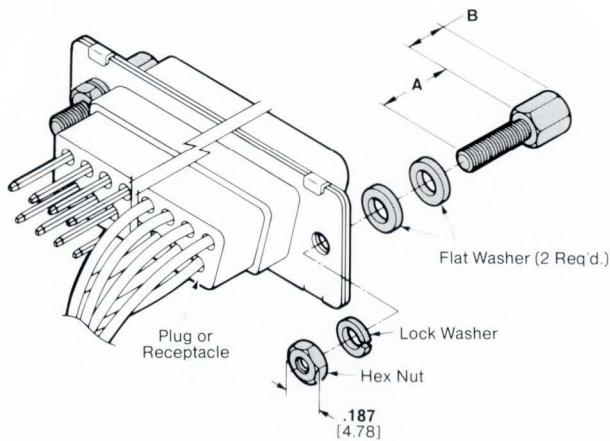
Material—Stainless steel,
.015 [0.38] thick



Shell Size (No. of Contact Pos.)		Dimensions				Part Number
Series 109 Connectors	Series 90 Connectors	A	B	C	D	
1 (9)	1 (15)	1.475 37.47	.775 19.68	.470 11.94	1.215 30.86	745011-1
2 (15)	2 (26)	1.850 46.99	1.100 27.94	.470 11.94	1.540 39.1	745012-1
3 (25)	3 (44)	2.340 59.44	1.640 41.66	.470 11.94	2.080 52.83	745013-1
4 (37)	4 (62)	2.990 75.95	2.290 58.17	.470 11.94	2.730 69.34	745014-1
5 (50)	5 (78)	2.945 74.8	2.195 55.75	.585 14.86	2.635 66.93	745015-1

Female Screwlocks and Kits

Materials and Finish:
Standard Steel Parts—Cold rolled steel per QQ-S-637, zinc plated per QQ-Z-325, Type II, Class 3 (yellow chromate)
Non-Magnetic parts—Passivated stainless steel



Dimension	Steel Kit Part Numbers			Non-Magnetic Parts	
	A	B	Long Kit	Standard Individual	Long Special
.560 14.22	.188 4.78	207719-1	—	—	—
.312 7.92	.188 4.78	—	205817-8 M24308/26-1	205817-9	212447-1
.500 12.7	.223 5.66	—	—	—	212452-1

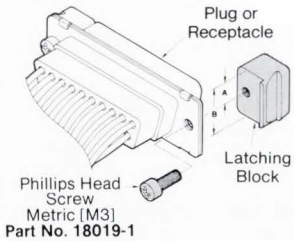
Note: Kits include two complete assemblies, illustrated above.

Dimensioning:

All dimensions in inches and millimetres. Values in brackets are metric equivalents. Charts contain dimensions in inches over millimetres.

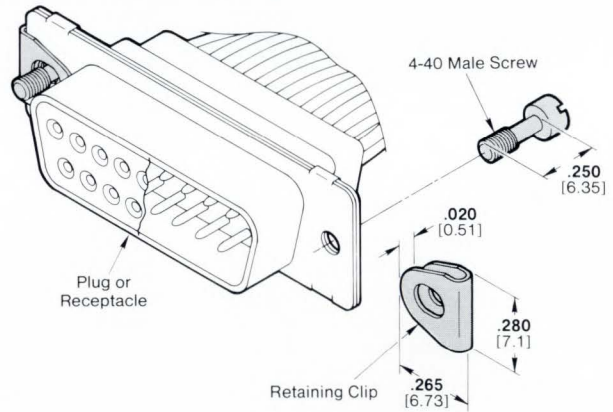
Latching Blocks

Materials
Blocks—Aluminum
Screws—Zinc-plated steel



Shell Size	Dimensions		Kit Part Number
	A	B	
1-4	.200 5.08	.400 10.16	745007-1
5	.265 6.73	.530 13.46	745007-2

Male Screw/ Retainer Kits



Standard Kits

Material and Finish
Screw—Steel, zinc plated per QQ-Z-325, Type II, Class 3 (yellow chromate)
Retaining Clip—Steel, .012 [0.3] thick, aluminum coated

Kit Part Numbers
AMP Number 205980-1 (two assemblies per package)
Military Number M24308/25-6
AMP Number 205980-3 (bulk packed)*

*Each part is individually bulk packed for multiple kit orders.

Kits for Non-Magnetic Applications

Materials—All parts stainless steel, passivated per QQ-P-35B
Part Number **211883-5**

Notes: 1. Each kit includes two screws and two retainers.
2. Retainer is assembled onto connector flange with threaded hole toward the wire side of the connector.

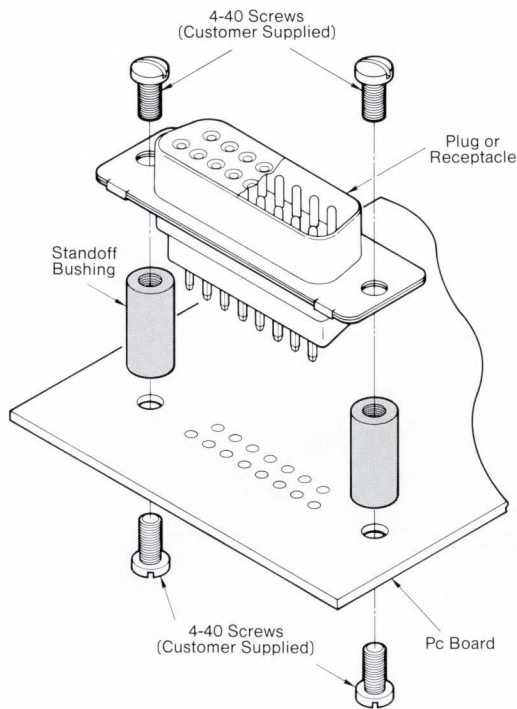
Accessories

Standoff Bushings (for Connectors with Straight Posted Contacts, Pc Board Mounted)

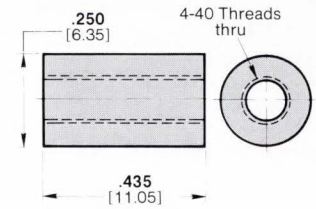
Material and Finish:
Aluminum—Zinc plated per
QQ-Z-325, Type II, Class 3 (Clear)

Kit Part Numbers
205933-2 (one assembly
per package)
205933-3 (two assemblies per
package)
205933-4 (bulk packed)*

*Parts are individually bulk
packed for multiple kit orders.



Dimensioning:
All dimensions in inches and millimetres.
Values in brackets are metric equivalents.

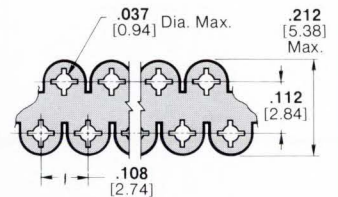
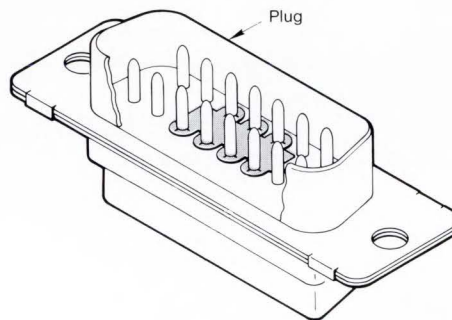


Note: Standoff Bushings are used with a plug or receptacle of pc board mounted connectors.

Commoning Strip (for Size 20 DM and 20 DF Pin Contacts)

Material and Finish:
Brass per Mil-C-50, .004 [0.1]
thick; tin plated per Mil-T-10727

Part Number 206918-1
(continuous strip)

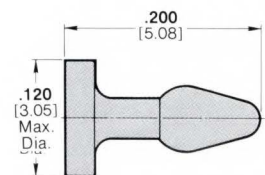
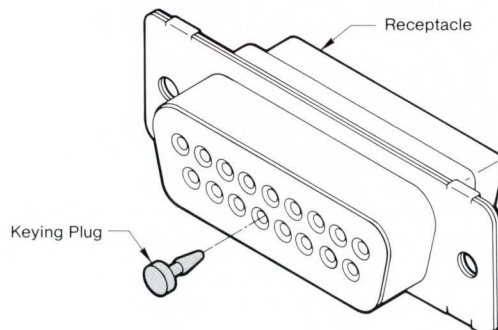


Notes: 1. Commoning Strips can be used on any Series 109 plug with pin contacts.
2. Use punching tool to remove desired pin locations on commoning strip. Seal strip over pins in plug with mating receptacle.
3. For higher volume production AMP has available punching dies which can be used in an arbor press. Consult AMP Incorporated with your specific requirements.

Keying Plug (for Size 20 DM and 20 DF Socket Contacts)

Material—Natural Nylon

Part Number 206509-1



Note: 1. Keying plugs are used only in socket cavities of Series 109 receptacles. Keying plug is installed taper-end first into front of receptacle.

Accessories

Dimensioning:

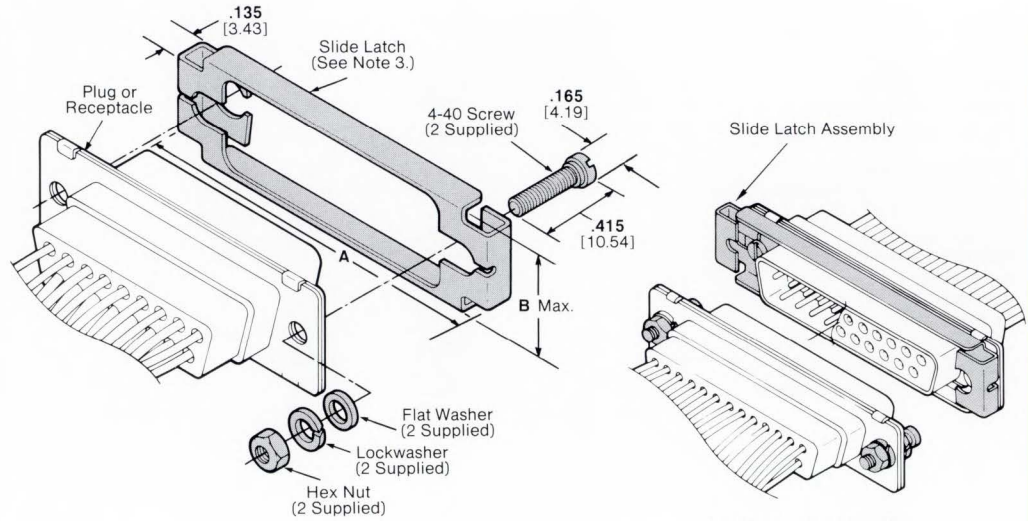
All dimensions in inches and millimetres. Values in brackets are metric equivalents. Chart contains dimensions in inches over millimetres.

Slide Latch Assemblies (One Piece)

Material and Finish:

4-40 Screws, Washers and Hex Nuts—Steel; zinc plated (yellow chromate)

Slide Latch—Stainless steel



Typical Application

Shell Size (No. of Contact Pos.)	Dimensions		Slide Latch Assembly Kit Number	
	A	B	Individual	Bulk Packed*
1 (9)	1.397 35.48	.490 12.45	745404-1	745404-2
2 (15)	1.752 43.82	.490 12.45	745405-1	745405-2
3 (25)	2.215 56.26	.490 12.45	745406-1	745406-2
4 (37)	2.913 73.99	.490 12.45	745407-1	745407-2
5 (50)	2.819 71.6	.596 15.14	745408-1	745408-2

*Each part is individually bulk packed for multiple kit orders.

Notes: 1. All parts are packaged unassembled.
2. Each kit includes a one-piece slide latch and two 4-40 screws, flat washers, lock washers and hex nuts. One-piece slide latches with 4-40 screws are also furnished as part of cable clamp assembly kits.
3. One-piece slide latch assemblies for shell sizes 1, 4 and 5 (shown above) can not be used with cable clamp bodies that extend beyond the front flange of the connector. However, slide latch assemblies for shell sizes 2 and 3 (not shown) have a universal configuration that accommodates these cable clamp bodies. For details, consult AMP Incorporated.

Locking Post Assemblies

Material and Finish:

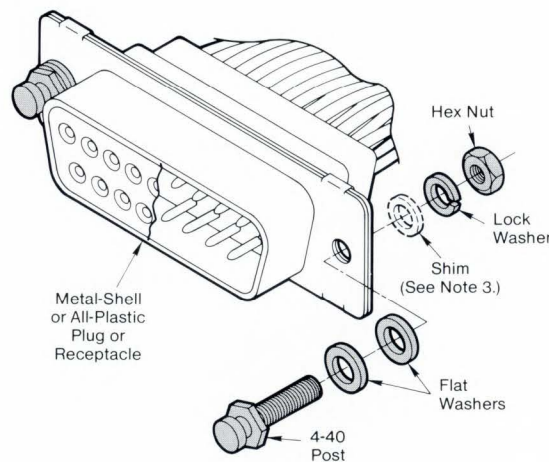
All Parts—Cold rolled steel, zinc plated (yellow chromate)

Kit Numbers:

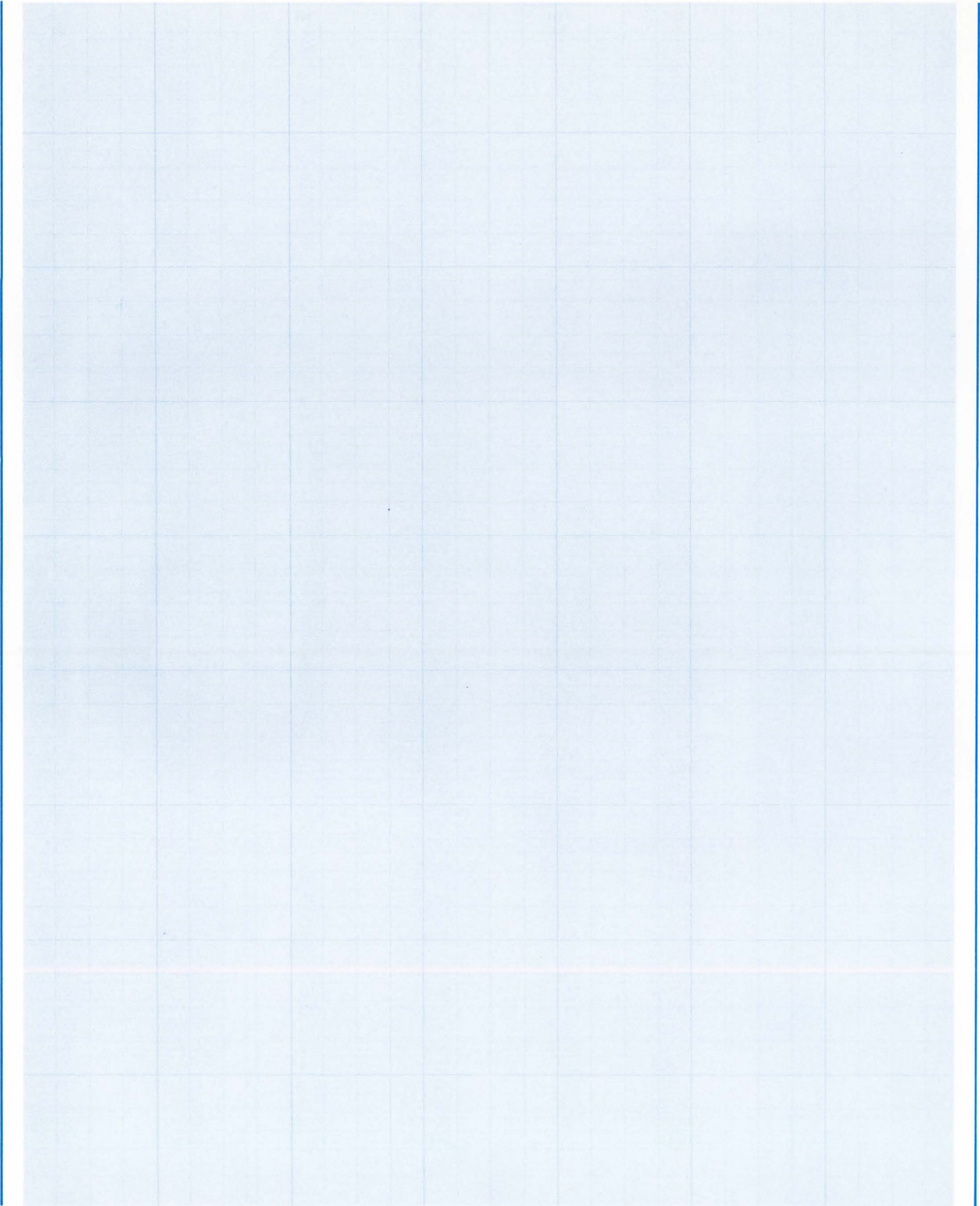
206514-1 (two assemblies per package)

206514-3 (bulk packed)*

*Each part is individually bulk packed for multiple kit orders.



Notes: 1. All parts are packaged unassembled.
2. Locking post assemblies mate with one and two-piece slide latch assemblies.
3. For front panel mounting, use a shim between the connector flange and the panel to prevent bowing of the flange.



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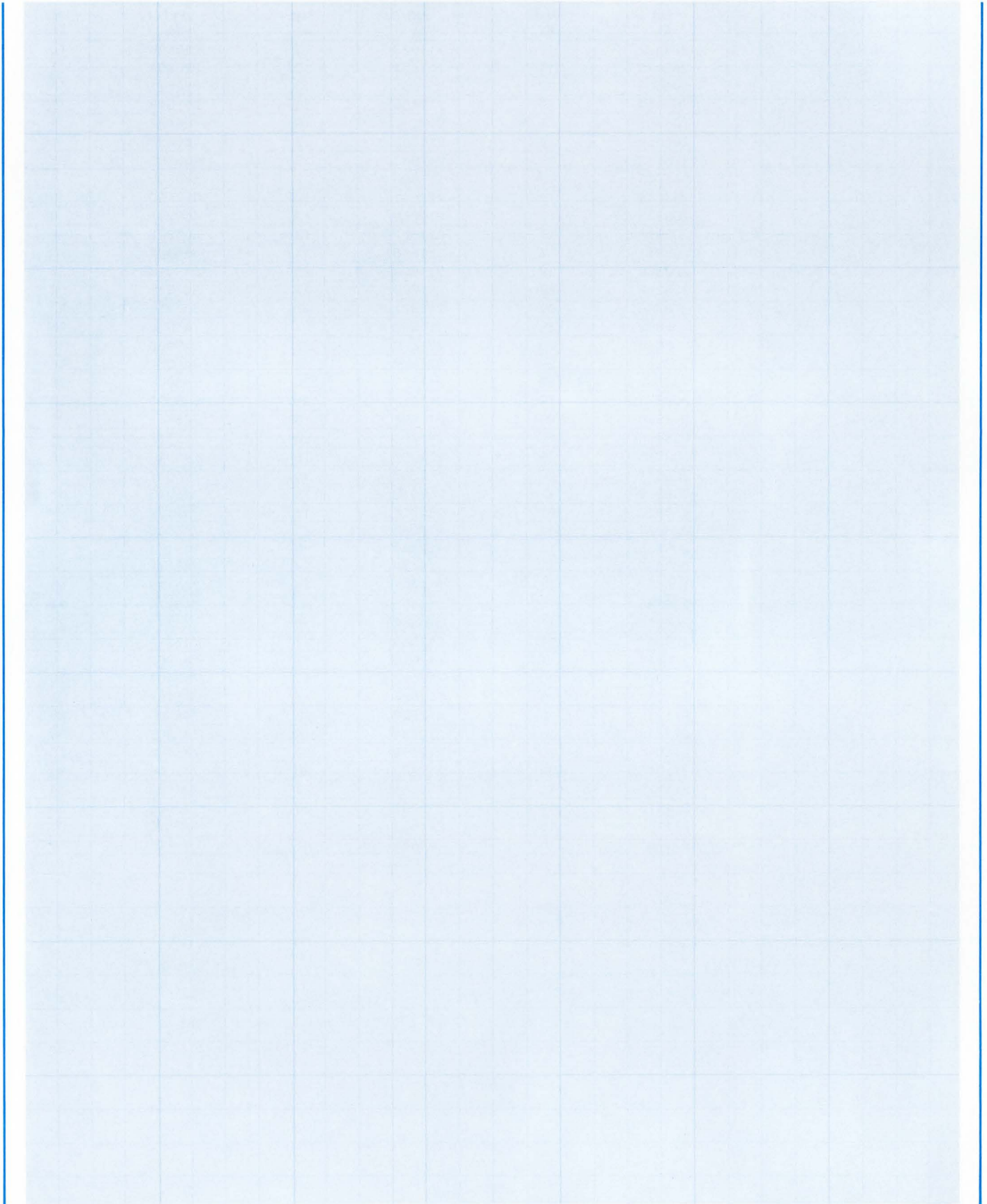
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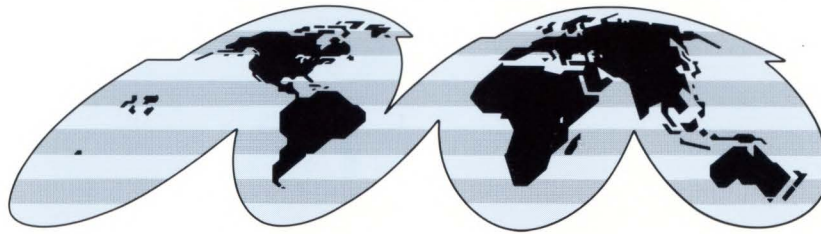
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