10

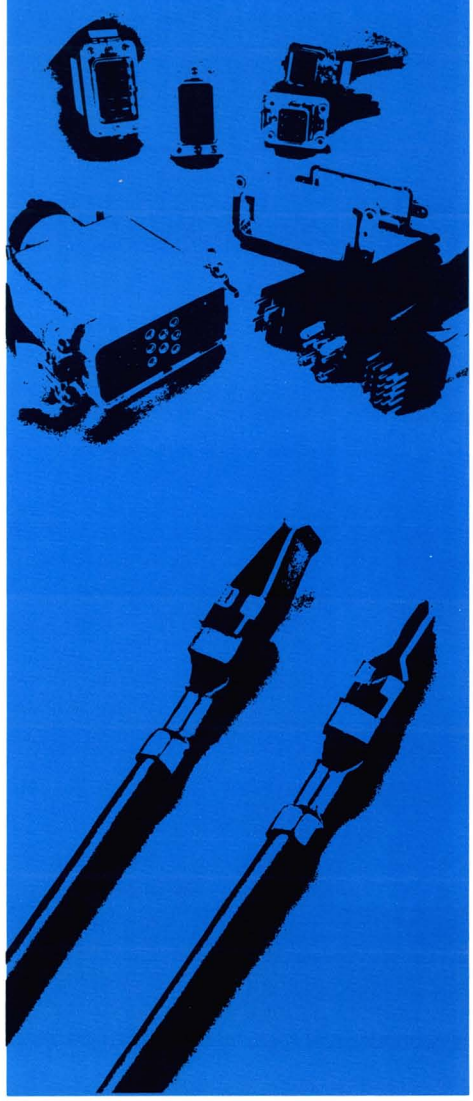
MODULAR CONNECTORS

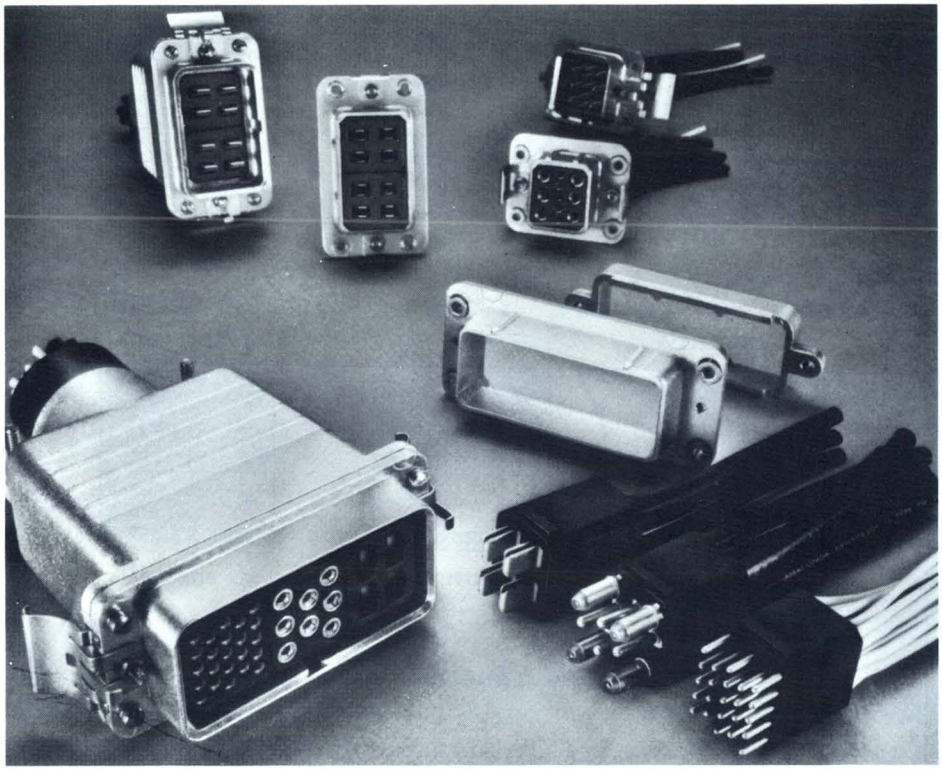
AMP's concept in modular connector design permits unlimited combinations of signal, power and coaxial circuits in one basic connector style, eliminating the need for separate connectors for each application.

Connector assemblies for 1, 2 or 3 multiple-position modules 10-3
"G" Series Pin and Socket Connectors

Zero Insertion Force connectors for crimp snap-in, insulation displation and posted contact modules.... 10-15
CR Series Connectors

Cross-reference..... 10-26





AMP "G" Series Connectors (A Multi-Mate Product)

The need for a practical means of mixing various types of electrical circuits in one connector configuration has created a different concept in connector design. AMP's concept goes beyond practicality to include modular versatility. The "G" Series connector features connector assemblies which will accept 1, 2 or 3 module inserts. This arrangement permits multiple combinations of signal, power and coaxial circuits in one basic connector configuration. In addition, the module inserts make it possible to change your circuit connections whenever your circuity requirements are changed.

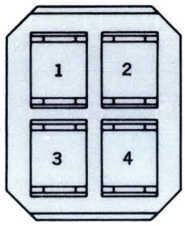
Basically each connector in the "G" Series line consists of two parts; the module insert and the shell subassembly. The shell subassembly consists of the shell and retainer plate which provides easy drop-in assembly of modules. The shell and retainer are made of cast aluminum, are available with or without floating bushings and are polarized with keyways in the receptacle and matching keys on the plug. The module inserts are made of diallyl phthalate or general purpose phenolic. Each connector assembly can be provided with a die cast aluminum shield with cable clamps. In addition to the shields, a strain relief clamp is available for the 3-module connector assembly.

FEATURES

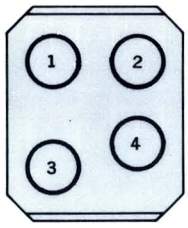
AMP "G" Series modules are now available in six basic configurations:

- 4-position module — accepts Type XII power contacts only
- 4-position module — accepts miniature COAXICON contacts or Type I (Size 12) power contacts
- 8-position module — accepts 8 miniature COAXICON contacts or 4 miniature COAXICON and 4 Type I (Size 12) power contacts
- 11-position module — accepts 6 miniature COAXICON contacts or 6 Type I (Size 12) power contacts plus 5 Type II (Size 16, long), III(+) (Size 16) or VI (Size 16) pin and socket contacts or 5 subminiature COAXICON contacts
- 14 position module — accepts 2 Type XII power contacts and 12 Type II (Size 16, long), III(+) (Size 16) or VI (Size 16) pin and socket contacts or 12 subminiature COAXICON contacts
- 23-position module — accepts 23 Type II (Size 16, long), III(+) (Size 16) or VI (Size 16) pin and socket contacts or 23 subminiature COAXICON contacts

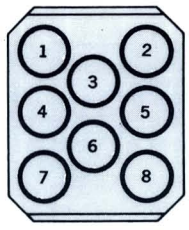
Recognized under the component program of Underwriters' Laboratories, Inc.



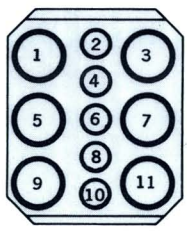
4 POSITION
(Type XII)



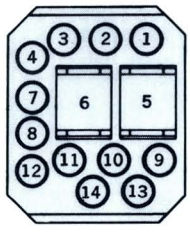
4 POSITION



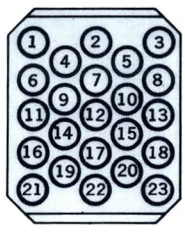
8 POSITION



11 POSITION



14 POSITION



23 POSITION

Mating face of Pin Module shown. Socket Module is mirror image.

No. of Positions	Block Will Accommodate These Contact Variations	Phenolic		Diallyl Phthalate	
		Pin Module	Socket Module	Pin Module	Socket Module
4	4 Type XII Contacts	202624-2	202625-2	—	—
4	4 Miniature COAXICON Contacts or Type I (Size 12) Contacts	50215-1	50216-1	50215	50216
8	8 Miniature COAXICON Contacts or 4 Miniature COAXICON Contacts and 4 Type I (Size 12) Contacts	50213	50214	50213-1	50214-1
11	6 Miniature COAXICON Contacts or Type I (Size 12) Contacts and 5 Type II (Size 16), Type III(+) (Size 16), Type VI (Size 16) or Subminiature COAXICON Contacts	202648-4	202649-4	202648-2	202649-2
14	2 Type XII Contacts and 12 Type II (Size 16), Type III(+) (Size 16), Type VI (Size 16) or Subminiature COAXICON Contacts	202759-2	202760-2	202759-4	202760-4
23	23 Type II (Size 16), Type III(+) (Size 16), Type VI (Size 16) or Subminiature COAXICON Contacts	202650-4	202651-4	202650-2	202651-2

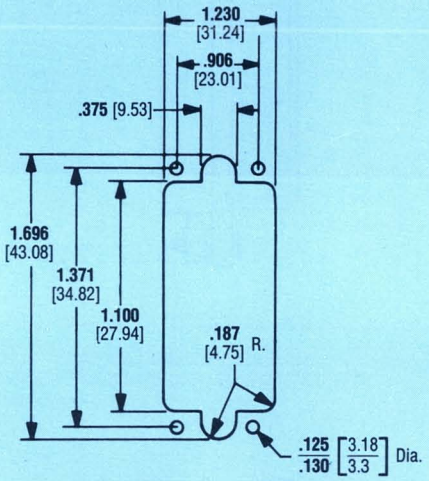
Note: Due to the variety of multiple combinations available within this connector series, caution must be exercised to ensure correct circuit orientation where symmetrical arrangements are selected.

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

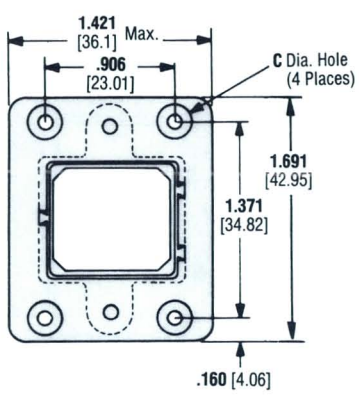
Shell Specifications

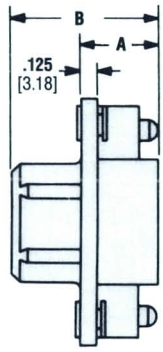
Dimensioning:
1. **All dimensions in inches and millimetres. Values in brackets are metric equivalents.**
2. **Chart contains dimensions in inches over millimetres.**

One Module Shell

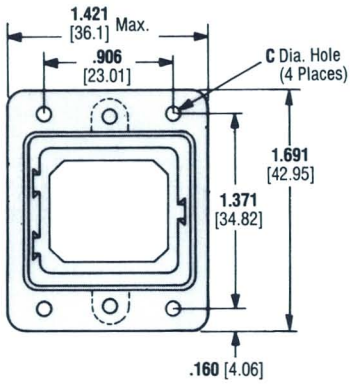


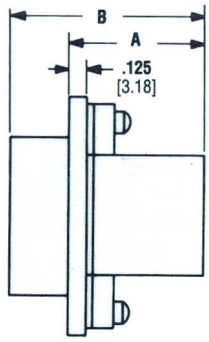
Recommended Panel Cutout





Plug





Receptacle

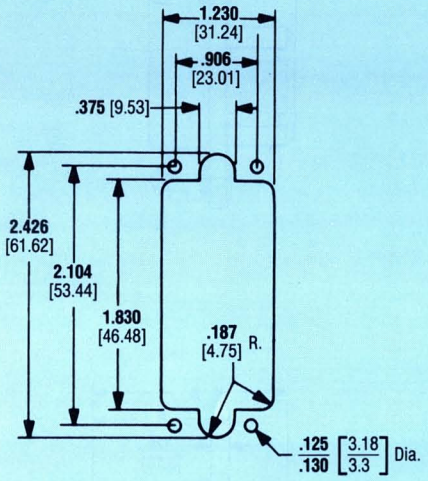
Shell Type	For Pin Module				For Socket Module			
	Dimensions			Shell Part No.	Dimensions			Shell Part No.
	A	B	C		A	B	C	
Receptacle	**1.001** 25.43	**1.509** 38.33	**.120** 3.05	202279-3	**.595** 15.11	**1.103** 28.02	**.120** 3.05	202279-4
Plug (with Floating Bushings)	**.886** 22.5	**1.416** 35.97	**.118** 3	202275-4	**.480** 12.19	**1.010** 25.65	**.118** 3	202275-3
Plug (without Floating Bushings)	**.886** 22.5	**1.416** 35.97	**.125** 3.18	202786-2	**.480** 12.19	**1.010** 25.65	**.125** 3.18	202786-1

Note: Completely assembled connectors are available upon request. Consult AMP Incorporated, Harrisburg, Pa. for part nos. of specific arrangements desired.

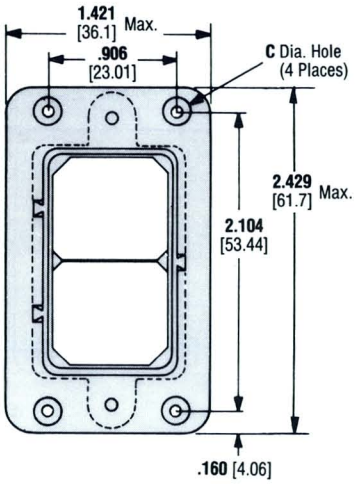
Shell Specifications (Cont'd)

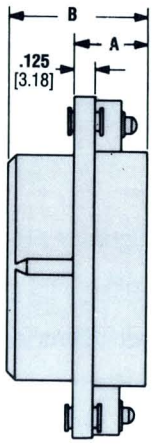
Dimensioning:
1. All dimensions in inches and millimetres. Values in brackets are metric equivalents.
2. Chart contains dimensions in inches over millimetres.

Two Module Shell

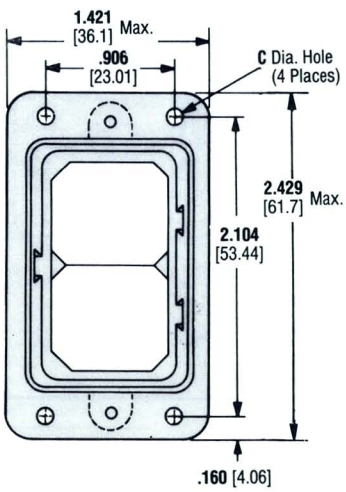


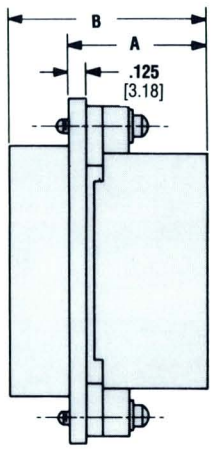
Recommended Panel Cutout





Plug





Receptacle

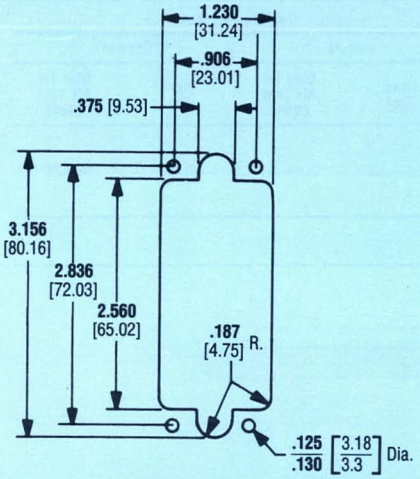
Shell Type	For Pin Modules				For Socket Modules			
	Dimensions			Shell Part No.	Dimensions			Shell Part No.
	A	B	C		A	B	C	
Receptacle	1.001 25.43	1.509 38.33	.120 3.05	202681-2	.595 15.11	1.103 28.02	.120 3.05	202681-3
Plug (with Floating Bushings)	.886 22.5	1.416 35.97	.118 3	202680-3	.480 12.19	1.010 25.65	.118 3	202680-2
Plug (without Floating Bushings)	.886 22.5	1.416 35.97	.125 3.18	202789-2	.480 12.19	1.010 25.65	.125 3.18	202789-1

Note: Completely assembled connectors are available upon request. Consult AMP Incorporated, Harrisburg, Pa. for part nos. of specific arrangements desired.

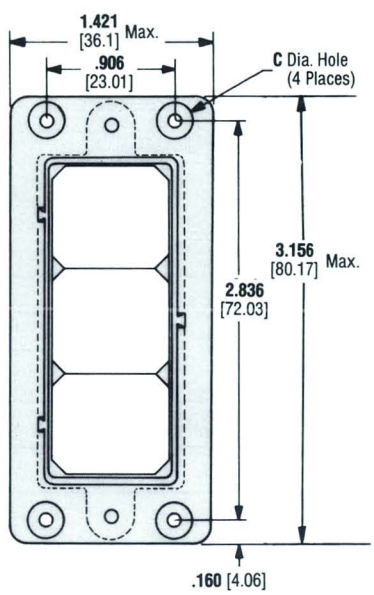
Shell
Specifications (Cont'd)

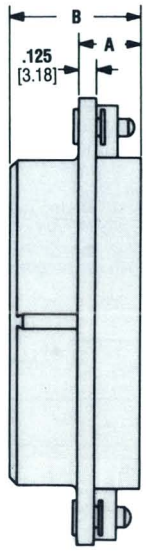
Dimensioning:
1. **All dimensions in inches and millimetres. Values in brackets are metric equivalents.**
2. **Chart contains dimensions in inches over millimetres.**

Three Module Shell

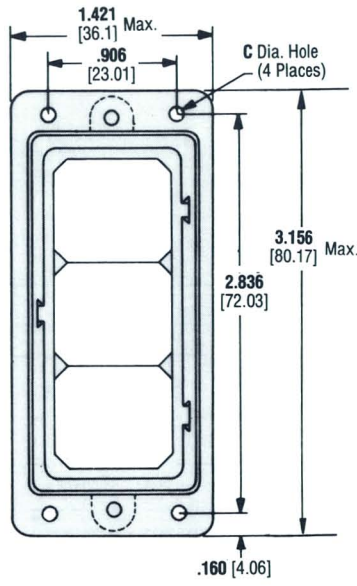


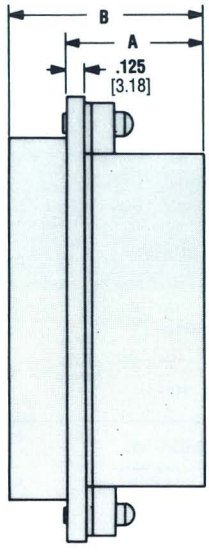
Recommended Panel Cutout





Plug





Receptacle

Shell Type	For Pin Modules				For Socket Modules			
	Dimensions			Shell Part No.	Dimensions			Shell Part No.
	A	B	C		A	B	C	
Receptacle	1.001 25.43	1.509 38.33	.120 3.05	202287-3	.595 15.11	1.103 28.02	.120 3.05	202287-4
Plug (with Floating Bushings)	.886 22.5	1.416 35.97	.118 3	202283-4	.480 12.19	1.010 25.65	.118 3	202283-3
Plug (without Floating Bushings)	.886 22.5	1.416 35.97	.125 3.18	202795-2	.480 12.19	1.010 25.65	.125 3.18	202795-1

Note: Completely assembled connectors are available upon request. Consult AMP Incorporated, Harrisburg, Pa. for part nos. of specific arrangements desired.

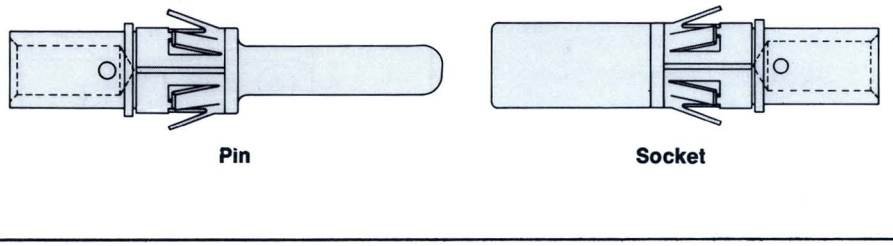
Contact Specifications

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

Type I Contacts

Contact size — 12
Pin diameter — .094″ [2.39 mm]
Test current — 23 amperes*
Finish — .000030″ [0.0008 mm] gold over .000030″ [0.0008 mm] nickel
Spring material — stainless steel

*Refer to contact current carrying capability information (page 11).



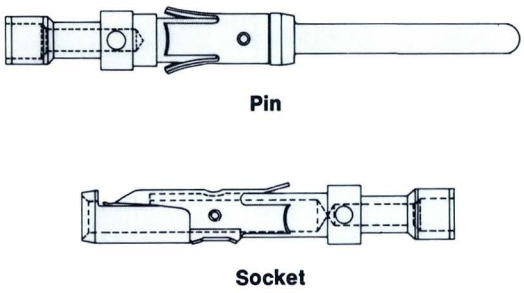
Wire Size Range		Wire Strip Length	Ins. Dia. Range	Ferrule Part No.	Loose Piece Contact Part Nos.		Tooling Part Nos.			
							Ferrule		Contact	
AWG	[mm²]				Pin	Socket	Hand Tool	Dies for Air Tool 69365	Hand Tool	Dies for Air Tool 69365
18-16	0.8-1.4	**.234** 5.95	No Ins. Support	None Required	202421-1	202418-1	—	—	90121	90122
14-12	2-3	**.234** 5.95	No Ins. Support	206308	202422-1	202417-1				

Extraction Tool **Part No. — 305183-8**

Type II Contacts

Contact size —16
Pin diameter — .062″ [1.57 mm]
Test current — 13 amperes*
Finish — .000030″ [0.0008 mm] gold over .000030″ [0.0008 mm] nickel
Spring material — stainless steel

*Refer to contact current carrying capability information (page 11).



Wire Size Range		Wire Strip Length	Ins. Dia. Range[1]	Contact Part Nos.				Color Code	Tooling Part Nos.			
				Tape Mounted[2,3]		Loose Piece			Tape Mounted		Loose Piece	
AWG	[mm²]			Pin	Socket	Pin	Socket		Dies for AMP-TAPEMATIC Machine (69118-1)	Dies for AMP-TAPETRONIC Machine (69875)	Hand Tool	Dies for Air Tool 69365
32-30	0.03-0.05	.203 5.16	**.030-.048** 0.76-1.22	—	—	201555-1	201554-1	White/ Red	90103	90249-2	45099	90230-1
28-24	0.08-0.2		**.035-.055** 0.89-1.4	201611-4	201613-4	201611-1	201613-1	Red/ Red				
			.048-.065 1.22-1.65	201334-3	201332-3	201334-1	201332-1	Red/ Red				
			.095-.110 2.41-2.79	—	—	202410-1	202411-1	Green	—		90093	90111
24-20	0.2-0.6		**.040-.062** 1.02-1.57	201578-4	201580-4	201578-1	201580-1	Yellow/ Red	90103		45099	90230-1
			.055-.085 1.4-2.16	201330-6	201328-9	201330-1	201328-1	Yellow/ Red				
22-18	0.3-0.9	.250 6.35	No Ins. Support	—	—	—	201751-1	Green/ Blue	90080-2	90250-1	45098	90231-2
Two 18's	Two 0.8-0.9		No Ins. Support	202725-2	202726-2	202725-1	202726-1	Blue				
18-16	0.8-1.4		**.080-.105** 2.03-2.67	202507-2	202508-2	202507-1	202508-1	—	90207-1		90136-1	—
			No Ins. Support	200336-6	200333-8	200336-1	200333-1	Blue/ Blue	90080-2			90231-2
			No Ins. Support	—	—	204219-1	—	—	90080	—	45098	90231-1
14	2		No Ins. Support	201570-2	201568-3	201570-1	201568-1	Violet/ Blue	90080-2	90250-1		90231-2

[1]Overall insulation crimp diameter, including crimp barrel, must not exceed .125″ [3.18 mm].
[2]For AMP-TAPEMATIC Machine, order contacts by tape number plus packaging code "1M BOX" (1000 parts to a box).
[3]For AMP-TAPETRONIC Machine, order contacts by tape number plus packaging code "1M REEL" (1000 parts to a reel) or "5M REEL" (5000 parts to a reel).
Insertion Tool **Part No. — 200893-2** (for insulation diameters .070″ [1.78 mm] or less). Extraction Tool **Part No. — 305183**

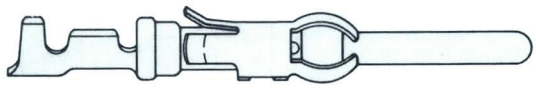
Contact Specifications (Cont'd)

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

Type III(+) Contacts

Contact size — 16
Pin diameter — .062" [1.57 mm]
Test current — 13 amperes*
Spring material — stainless steel

*Refer to contact current carrying capability information (page 11).



Pin

Socket

Wire Size Range[1] AWG	Wire Size Range[1] [mm²]	Ins. Dia. Range	Contact Finish	Contact Part Nos. (reeled for AMP-O-MATIC Machine) Pin	Contact Part Nos. (reeled for AMP-O-MATIC Machine) Socket	Contact Part Nos. (reeled for AMP Min. Applicator) Pin	Contact Part Nos. (reeled for AMP Min. Applicator) Socket	Loose Piece Contact Part Nos. Pin	Loose Piece Contact Part Nos. Socket	Hand Tool Part Nos.
30-26	0.05-0.15	.070-.100 1.78-2.54	Gold/Nickel[2]	66477-1	66479-1	—	—	—	66483-1	90277-1 or 90282-1
		.040-.060 1.02-1.52	Gold/Nickel[2]	66425-1	66424-1	66425-5	66424-5	66429-1	66428-1	90277-1 or 90066
			Tin	66425-2	66424-2	66425-6	66424-6	66429-2	66428-2	
			Gold/Nickel[3]	66425-3	66424-3	66425-7	66424-7	66429-3	66428-3	
			Sel. Gold/ Nickel[4]	66425-4	66424-4	66425-8	66424-8	66429-4	66428-4	
		.014-.030 0.36-0.76	Gold/Nickel[2]	66393-1	66394-1	66393-5	66394-5	66406-1	66405-1	90277-1 or 90225-2
			Tin	66393-2	66394-2	66393-6	66394-6	66406-2	66405-2	
			Gold/Nickel[3]	66393-3	66394-3	66393-7	66394-7	66406-3	66405-3	
			Sel. Gold/ Nickel[4]	66393-4	66394-4	66393-8	66394-8	66406-4	66405-4	
26-24	0.12-0.2	.035-.055 0.89-1.4	Gold/Nickel[2]	66106-1	66108-1	66106-5	66108-5	66107-1	66109-1	90277-1 or 90066
			Tin	66106-2	66108-2	66106-6	66108-6	66107-2	66109-2	
			Gold/Nickel[3]	66106-3	66108-3	66106-7	66108-7	66107-3	66109-3	
			Sel. Gold/ Nickel[4]	66106-4	66108-4	66106-8	66108-8	66107-4	66109-4	
24-20	0.2-0.6	.040-.080 1.02-2.03	Gold/Nickel[2]	66102-1	66104-1	66102-6	66104-6	66103-1	66105-1	90277-1, 90066 or 90067
			Tin	66102-2	66104-2	66102-7	66104-7	66103-2	66105-2	
			Gold/Nickel[3]	66102-3	66104-3	66102-8	66104-8	66103-3	66105-3	
			Sel. Gold/ Nickel[4]	66102-4	66104-4	66102-9	66104-9	66103-4	66105-4	
		.080-.100 2.03-2.54	Tin	66332-1	66331-1	66332-5	66331-5	66400-1	66399-1	90277-1, 90067-2 or 90225-2
			Gold/Nickel[2]	66332-2	66331-2	66332-6	66331-6	66400-2	66399-2	
			Gold/Nickel[3]	66332-3	66331-3	66332-7	66331-7	66400-3	66399-3	
			Sel. Gold/ Nickel[4]	66332-4	66331-4	66332-8	66331-8	66400-4	66399-4	
18-16	0.8-1.4	.080-.100 2.03-2.54	Gold/Nickel[2]	66098-1	66100-1	66098-6	66100-6	66099-1	66101-1	90277-1, 90067, 90208-1 or 90067-2
			Tin	66098-2	66100-2	66098-7	66100-7	66099-2	66101-2	
			Gold/Nickel[3]	66098-3	66100-3	66098-8	66100-8	66099-3	66101-3	
			Sel. Gold/ Nickel[4]	66098-4	66100-4	66098-9	66100-9	66099-4	66101-4	
14	2	.080-.100 2.03-2.54	Gold/Nickel[2]	66359-1	66358-1	66359-5	66358-5	66361-1	66360-1	90208-1
			Tin	66359-2	66358-2	66359-6	66358-6	66361-2	66360-2	
			Gold/Nickel[3]	66359-3	66358-3	66359-9	66358-9	66361-3	66360-3	
			Sel. Gold/ Nickel[4]	66359-4	66358-4	1-66359-0	1-66358-0	66361-4	66360-4	

[1]Wire strip length — 156" [3.96 mm] (all wire sizes).
[2].000030" [0.0008 mm] gold over .000050" [0.0013 mm] nickel.
[3].000015" [0.00038 mm] gold over .000050" [0.0013 mm] nickel.
[4]Gold flash over 000050" [0.0013 mm] nickel on entire contact, with .000030" [0.0008 mm] selective gold plating on contact area.
Insertion Tool **Part No. — 91002-1** (for insulation diameters .070" [1.78 mm] or less). Extraction Tool **Part No. — 305183**

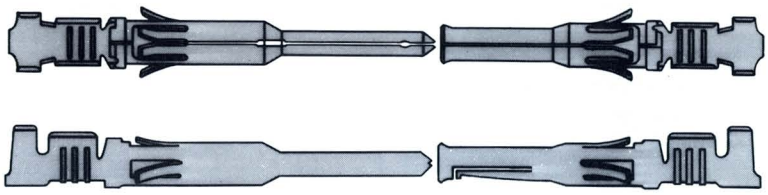
Contact Specifications (Cont'd)

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

Type VI Contacts

Contact size — 16
Pin diameter — .062″ [1.57 mm]
Test current — 13 amperes*
Material — copper alloy

*Refer to contact current carrying capability information (page 11).



Pin **Socket**

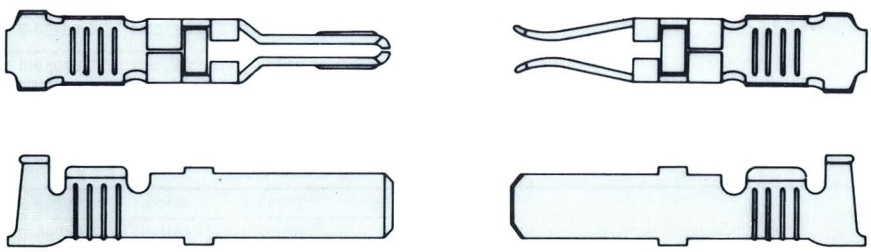
Wire Size Range[1] AWG	Wire Size Range[1] [mm²]	Ins. Dia. Range	Contact Finish	Contact Part Nos. (reeled for AMP-O-MATIC Machine) Pin	Contact Part Nos. (reeled for AMP-O-MATIC Machine) Socket	Contact Part Nos. (reeled for AMP Min. Applicator) Pin	Contact Part Nos. (reeled for AMP Min. Applicator) Socket	Loose Piece Contact Part Nos. Pin	Loose Piece Contact Part Nos. Socket	Hand Tool Part Nos.
28-26	0.08-0.15	.035-.055 0.89-1.4	Tin	66585-1	66586-1	66585-2	66586-2	66595-1	66596-1	90277-1
			Sel. Gold/ Nickel[2]	66585-3	66586-3	66585-4	66586-4	66595-2	66596-2	
24-20	0.2-0.6	.040-.080 1.02-2.03	Tin	66583-1	66584-1	66583-2	66584-2	66593-1	66594-1	90277-1
			Sel. Gold/ Nickel[2]	66583-3	66584-3	66583-4	66584-4	66593-2	66594-2	
22-18	0.3-0.9	.055-.110 1.4-2.79	Tin	66581-1	66582-1	66581-2	66582-2	66591-1	66592-1	90277-1
			Sel. Gold/ Nickel[2]	66581-3	66582-3	66581-4	66582-4	66591-2	66592-2	
18-16	0.8-1.4	.080-.100 2.03-2.54	Tin	66579-1	66580-1	66579-2	66580-2	66589-1	66590-1	90277-1
			Sel. Gold/ Nickel[2]	66579-3	66580-3	66579-4	66580-4	66589-2	66590-2	
14	2	.080-.135 2.03-3.43	Tin	66577-1	66578-1	66577-2	66578-2	66587-1	66588-1	90310-1
			Sel. Gold/ Nickel[2]	66577-3	66578-3	66577-4	66578-4	66587-2	66588-2	

[1]Wire strip length — .156″ [3.96 mm] (all wire sizes).
[2]Gold flash over .000050″ [0.0013 mm] nickel on entire contact, with .000030″ [0.0008 mm] selective gold plating on contact area.
Insertion Tool **Part No. — 91002-1** (for insulation diameters. 070″ [1.78 mm] or less). Extraction Tool **Part No. — 305183**

Type XII Contacts

Test current — 35 amperes*
Material — copper
Finish — tin or gold over nickel

*Refer to contact current carrying capability information (page 11).



Male **Female**

Wire Size Range[1] AWG	Wire Size Range[1] [mm²]	Ins. Dia. Range	Contact Finish	Strip Form Contact Part Nos.[4] Male	Strip Form Contact Part Nos.[4] Female	Loose Piece Contact Part Nos. Male	Loose Piece Contact Part Nos. Female	Die Insert Nos. for Hand Tool 69710-1 or Pneumatic Tool 69365
16 and 14-12	1.25-1.4 and 2-3	.135-.160 3.43-4.06	Tin	66255-1	66252-1	66261-1	66258-1	90145-1** and 90145-2**
			Gold/Nickel[2]	66255-2	66252-2	66261-2	66258-2	
			Gold/Nickel[3]	66255-3	66252-3	66261-3	66258-3	
10-8	5-8	.190-.220 4.83-5.59	Tin	66253-1	66251-1	66259-1	66257-1	90140-1
			Gold/Nickel[2]	66253-2	66251-2	66259-2	66257-2	
			Gold/Nickel[3]	66253-3	66251-3	66259-3	66257-3	

Die Insert **No. 90145-1 is for crimping 14-12 AWG [2-3 mm²] wire, and Die Insert **No. 90145-2** is for crimping 16 AWG [1.25-1.4 mm²] wire.
[1]Wire strip length — .281″ [7.14 mm]
[2].000030″ [0.0008 mm] gold over .000050″ [0.0013 mm] nickel
[3].000015″ [0.00038 mm] gold over .000050″ [0.0013 mm] nickel
[4]Contacts reeled for machines using the AMP Standard Applicator
Extraction Tool **Part No. — 91019-3**

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

Subminiature COAXICON Contacts

Multi-Mate Pin **Ferrule**

Ferrule **Socket**

Material — Center contacts: beryllium copper per QQ-C-530
— Inner dielectric: polypropylene
— Retention springs: passivated stainless steel
— Ferrule: copper
Finish — Center contacts, outer shells: .000030″ [0.0008 mm] gold over .000050″ [0.0013 mm] nickel; gold plating per MIL-G-45204, nickel plating per QQ-N-290
— Ferrule: tin plated per MIL-T-10727

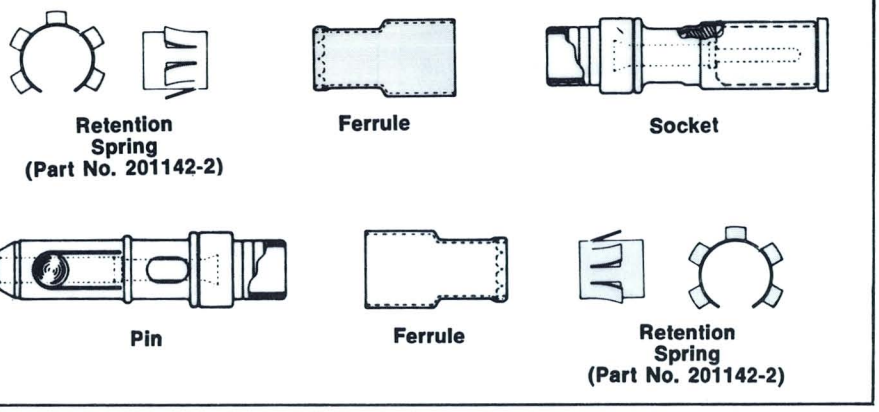
Cable Size		Strip Form Contact Part Nos.		Loose Piece Contact Part Nos.		Ferrule Part Nos.	Hand Tool Part Nos.	Die Insert Nos. for Hand Tool 69710-1, or Pneumatic Tool 69365† and 69365-2
RG/U or AWG	[mm²]	Pin	Socket	Pin	Socket			
RG/U-178, 196	—	226533-2	51564-2*	226537-2	51565-2*	1-332057-0	69656-2, Mod. E	69690-2
RG/U-196 Double Braid	—	226533-2	51564-2*	226537-2	51565-2*	225088-1	69656-9, Mod. A	—
RG/U-174, 188, 316	—	226533-1	51564-1	226537-1	51565-1	1-332056-0	69656, Mod. E	69690, Mod. D
RG/U-174 Double Braid	—	226533-1	51564-1	226537-1	51565-1	225088-3	69656-7, Mod. E	—
RG/U-179, 187	—	226533-1	51564-1	226537-1	51565-1	1-332056-0	69656-1, Mod. E	69690-1, Mod. D
RG/U-187 Double Braid	—	226533-1	51564-1	226537-1	51565-1	225088-1	69656-8, Mod. E	—
RG/U-161	—	226533-1	51564-1	226537-1	51565-1	1-332056-0	69656-5, Mod. D	—
26 AWG Shielded, .075 [1.91] Max. O.D.	0.12-0.15	226533-1	51564-1	226537-1	51565-1	1-332057-0	69656-3, Mod. E	69690, Mod. D
26 AWG Twisted Pair, Solid or Stranded (7 str.), .0063 [0.16] Dia.	0.12-0.15	—	—	226537-3	51565-3	1-332057-0	69656-3, Mod. E	69690, Mod. D
28 AWG Twisted Pair, Solid	0.08-0.09	—	—	226537-3	51565-3	1-332057-0	69656, Mod. E	69690, Mod. D
28 AWG Twisted Pair, Stranded (7 str.), .005 [0.13] Dia.	0.08-0.09	—	—	226537-3	51565-3	1-332057-0	69656-1, Mod. E or 69656-2, Mod. E	69690-1, Mod. D or 69690-2
30 AWG Twisted Pair, Solid	0.05	—	—	226537-3	51565-3	1-332057-0	69656-2, Mod. E	69690-2

*These contacts have insulating liner inside support sleeve.
†This pneumatic tool requires Manual Take-Up Attachment **No. 69689.**

Contact Specifications (Cont'd)

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

Miniature COAXICON Contacts



Selection Chart for Coaxial Cable

Cable Size (RG/U)	Contact Finish	Contact Part Nos. Pin	Contact Part Nos. Socket	Ferrule Part Nos. and Color**	Hand Tool Part Nos.	Die Insert Nos. for Hand Tool 69710, or Pneumatic Tool 69365† and 69365-2	Tool Handle, Die Insert and Plastic Collar Color Code***
71, 71A, 71B	Gold[1]	201097-1*	201098-1*	330016 Red, Blue Stripe	69613	69675	Violet and Yellow
	Gold[2]	201098-3*	201098-3*				
59, 59A, 59B, 62, 62A, 62B, 124, 140, 210	Gold[1]	201097-1*	201098-1*	329006 Violet	45634-3	69675-1	Yellow
	Gold[2]	201097-3*	201098-3*				
55, 55A, 55B, 141, 142, 223	Gold[1]	201145-4	201146-4	330478 Orange, Red Stripe	69248-4	69315-4	Blue and Orange
	Gold[2]	201145-9	201146-9				
58, 58A, 58B, 58C	Gold[1]	201145-4	201146-4	328663 Green	45740-2	69220-2	Blue
	Gold[2]	201145-9	201146-9				
174, 197A, 187, 21-598	Gold[1]	201143-1	201144-1	328666 Orange	45638-2	69227-2	White
	Gold[2]	201143-6	201144-6				
180, 180A, 195, 21-597	Gold[1]	201145-2	201146-2	328664 Yellow	45629-2	69222-2	Red
	Gold[2]	1-201145-0	1-201146-0				
161	Gold[1]	201143-4	201144-4	328666 Orange	69147-2	69230-1	Gray
	Gold[2]	201143-8	201144-8				
178, 178A, 196	Gold[1]	201511-1	201512-1	328667 Red, Orange Stripe	69186-2	69373	Brown
	Gold[2]	201511-3	201512-3				
188	Gold[1]	201143-5	201144-5	328666 Orange	45638-2	69227-2	White
	Gold[2]	201154-7	201144-7				
141A, 142A, 142B	Gold[1]	1-201145-3	1-201146-3	330478 Orange, Red Stripe	69248-4	69315-4	Blue and Orange
122	Gold[1]	201145-1	201146-1	328664 Yellow	45639-2	69222-2	Red
	Gold[2]	1-201145-5	1-201146-5				

Selection Chart for Twisted Pair Leads

Wire Size AWG	Wire Size [mm²]	Ins. Dia., 2 Wires Combined (Max.)	Contact Finish	Contact Part Nos. Pin	Contact Part Nos. Socket	Ferrule Part Nos. and Color**	Hand Tool Part Nos.	Die Insert Nos. for Hand Tool 69710, or Pneumatic Tool 69365† and 69365-2	Tool Handle, Die Insert and Plastic Collar Color Code***
24 or 22	0.2 or 0.3-0.4 Stranded	.115 2.92	Gold[1]	201143-5	201144-5	328666 Orange	45638-3	69672	Gray and White
			Gold[2]	201143-7	201144-7				
24 or 22	0.2 or 0.3-0.4 Solid or Stranded	.160 4.06	Gold[1]	50079-1	50080-1	329029 Red	45639-2	69222-2	Red
			Gold[2]	—	—				
28 or 26	0.08-0.09 or 0.12-0.15 Solid	.180 4.57	Gold[1]	201511-1	201512-1	328667 Red, Orange Stripe	69186-2	69373	Brown
			Gold[2]	201511-3	201512-3				

[1].000030″ [0.0008 mm] gold plated contacts [2].000100″ [0.00254 mm] gold plated contacts

*These contacts are for use with special connectors. Consult AMP Engineering for recommendations. **Ferrule color distinguishes item only.

***Match Plastic Collar and Tool colors for application to cable. Inner Insulator color identifies Wire Barrel of Center Contact.

†This pneumatic tool requires Manual Take-Up Attachment **No. 69689.** Extraction Tool **Part No. — 305183-8**

Note: Wire other than that listed above may be used. Send wire sample and/or specifications to AMP Incorporated for engineering recommendation.

Contact Specifications (Cont'd)

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

Selection Chart for Various Manufacturer's Cables

Center Conductor Wire AWG	Center Conductor Wire [mm²]	Dielectric O.D. (Max.)	Cable O.D.	Braid	Contact Finish	Contact Part Nos. Pin	Contact Part Nos. Socket	Ferrule Part Nos. and Color**	Hand Tool Part Nos.	Die Insert Nos. for Hand Tool 69710, or Pneumatic Tool 69365† and 69365-2	Tool Handle, Die Insert and Plastic Collar Color Code***
Brand Rex T209A 29	0.7-0.8	**.076** 1.93	**.112-.122** 2.84-3.1	Single	Gold[1]	201145-6	201146-6	330587 Orange, Blue Stripe	69360-2	69440	Orange
					Gold[2]	1-201145-6	1-201146-6				
32-26	0.03-0.15										
Raychem 0030D1314		**.129** 3.28	**.122-.137** 2.84-3.48	Single	Gold[1]	201145-6	201146-6	330587 Orange, Blue Stripe	69360-2	69440	Orange
Army Ordinance 11207177					Gold[2]	1-201145-6	1-201146-6				
32-26	0.03-0.15	**.129** 3.28	**.187-.199** 4.75-5.05	Single or Double	Gold[1]	1-201145-1	1-201146-1	328663 Green	45740-2	69220-2	Blue
					Gold[2]	—	—				
22-20	0.3-0.6	**.129** 3.28	**.122-.137** 2.84-3.48	Single	Gold[1]	201145-7	201146-7	330587 Orange, Blue Stripe	69360-2	69440	Orange
					Gold[2]	—	—				

Selection Chart for Shielded Wire

Shielded Wire No.	Contact Finish	Contact Part Nos. Pin	Contact Part Nos. Socket	Ferrule Part Nos. and Color**	Hand Tool Part Nos.	Die Insert Nos. for Hand Tool 69710, or Pneumatic Tool 69365† and 69365-2	Tool Handle, Die Insert and Plastic Collar Color Code***
No. 26, NAS-702, Class A & C No. 26, MIL-W-16878, Types E & EE No. 24, NAS-702, Class A & C No. 24, MIL-W-16878, Types E & EE No. 22, NAS-702, Class C No. 22, MIL-W-16878, Type E No. 22, MIL-C-7078 A, Type I No. 1 Dielectric, .068 [1.73] O.D.	Gold[1]	201143-2	201144-2	328666 Orange	69147-2	69230-1	Gray
	Gold[2]	—	—				
No. 26, NAS-702, Class B No. 24, NAS-702, Class B No. 22, MIL-W-16878, Type EE	Gold[1]	201145-3	201146-3	328665 Black Stripe	45639-2	69222-2	Red
	Gold[2]	—	—				
No. 22, NAS-702, Class A No. 22, MIL-C-7078 A, Type II	Gold[1]	201143-3	201144-3	328666 Orange	45638-2	69227-2	White
	Gold[2]	201143-9	201144-9				
No. 22, MIL-C-7078 A, Types I & II No. 2 Dielectric, .075 [1.91] O.D. No. 3 Dielectric, .085 [2.16] O.D.	Gold[1]	201145-1	201146-1	328665 Black Stripe	45639-2	69222-2	Red
	Gold[2]	—	—				
No. 22, NAS-702, Class B	Gold[1]	201145-4	201146-4	328663 Green	45740-2	69220-2	Blue
	Gold[2]	201145-9	201146-9				

[1].000030″ [0.0008 mm] gold plated contacts
[2].000100″ [0.00254 mm] gold plated contacts
**Ferrule color distinguishes item only.
***Match Plastic Collar and Tool colors for application to cable. Inner Insulator color identifies Wire Barrel of Center Contact.
†This pneumatic tool requires Manual Take-Up Attachment **No. 69689.**
Extraction Tool **Part No. — 305183-8**
Note: Wire other than that listed above may be used. Send wire sample and/or specifications to AMP Incorporated for engineering recommendation.

Current Carrying Capability

The total current capacity of each contact is dependent upon the heat rise resulting from the combination of electrical loads on all the contacts in the connector arrangement and the maximum ambient temperature in which the connector will be operating. Caution must be taken to assure that these combinations of conditions do not cause the internal temperature of the connector to exceed the maximum operating temperature of the housing material. There are several variables which must be considered when determining this maximum current capability for your application.

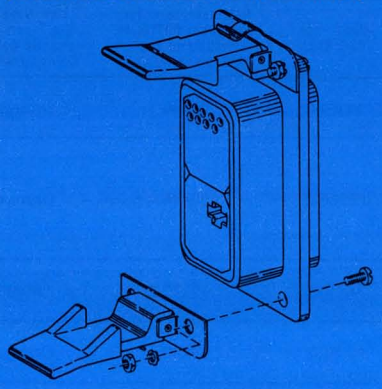
These variables are:

a) Wire Size — Larger wire will carry more current since it has less internal resistance to current flow and generates less heat. The wire also conducts heat away from the connector.

b) Connector Size — in general, the more circuits in a connector, the less current per contact can be carried.

c) Ambient Temperature — The higher the ambient temperature, the less current can be carried.

Locking Latch Assembly
(Not to be used with Floating Bushings)



Part No. 202832-1*
Part No. 202832-2**

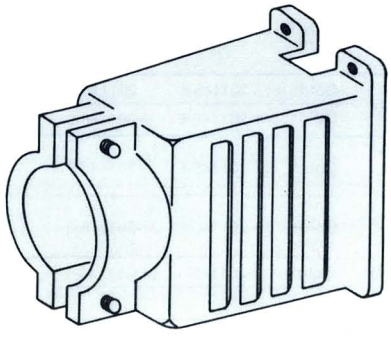
Locking Spring
(Not to be used with Floating Bushings)

Spring Catch
Kit No. 202576-1*
Kit No. 202576-2**

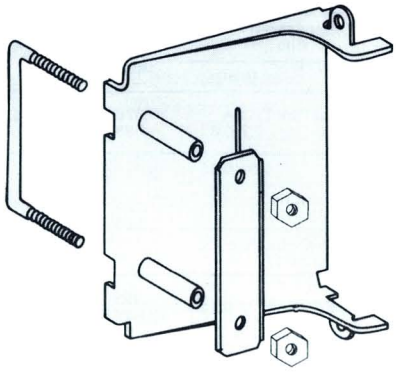
Locking Spring
Kit No. 202577-1*
Kit No. 202577-2**

*Without Mounting Hardware
**With Mounting Hardware

Shield and Cable Clamps



Strain Relief Clamp

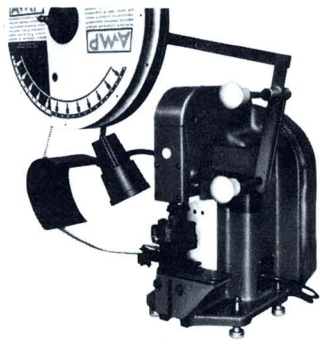


For Three Module Shell
(Part No. 202567-1)

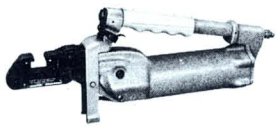
Shell Size	Cable Bushings	Shield and Cable Clamp Part Nos.
1	With	202764-1
	Without	202305-1
2	With	202617-1
	Without	202617-2
3	With	1-202301-1
	Without	1-202301-0

Application Tooling

AMP crimping tools range from hand tools to automatic terminating machines. Each is designed to meet a specific production requirement. Contact specifications listed on pages 6 thru 11 indicate the recommended tool and crimping die numbers for each contact type.



AMP-O-LECTRIC Terminating Machine



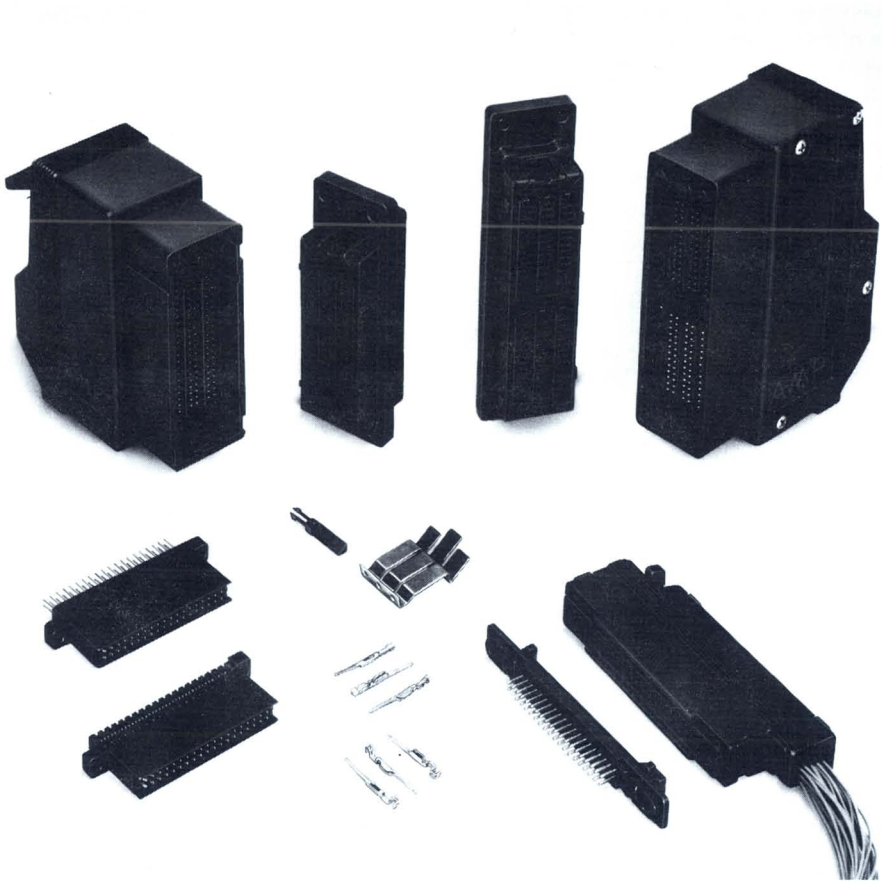
Pneumatic Tools

AMP-O-MATIC Stripper/Crimper Machine

CERTI-CRIMP Hand Tools

AMP-TAPEMATIC Tools

Zero Insertion Force Connectors



CR Series Connectors, 40, 120 and 156 Positions

Features

- Zero insertion force for blind mating and low contact wear
- Modular construction for reliability and economy
- Positive lock housings prevent accidental unmating
- Keyed housings, with optional keying positions available
- Single cable clamp assembly provides 90°, 135° or 180° cable exit for 120 and 156 position connectors
- Wipe and backwipe motion of contacts ensures engagement of precleaned surface for excellent electrical continuity
- Contact preloading assures high contact normal forces with minimum relative movement
- Crimp snap-in contacts for plug half can be machine terminated to wire for low applied cost
- Insulation displation contacts available for high reliability and greater economy
- .025 [0.64] sq. posted receptacle contacts accept wrap-type terminations or can be intermated with round conductor, flexible flat cable connectors
- .028 [0.71] diameter posted contacts available for 120 position plug
- All contacts on .100 [2.54] centers for high density applications
- Contacts fully protected in both connector halves

Performance Characteristics

Contact normal force: 150 g [1.5 N] min.

Current rating: 3.0 amps

Dielectric strength: 1500 volts at sea level

Insulation resistance: 5000 megohms min.

Contact retention (both contacts): 10 lb. [45 N] min.

Operating temperature: −55°C to +105°C

Termination resistance (including crimp resistance): 75 millivolts max. at 3.0 amps after moisture resistance test per MIL-STD-202, Method 106

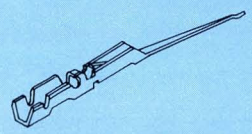
Durability: 5000 cycles min.

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

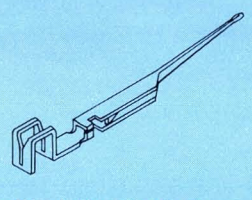
Specifications subject to change.
Consult AMP Incorporated for latest design specifications.

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

Introduction



Crimp Snap-In Contact



Insulation Displation Contact

The AMP CR Series Connector Line offers true zero-insertion force connectors designed for quick and easy mating of a large number of contacts. Complete connector assemblies are available in 40, 120 and 156 positions and are finding wide acceptance in computer, peripheral, business machine and test equipment applications.

The zero insertion force of the mating connector halves ensures maximum contact life. The integral camming action during contact engagement provides forward and backward wiping of the contact surface. This wipe, backwipe motion allows the contact to seat itself on a precleaned surface for a high degree of electrical continuity.

Both plug and receptacle are modularized, affording the user a high degree of economy since only the exact number of contact positions required need be loaded into the plug. In actual application the modularized receptacle is panel mounted and preloaded with posted contacts for either wrap-type termination or for intermating with round conductor, flexible flat cable connectors. The modularized plug may be a 40 position which contains one module of 40 contacts, a 120 position which contains three modules of 40 contacts or a 156 position which contains six modules of 26 contacts.

Three types of contact modules are available for termination in the 120 position plug . . . crimp, snap-in modules for standard lead sizes 28-24 AWG [0.08 to 0.2 mm^2], modules with the revolutionary insulation displation contact for 28-26 AWG [0.08 to 0.15 mm^2] stranded wire and .028 [0.71] diameter round post contacts which mate with AMPMODU receptacle connectors. The 40 and 156 position plug housings will accept either crimp snap-in or insulation displation modules. All receptacle assemblies have .025 [0.64] sq. posted contacts which mate with AMP Latch and AMPMODU receptacle connectors and accept wrap-type terminations.

Contacts feature selective gold over nickel plating per MIL-G-45204 with a base material of copper alloy per QQ-B-750. Housings, contact modules, camshafts, keying plugs, strain reliefs and cable clamps are fabricated from glass-filled thermoplastic. Option stainless steel hold down clips are available for the back wiring of the 120 position receptacle connector.

All connectors are positive locking and are keyed for correct mating. A variety of optional keying positions is available depending on your application.

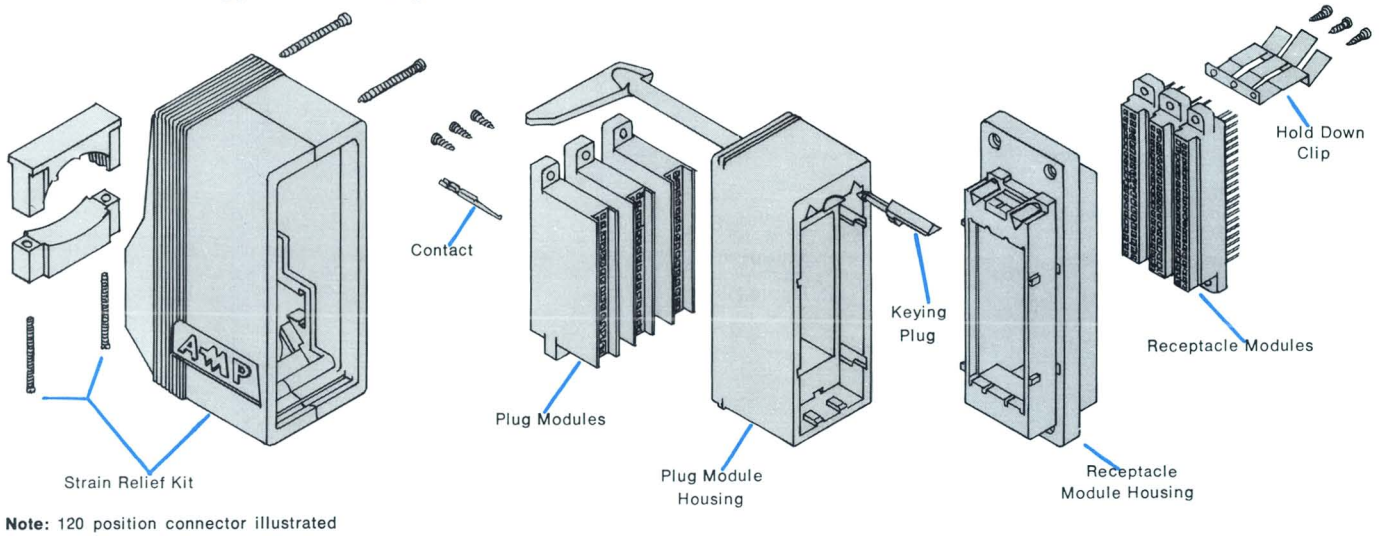
Crimp contacts are available in loose piece or on precision formed strips for high speed automatic machine application.

AMP has a complete range of application tooling for terminating crimp, snap-in contacts. You can choose from the AMPOMATOR fully automatic lead making machine which measures, cuts, strips and terminates one or both ends of your lead, the AMP-O-LECTRIC bench press which terminates prestripped leads and the AMP side-feed or air logic stripper/crimper bench mounted machine. For limited production, prototype, maintenance and repair, the AMP CERTI-CRIMP hand tool provides identical positive crimp terminations time after time.

Insulation displation contacts can be terminated with either a hand operated multiple terminating tool or a semi-automatic module terminating machine — both terminate leads without the need for expensive, time-consuming wire preparation.

For your specific zero insertion force application consult your local AMP Sales Engineer or contact AMP Incorporated, Harrisburg, Pa.

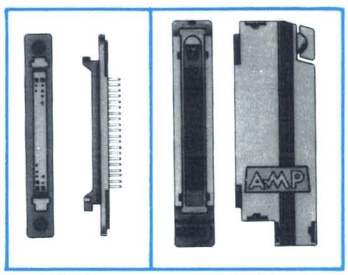
Typical Assembly



Note: 120 position connector illustrated

Connector Selection Guide

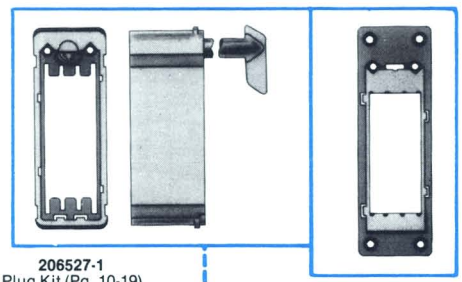
40 Position Connector



206952-1
Receptacle
Assembly
(Pg. 10-18)

206950-1
Plug Kit (Pg. 10-18)
(Without Modules)

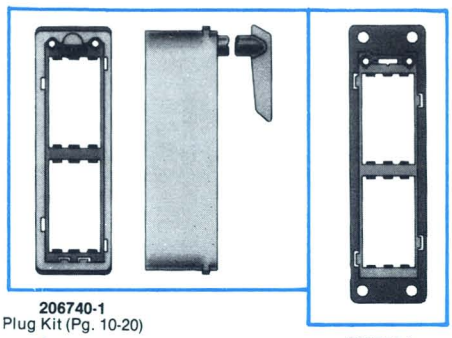
120 Position Connector



206527-1
Plug Kit (Pg. 10-19)

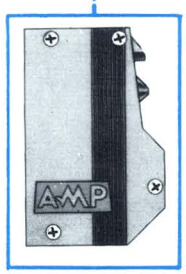
206536-1
Receptacle Kit (Pg. 10-19)

156 Position Connector

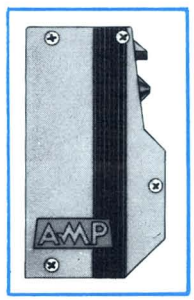


206740-1
Plug Kit (Pg. 10-20)

206742-1
Receptacle (Pg. 10-20)

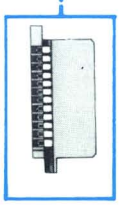


206540-1
Strain Relief Kit (Pg. 10-23)

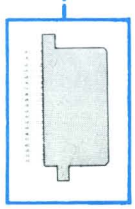


206737-1
Strain Relief Kit (Pg. 10-23)

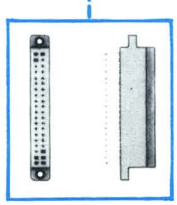
206541-1
Module for
Crimp Contacts
(Pg. 10-21)



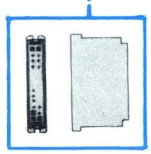
206573-1
Module with
Displation Contacts
(Pg. 10-21)



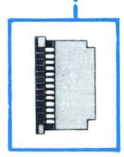
206968-1
Module with
Posted Contacts,
120 Position Only
(Pg. 10-21)



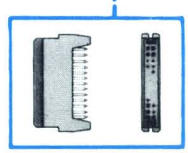
206542-1
Module with
Posted Contacts
(Pg. 10-21)



206743-1
Module for
Crimp Contacts
(Pg. 10-22)



206745-1
Module with
Displation
Contacts
(Pg. 10-22)



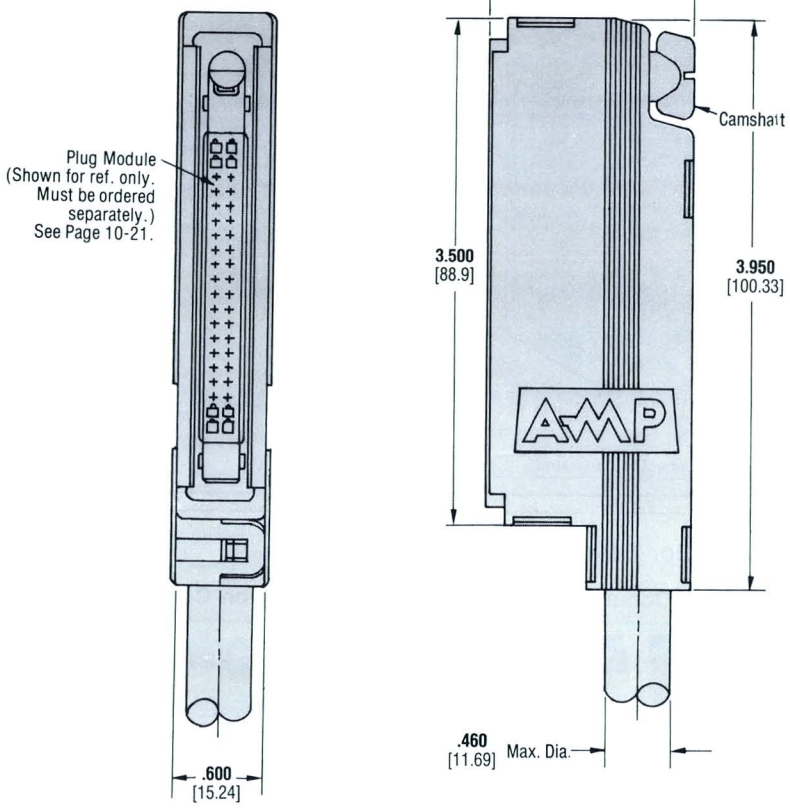
206746
Module with
Posted Contacts
206746-1 (With Guides)
206746-2 (Without Guides)
(Pg. 10-22)

40 Position Connector

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

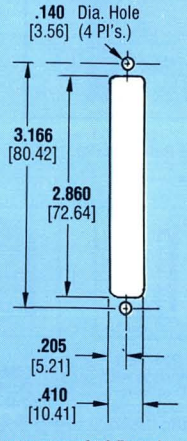
Plug Kit

Material: Glass-filled thermoplastic, black
Part Number: 206950-1

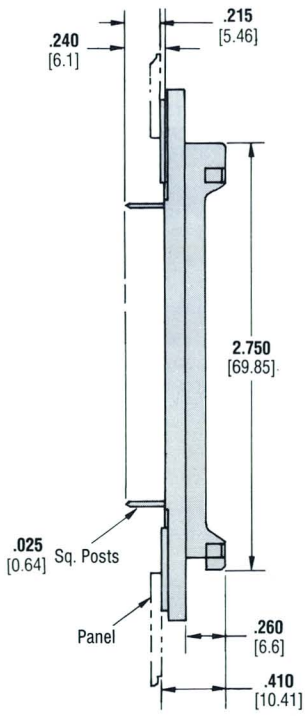


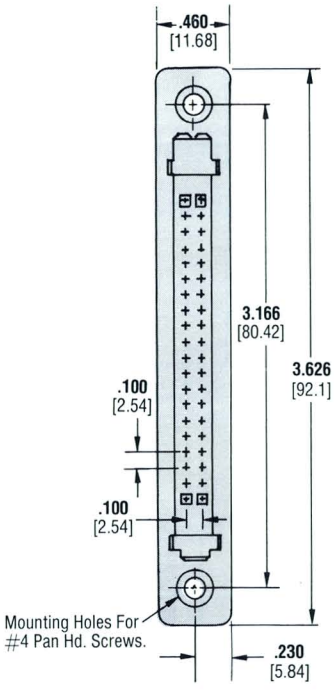
Receptacle Housing Assembly

Material:
Housing—Glass-filled thermoplastic, black
Contacts—Gold plated copper alloy
Part Number: 206952-1



Recommended Panel Cutout



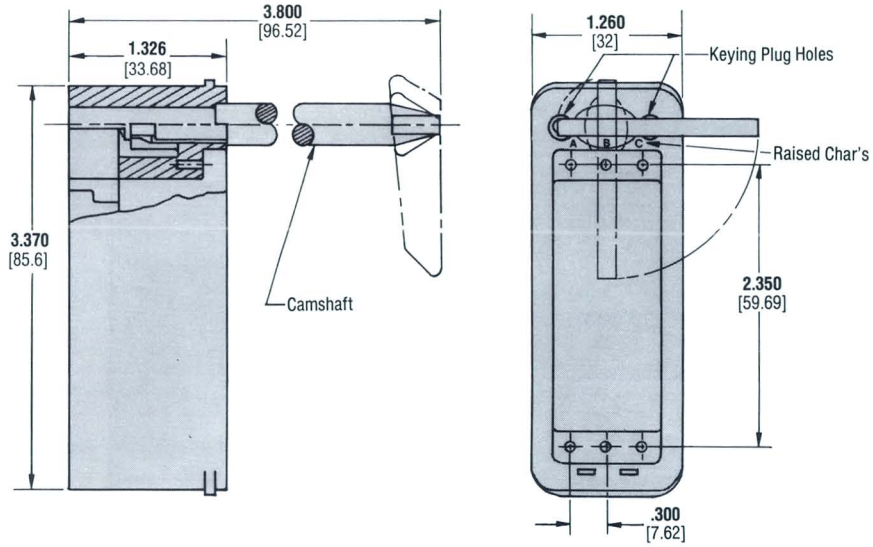


120 Position Connector

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

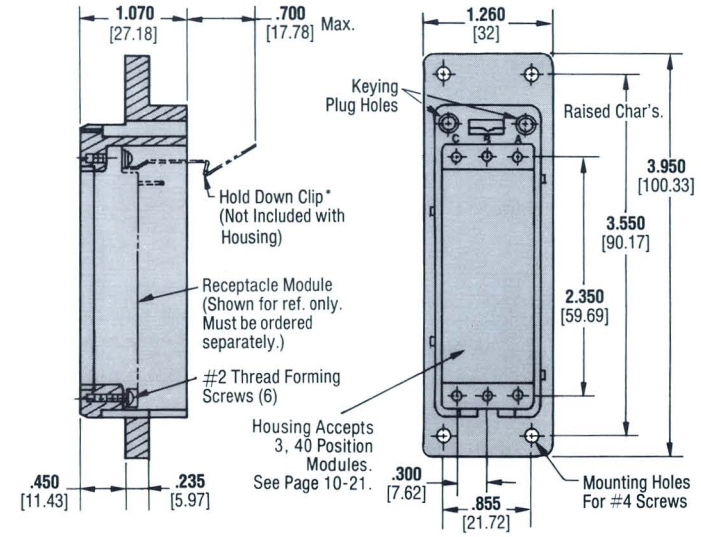
Plug Kit

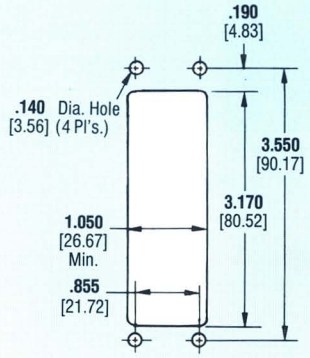
Material: Glass-filled thermoplastic, black
Part Number: 206527-1



Receptacle Kit

Material: Glass-filled thermoplastic, black
Part Number: 206536-1





Recommended Panel Cutout

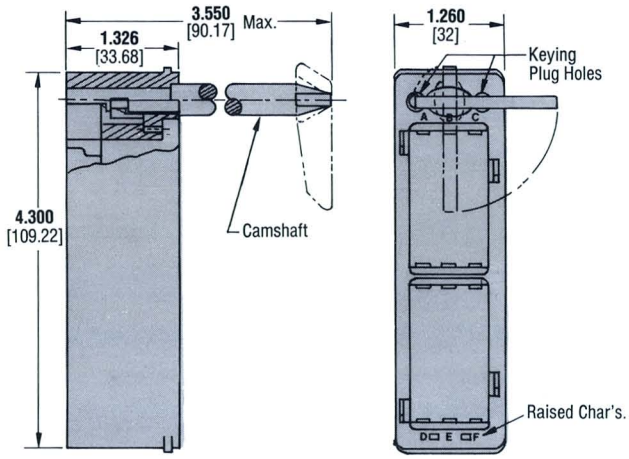
***Hold Down Clip Material:** Stainless steel
Part Number: 206538-1

156 Position Connector

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

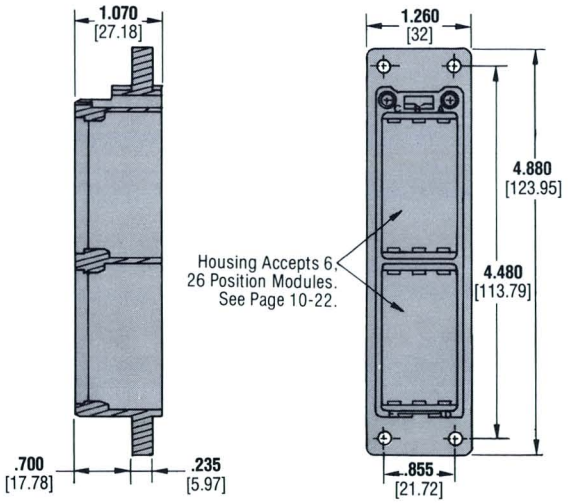
Plug Kit

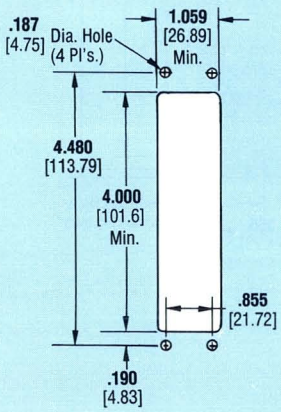
Material: Glass-filled thermoplastic, black
Part Number: 206740-1



Receptacle Housing

Material: Glass-filled thermoplastic, black
Part Number: 206742-1





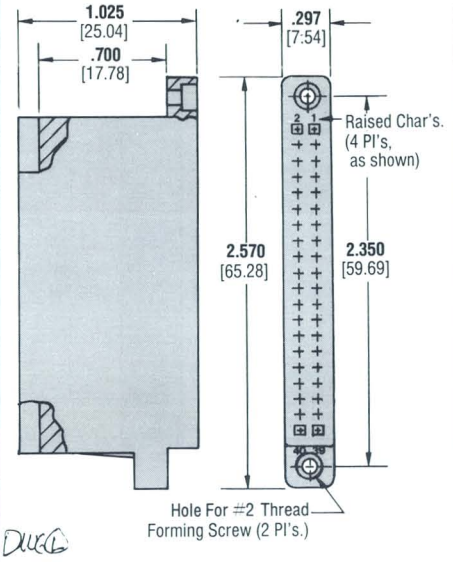
Recommended Panel Cutout

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

Plug and Receptacle Modules

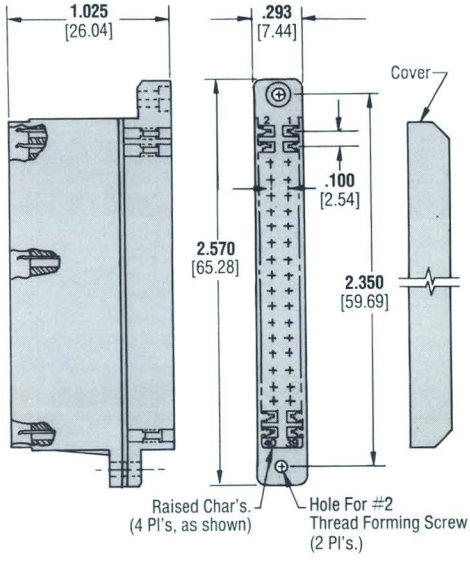
Plug Module for Crimp Contacts

Material: Glass-filled thermoplastic, black
Part Number: 206541-1



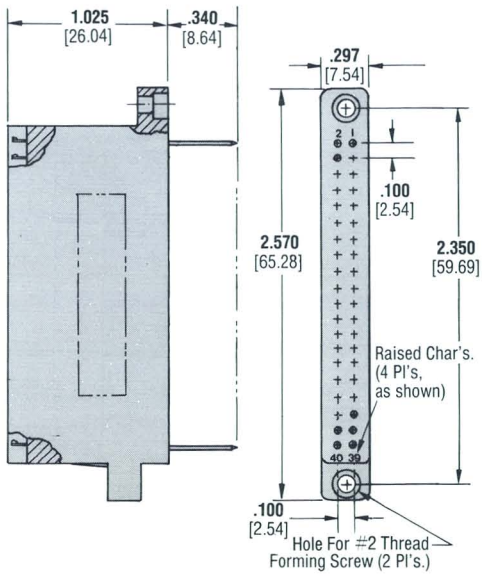
Plug Module with Displation Contacts

Material:
Housing and Cover—Glass-filled thermoplastic, black
Contact—Copper alloy, plated gold per MIL-G-45204 over nickel per QQ-N-290
Housing Part Number: 206573-1
Cover Part Number: 206574-1



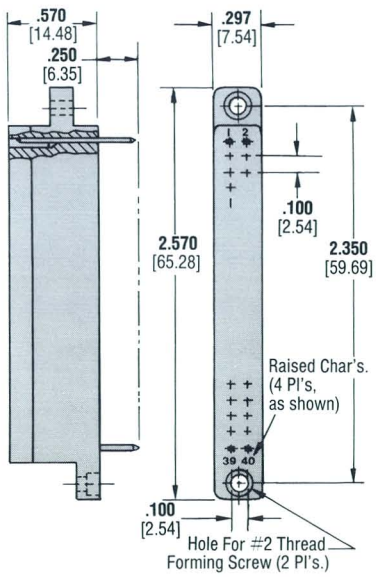
Plug Module with .028 [0.71] Diameter Posts

Material:
Housing—Glass-filled thermoplastic, black
Contact—Copper alloy, plated gold per MIL-G-45204 over nickel per QQ-N-290
Part Number: 206968-1



Receptacle Module with .025 [0.64] Sq. Posts

Material:
Housing—Glass-filled thermoplastic, black
Contact—Copper alloy, plated gold per MIL-G-45204 over nickel per QQ-N-290
Part Number: 206542-1



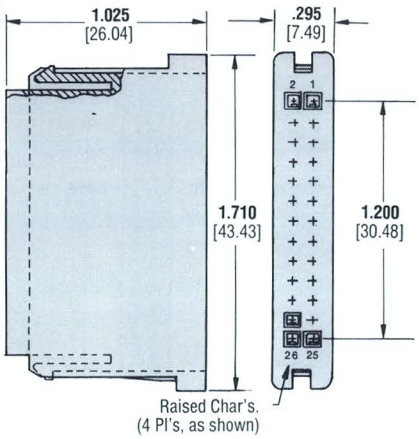
26 Position Modules

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

Plug and Receptacle Modules

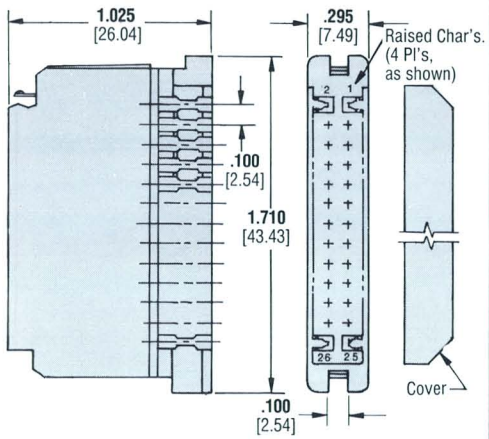
Plug Module for Crimp Contacts

Material: Glass-filled thermoplastic, black
Part Number: 206743-1



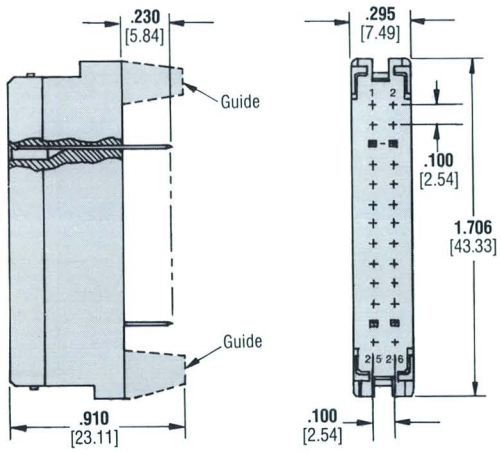
Plug Module with Displation Contacts

Material:
Housing and Cover—Glass-filled thermoplastic, black
Contact—Copper alloy, plated gold per MIL-G-45204 over nickel per QQ-N-290
Housing Part Number: 206745-1
Cover Part Number: 206574-3



Receptacle Module with .025 [0.64] Sq. Posts

Material:
Housing—Glass-filled thermoplastic, black
Contact—Copper alloy, plated gold per MIL-G-45204 over nickel per QQ-N-290
Part Number: 206746-1 (with guides)
206746-2 (without guides)

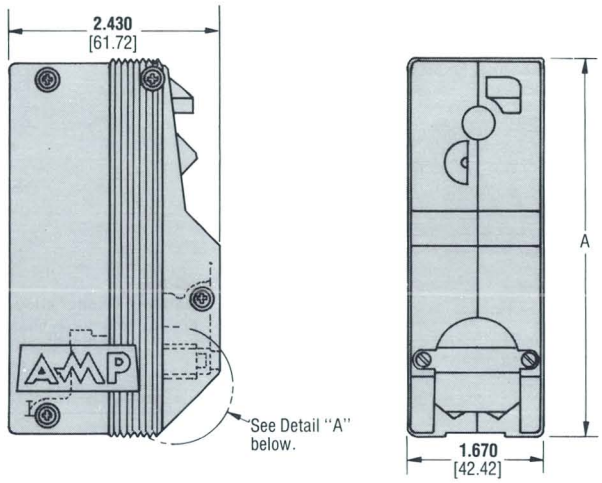


Strain Reliefs and Keying Plug

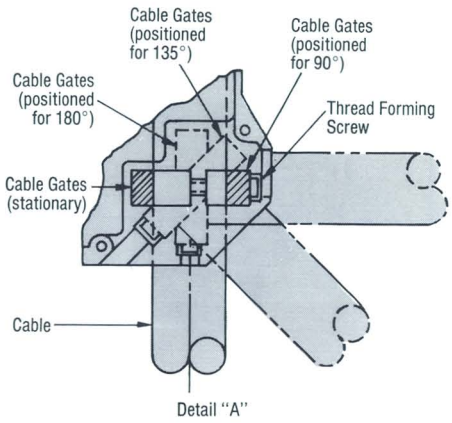
Dimensioning:

1. **All dimensons in inches and millimetres. Values in brackets are metric equivalents.**
2. **Chart contains dimensions in inches over millimetres.**

Strain Relief Kits (for 120 and 156 position plugs)



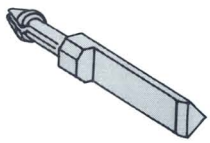
Note: Parts shown assembled, but are packaged unassembled.



Material: Glass-filled thermoplastic, black

Plug Size (Position)	A Dim.	Strain Relief Kit Part No.
120	**3.780** 96.01	206540-1
156	**4.792** 121.72	206737-1

Keying Plug (used with 120 and 156 position housings)

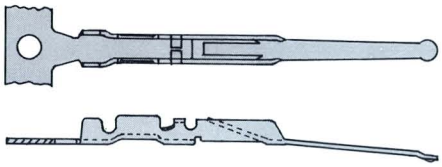


Material: Glass-filled thermoplastic, black
Part Number: 206545-1

Dimensioning:

1. **All dimensons in inches and millimetres. Values in brackets are metric equivalents.**
2. **Chart contains dimensions in inches over millimetres.**

Crimp Contact

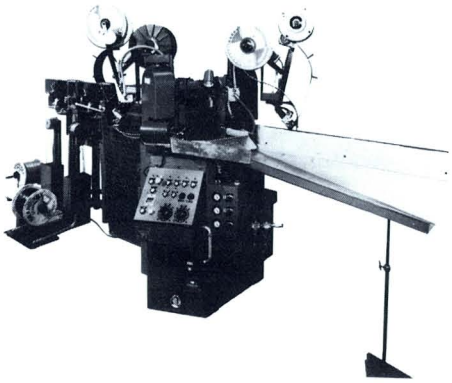


Material: Copper alloy per QQ-B-750
Finish: Selectively plated gold per MIL-G-45204 over nickel per QQ-N-290

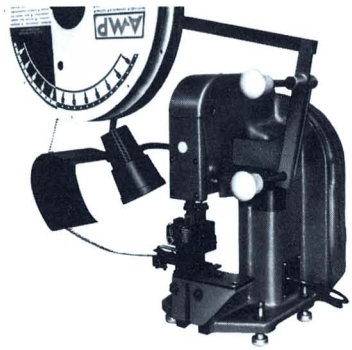
Wire Size		Ins. Dia. (Max.)	Strip Form Contact Part Nos.		Loose Piece Contact Part No.	Hand Tool Part No.
AWG	mm²		Reeled for Min. Applicator	Reeled for Std. Applicator		
28-24	0.08-0.2	.065 1.66	66555-2	66555-4	66555-3	90309-1

Insertion Tool Part Number: 91002-1
Extraction Tool Part Number: 91111-1

Crimp Contact Application Tooling

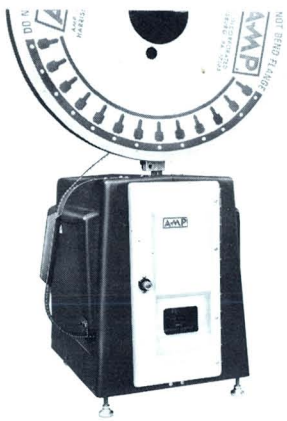


AMPOMATOR Fully Automatic Lead Making Machine (with Miniature Applicator)



AMP-O-LECTRIC Machine (with Miniature Applicator)

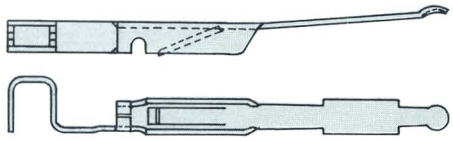
AMP Side-Feed Stripper/Crimper Machine (with Standard Applicator)



AMP Air Logic Stripper/Crimper Machine

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

Displation Contact (for replacement)



Wire Size: 28-26 AWG [0.08-0.15 mm²], stranded
Insulation Dia.: .049 [1.25] Max.
Material: Copper alloy per QQ-B-750
Finish: Selectively plated gold per MIL-G-45204 over nickel per QQ-N-290
Part Numbers:
66559-5—Right Hand Contact
66559-6—Left Hand Contact
Extraction Tool Part Number: 91111-1

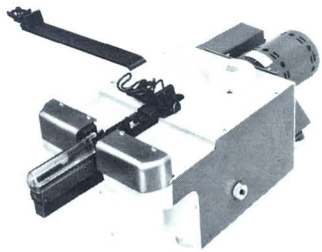
Displation Contact Application Tooling

AMP's insulation displation technique is the latest advance in termination technology. The simplicity of this terminating method is what assures its high reliability. In operation the AMP insulation displacement machine accepts insulated wire — no wire preparation is required. The insulated conductor is positioned above the two slots in the contact terminating area. When the machine is actuated, the terminating die forces the conductor deeper into position where the "funnel-shaped" area of the

slot displaces the insulation and restricts the conductor. Continual downward movement of the die fits the conductor into the confines of the narrow parallel portion of the slot where a "wipe clean" electrical contact is made.

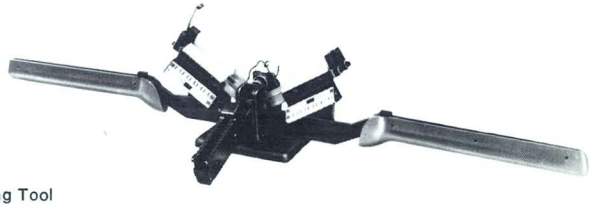
Semi-Automatic Module Terminating Machine

40 Position Module Terminating Machine
Part Number 90320-1
26 Position Module Terminating Machine
Part Number 90319-1



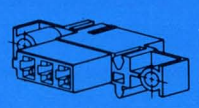
Hand Operated Multiple Terminating Tool

40 Position Module Terminating Tool
Part Number 91114-1
26 Position Module Terminating Tool
Part Number 91113-1
Single Lead Tool (also available)
Part Number 91119-1



Other Modular Connectors

187-Series FASTIN-FASTON Connectors-Section 4, Page 4-141. Tab and Receptacle type Connector. One-piece molded nylon housings snap together for quick, easy circuit expansion providing maximum flexibility.



RECEPTACLE HOUSING

Modular Miniature DUALATCH Connectors-Section 11, Page 11-26. Hermaphroditic Contact Connector with 4-position snap-in polycarbonate housing. Complete hardware available, including metal tracks, retention clips, mounting brackets, latching springs and screws.