

AMP

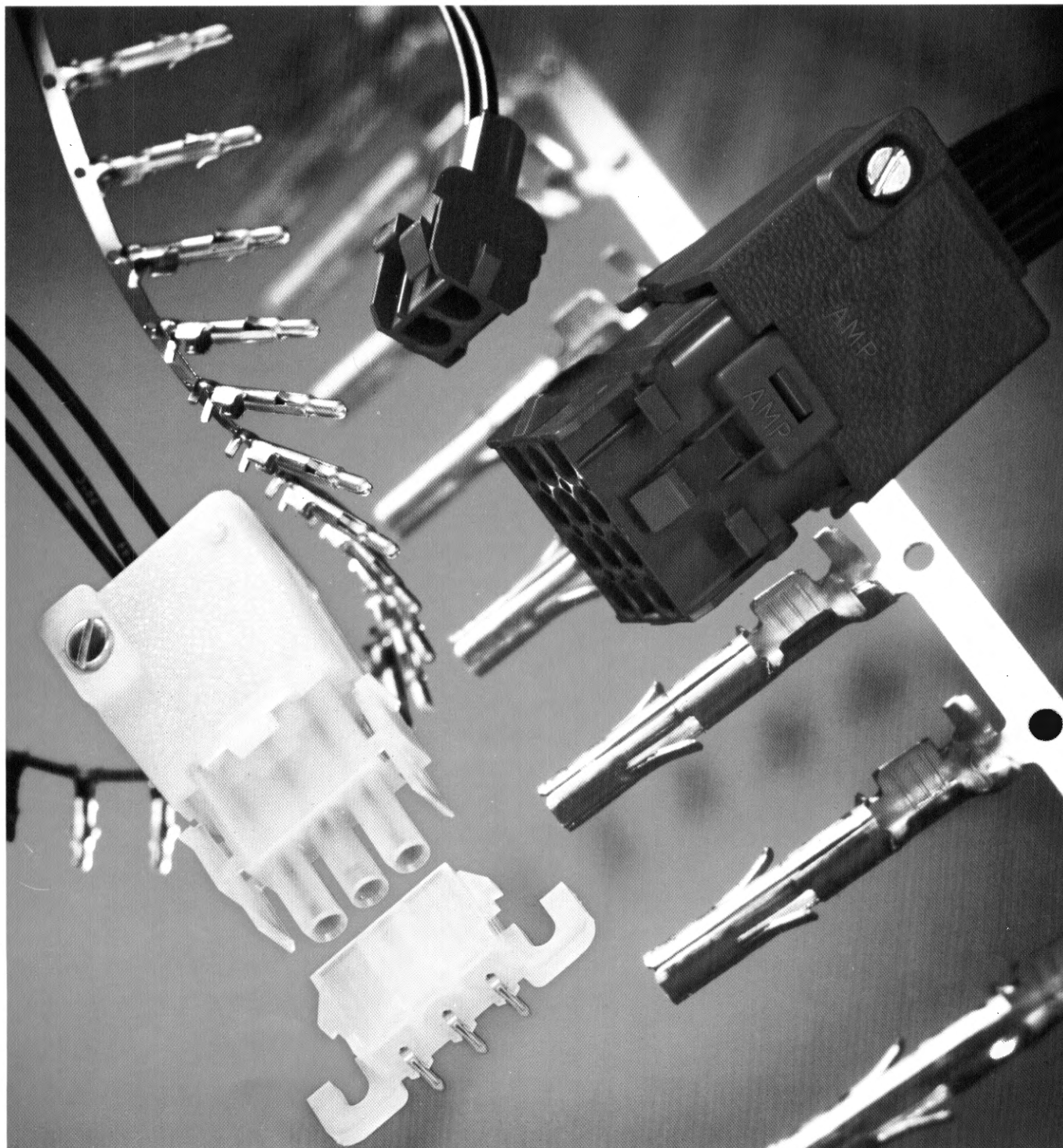
Universal MATE-N-LOK Pin and Socket Connectors

Catalog
73-104
Revised 9-84

DEVERELL ASSOCIATES
WELLINGTON

REC. 13 AUG 1987

ANSD.....



AMP means productivity/Worldwide

Universal MATE-N-LOK Connectors

Introduction

AMP Universal MATE-N-LOK connectors provide a highly reliable and economic means of grouping multiple-lead connections in today's computer, computer/peripheral equipment and business machines offering worldwide application approval. AMP Universal MATE-N-LOK connectors are now finding additional application and acceptance in home entertainment, appliances, vending machines and other commercial equipment due to their reliability and shock hazard protection features. UL component recognized and CSA certified for 600 volt applications and designed to meet 380 volt VDE requirements. These connectors feature fully polarized housings to

assure proper plug-to-cap mating plus the ability of intermixing pins and sockets in either the plug or cap half to offer a high number of possible keying combinations. Also, contacts are completely enclosed when installed in the housings, thus eliminating shock hazards and allowing either connector half to have hot leads.

AMP offers this versatile family of connectors in a wide range of sizes, including 1, 2, 3, 4, 5, 6, 9, 12 and 15 circuit configurations. Both plug and cap have positive locking housings to prevent accidental disengagement when used in panel mounted applications or as free-hanging connectors. The cap itself can be mounted in a panel .030 [0.76] to .090

[2.29] thick. A family of printed circuit board headers with pin, socket or right angle configurations are offered.

Standard housings are molded from durable nylon material and come in natural color. NEMA colors are available upon request. Natural color of 94V-0 flame retardant material is brick red. Additional housing features include: numbered cavities for easy circuit identification and large rear-entry cavities to permit the termination of two wires to a contact.

The stamped and formed contacts, in pre-tinned or gold plating, are available for terminating wire sizes ranging from No. 30-10 AWG [0.05-6 mm²]. These crimp snap-in contacts feature dual locking lances for

optimum contact stability and are especially designed for low-force mating. They are easily hand loaded into the housings, requiring no orientation. Only one simple extraction tool is needed to remove both pins and sockets.

AMP furnishes the contacts in continuous strip form for automatic machine termination and in loose piece form for hand tool crimping. AMP's high-speed machines use the versatile quick-change miniature applicator for crimping both pins and sockets at volume production rates and at the lowest possible installed cost.

Dimensioning:

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

Metric symbols used are:

kg (kilogram)
cm (centimetre)
mm (millimetre)
mm² (square millimetre)
N (newton)
C (Celsius)

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

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AMP, MATE-N-LOK, AMP-O-LECTRIC, AMPOMATOR, AMP-O-MATIC, CERTI-CRIMP, FASTON—Trademarks of AMP Incorporated.

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**Universal MATE-N-LOK
Connectors**

(Continued)

**NEW ZEALAND AMP LTD.
51 MAHUNGA DRIVE
MANGERE
PH. 644-580**

Dimensioning:

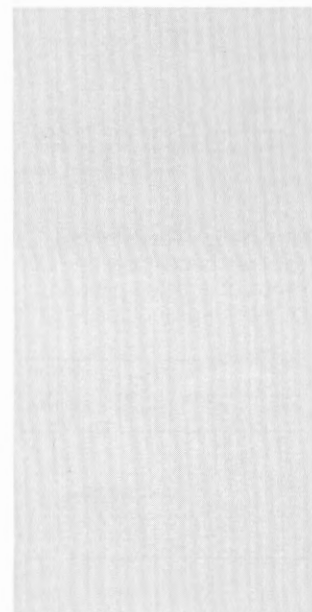
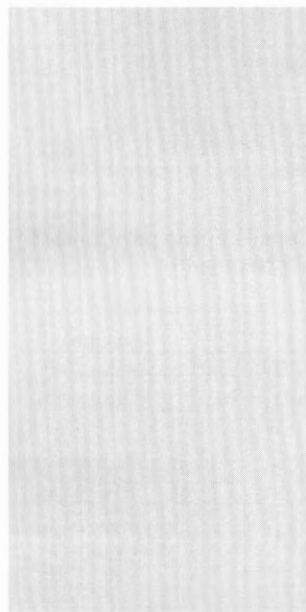
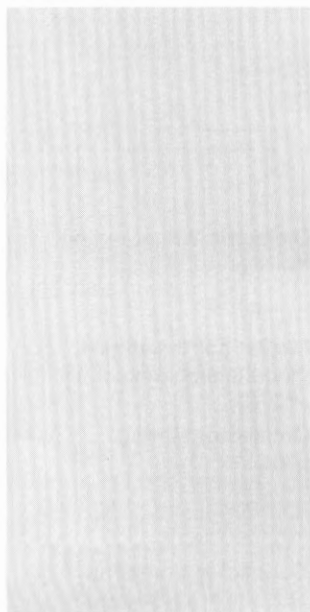
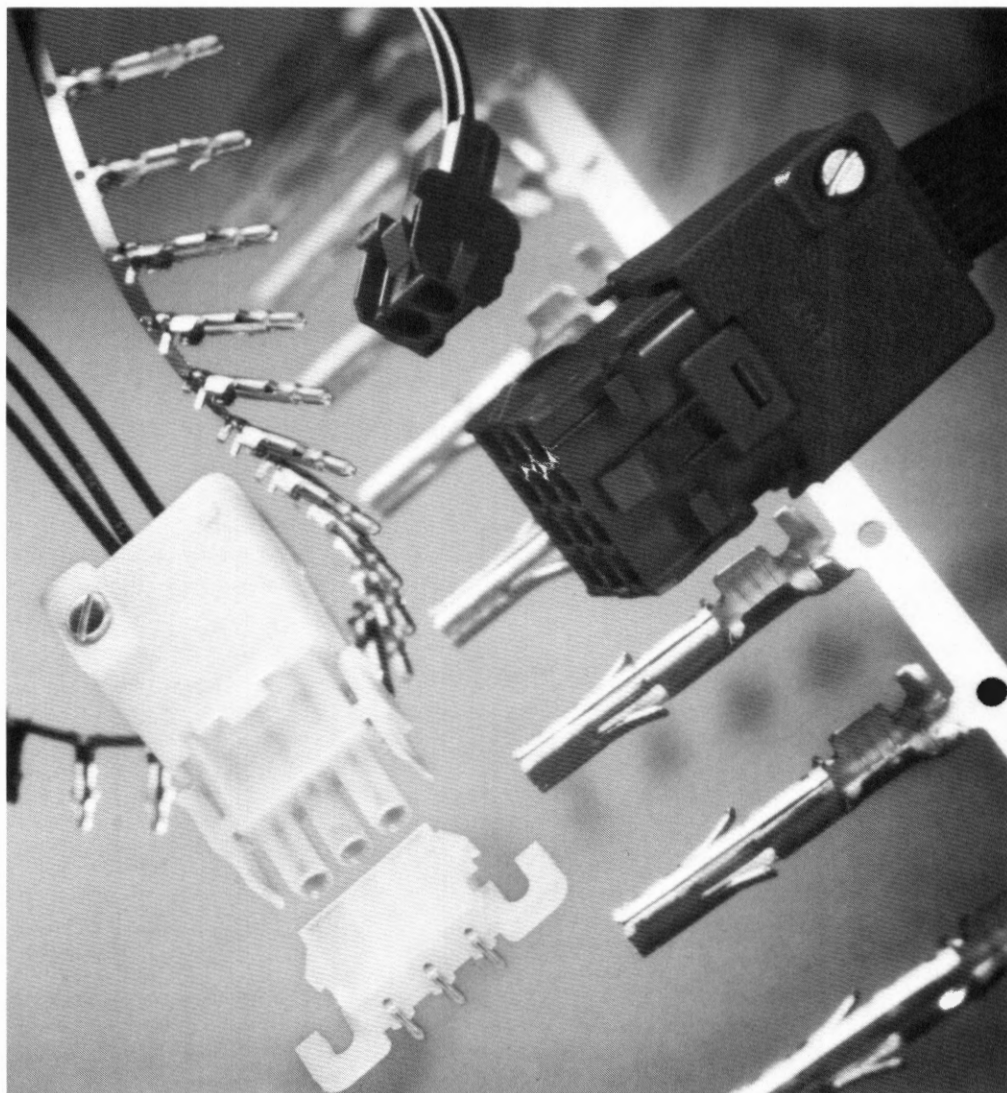
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Values in brackets are metric equivalents.

Features

- Innumerable keying combinations
- Pins and sockets can be intermixed in the same housing
- Positive polarization
- Rear cavity identification
- Pin or socket contact can be hot
- Positive locking housings
- Contacts and housings have dual-wire capability
- Insulation capability to .200 [5.08] diameter
- Removable, crimp snap-in contacts
- Low contact mating force
- Dual locking lances provide optimum contact stability
- Continuous strip contacts permit high-speed application with AMP automatic terminating machines using quick-change miniature applicators
- Panel mount or free-hanging
- Available in 94V-0 flame retardant material. Meets the material requirements of table 23.1 of U.L. Standard 1410 (television receivers and video products)
- Make first, break last capability using grounding pin
- Harness to pc board capability using pin or socket header assemblies
- Contacts are on .250 [6.35] centerline spacing
- Recognized under Component Program of Underwriters Laboratories Inc.  File No. E28476
- CSA Certified— File No. LR 16455
- Tested by VDE under their Test Report #4751-800-2/A

Technical Documents

AMP Product Specifications 108-1031 (free hanging and panel mount connectors) and 108-1053 (printed circuit board headers).



Performance Specifications

Dimensioning:
Values in brackets are metric equivalents.

The Universal MATE-N-LOK performance specifications found on this page apply to free-hanging and panel mount connectors. The maximum current that can be carried by the Universal MATE-N-LOK connectors is limited by the maximum operating temperature of the housings which is 105°C (221°F) and the temperature rise of the contacts which is 30°C (54°F). There are several variables which have a direct effect on this maximum current carrying capability for a given connector and must be

considered for each application. These variables are:

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

Connector Size—In general, the more circuits in a connector, the less current can be carried.

Ambient Temperature—The higher the ambient temperature, the less current can be carried in any given connector.

Universal MATE-N-LOK connectors also will withstand the following tests:

Thermal Shock: -55°C to +85°C

Temperature-Humidity Cycling: 10°C to 65°C at 90-95 RH

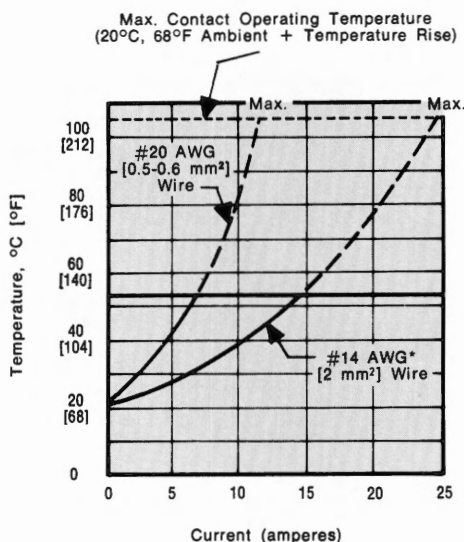
Corrosion: 48 hr. at 5% salt concentration

Vibration: 10-55-10 cycles per second at .06" [1.52 mm] total excursion

Physical Shock: 18 drops, 50 g sawtooth at 10 milliseconds

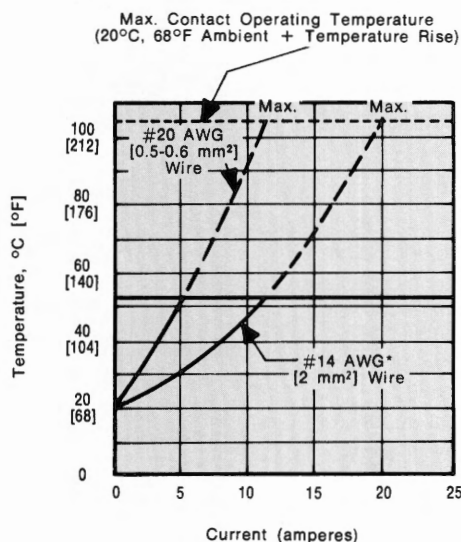
Durability: 50 cycles, mating and unmating

A comparison of Universal MATE-N-LOK contacts on #20 AWG [0.5-0.6 mm²] wire and #14 AWG [2 mm²] wire used in 4-circuit housings. All circuits carrying indicated current.



— Component Recognition 30°C (54°F) T-rise
- - - Maximum Connector Limit, 105°C (221°F)
*This curve was developed using phosphor bronze contacts.

A comparison of Universal MATE-N-LOK contacts on #20 AWG [0.5-0.6 mm²] wire and #14 AWG [2 mm²] wire used in 12-circuit housings. All circuits carrying indicated current.



— Component Recognition 30°C (54°F) T-rise
- - - Maximum Connector Limit, 105°C (221°F)
*This curve was developed using phosphor bronze contacts.

Termination Resistance
(Total resistance between wire crimps of a mated pin and socket—tin-plated contacts)

Wire Size	Test Current (Amperes)	Potential Drop (Millivolts Avg.)
AWG mm ²		
24 0.2	1.5	3
22 0.3-0.4	3	5
20 0.5-0.6	4.5	6
18 0.8-0.9	6	9
16 1.25-1.4	8	11
14 2	10	14

Tensile Force per Contact (Wire pullout)

Wire Size	Force (Min.)
AWG mm ²	Lb. N
30 0.05	2 9
28 0.08-0.09	3 13
26 0.12-0.15	6 27
24 0.2	8 36
22 0.3-0.4	14 62
20 0.5-0.6	14 62
18 0.8-0.9	30 133
16 1.25-1.4	45 200
14 2	50 222
12 3	60 267
10 5-6	70 311

Dielectric Withstanding Voltage: 5.0 KVAC or 10 KVDC between adjacent circuits

Insulation Resistance: 1000 megohms between adjacent circuits

Connector Mating:
Solid Pin—3.0 lb. [13 N] avg. per circuit
Split Pin—1.5 lb. [7 N] avg. per circuit

Connector Unmating:
Solid Pin—1.5 lb. [7 N]

avg. per circuit
Split Pin—1.0 lb. [4 N] avg. per circuit

Contact Insertion Force:
2.0 lb. [9 N] max. per contact

Contact Retention:
15 lb. [67 N] min. per contact

Housing Panel Retention:
75 lb. [334 N] min.

Housing Lock Strength:
35 lb. [156 N] min.

Contact Specifications

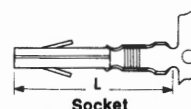
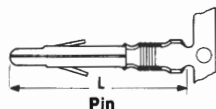
Dimensioning:

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

Charts contain dimensions in inches over millimetres.

Dimensional tolerances are $\pm .015$ [0.38] unless noted otherwise.

Universal Contacts—Pin and sockets can be used in either plug or cap housings (Pin Diameter .084 [2.13])



Wire Size Range		Ins. Dia. Range	Stock Thickness	L Dim.		Material & Finish	Strip Form Contact No.		Loose Piece Contact No.		Miniature Applicator Part No.†	Hand Tool Part No.
AWG	mm²			Pin	Socket		Pin	Socket	Pin	Socket		
30-26	0.05-0.15	.032-.057 0.81-1.45	.012 0.3	.790 20.07	.760 19.3	Brass, Pre-tin	350924-1	350925-1	—	—	466616-2	—
24-18	0.2-0.9	.040-.100 1.02-2.54	.012 0.3	.790 20.07	.760 19.3	Brass, Pre-tin	350561-1	350570-1* 350851-1	350690-1	350689-1*	466320-1 466320-2	90300-1
						Brass, Gold	350561-2	350570-2 350851-2	350690-2	350689-2*		
						Brass, Select Gold	350561-7	350570-7* 350851-7	350690-7	350689-7*		
						Phos. Brz., Pre-tin	350561-3	350570-3*	350690-3	350689-3*		
						Phos. Brz., Select Gold	—	350570-6*	—	—		
20-14	0.5-2	.060-.130 1.52-3.3	.012 0.3	.790 20.07	.760 19.3	Brass, Pre-tin	350218-1	350536-1	350547-1	350550-1	687763-1 687763-2	90296-1
						Brass, Gold	350218-2	350536-2	350547-2	350550-2		
						Brass, Select Gold	350218-7	350536-7	350547-7	350550-7		
						Phos. Brz., Pre-tin	350218-3	350536-3	350547-3	350550-3		
						Phos. Brz., Select Gold	350218-6	350536-6	350547-6	350550-6		
20-14	0.5-2	.130-.200 3.3-5.08	.012 0.3	.810 20.57	.780 19.81	Brass, Pre-tin	350538-1	350537-1	350552-1	350551-1	687926-1 687926-2	90298-1** 90299-1**
						Brass, Gold	350538-2	350537-2	350552-2	350551-2		
						Brass, Select Gold	350538-7	350537-7	350552-7	350551-7		
						Phos. Brz., Pre-tin	350538-3	350537-3	350552-3	350551-3		
						Phos. Brz., Select Gold	350538-6	350537-6	350552-6	350551-6		
18-14‡	0.8-2	.130-.200 3.3-5.08	.012 0.3	.810 20.57	.780 19.81	Brass, Pre-tin	350873-1	350874-1	—	—	466588-1 466588-2	▲
						Brass, Gold	350873-2	350874-2	—	—		
						Brass, Select Gold	350873-7	350874-7	—	—		
						Phos. Brz., Pre-tin	350873-3	350874-3	350918-3	350919-3		
						Phos. Brz., Select Gold	350873-6	350874-6	—	—		
12-10	3-6	.200 max.* ** 5.08	.012 0.3	.810 20.57	.780 19.81	Phos. Brz., Pre-tin	350922-3	350923-3	640309-3	640310-3	466597-1 466597-2	69710-1**
						Phos. Brz., Select Gold	350922-6	350923-6	640309-6	640310-6		
						Phos. Brz., Gold	350922-4	350923-4	—	—		

* Socket Contact—.010 [0.25] stock thickness.

Contact Extraction Tool Part No. 458994-1. Contact Insertion Tool Part No. 455830-1.

** Hand Tool No. 90298-1 for wire size 20-18 AWG [0.5-0.9 mm²]. Hand Tool No. 90299-1 for wire size 16-14 AWG [1.25-2 mm²].

*** No insulation barrel on this contact. Insulation max. dia. limited by housing.

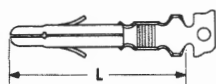
† Has larger wire barrel. Recommended for predominant use of #14 AWG [2 mm²].

Notes: 1. Phos. bronze should be used in high temperature/humidity cycling applications.

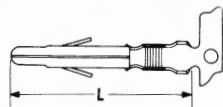
2. Stripper/Crimper Applicators for Jacketed Cable also available, contact AMP Incorporated, Harrisburg, PA 17105.

▲ Contact AMP Incorporated, Harrisburg, PA for recommended hand tool.

Split Pins—Can be used in either plug or cap housings



Grounding Pin (.100 [2.54] longer)
—Can be used in either plug or cap housings



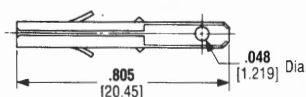
Wire Size Range		Ins. Dia.	Stock Thickness	L Dim.	Material & Finish	Contact Part No.		Miniature Applicator Part No.†	Hand Tool Part No.
AWG	mm²					Strip Form	Loose Piece		
24-18	0.2-0.9	.040-.100 1.02-2.54	.012 0.3	.790 20.07	Brass, Pre-tin	350699-1	350706-1	466320-1 466320-2	90300-1
					Brass, Gold	350699-2	350706-2		
					Brass, Select Gold	350699-7	350706-7		
20-14	0.5-2	.060-.130 1.52-3.3	.012 0.3	.790 20.07	Brass, Pre-tin	350687-1	350705-1	687763-1 687763-2	90296-1
					Brass, Gold	350687-2	350705-2		
					Brass, Select Gold	350687-7	350705-7		
20-14	0.5-2	.130-.200 3.3-5.08	.012 0.3	.810 20.57	Brass, Pre-tin	350700-1	350707-1	687926-1 687926-2	90298-1* 90299-1*
					Brass, Gold	350700-2	350707-2		
					Brass, Select Gold	350700-7	350707-7		

AMP recommends split pins be used in housings having 6, 9, 12 and 15 circuits to reduce mating force.

* Hand Tool No. 90298-1 for wire size 20-18 AWG [0.5-0.9 mm²]. Hand Tool No. 90299-1 for wire size 16-14 AWG [1.25-2 mm²].

Wire Size Range		Ins. Dia.	Stock Thickness	L Dim.	Material & Finish	Contact Part No.		Miniature Applicator Part No.†	Hand Tool Part No.
AWG	mm²					Strip Form	Loose Piece		
20-14	0.5-2	.060-.130 1.52-3.3	.012 0.3	.890 22.61	Brass, Pre-tin	350654-1	350669-1	687763-1 687763-2	90296-1
					Phos. Brz., Pre-tin	350654-3	—		

Programmable Connector Contact
—Socket with 110 Series Special FASTON Tab



Material: .012 [0.3] Brass
Part Nos. 350877-7 (Select Gold) and 350877-1 (Pre-tin)

Mates with 110 Series FASTON Receptacle Part No. 350871-1 (strip).

Fits any plug or cap housing.

Allows simple field wiring or wiring changes.

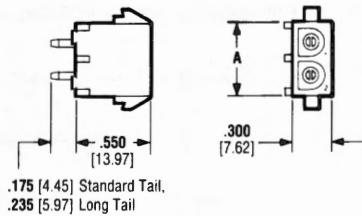
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† Miniature Applicator Part No. with -1 is for a "T" terminating unit used in automatic machines; -2 is for a "K" AMP-O-LECTRIC bench machine. Stripper/Crimper Applicators for Jacketed Cable also available, contact AMP Incorporated, Harrisburg, PA 17105.

Printed Circuit Board Pin Header Assemblies

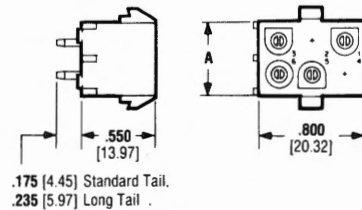
Dimensioning:
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Dimensional tolerances are $\pm .015$ [0.38] unless noted otherwise.

2, 3, 4, 5, 6 and 8 In-Line Circuits



No. of Circuits	Pin Assembly Part Numbers			Housing Material	A Dim	Pin Finish	Mates with Plug Housing Part Number (Using Socket Contacts)
	Standard Tail*	Standard Tail Polarized*	Long Tail**				
2	350428-1	641963-1	350582-1	94V-2	.550 13.97	Pre-Tin	1-480698-0
	350428-2	—	350582-2			Gold	
	350786-1	641964-1	350787-1	94V-0		Pre-Tin	350777-1
	350786-2	—	350787-2			Gold	
3	350429-1	641965-1	350583-1	94V-2	.800 20.32	Pre-Tin	1-480700-0
	350429-2	—	350583-2			Gold	
	350789-1	641966-1	350790-1	94V-0		Pre-Tin	350766-1
	350789-2	—	350790-2			Gold	
4	350430-1	641967-1	350584-1	94V-2	1.050 26.67	Pre-Tin	1-480702-0
	350430-2	—	350584-2			Gold	
	350792-1	641968-1	350793-1	94V-0		Pre-Tin	350779-1
	350792-2	—	350793-2			Gold	
5	640466-1	643405-1	—	94V-2	1.300 33.02	Pre-Tin	1-480763-0
	640900-1	643406-1	—	94V-0			350809-1
6	641832-1	643407-1	—	94V-2	1.550 39.37	Pre-Tin	640585-1
	641831-1	643408-1	—	94V-0			
8	641825-1	643409-1	—	94V-2	2.050 52.07	Pre-Tin	640586-1
	641828-1	643410-1	—	94V-0			

6, 9, 12 and 15 Multiple Row Circuits



No. of Circuits	Pin Assembly Part Numbers			Housing Material	A Dim	Pin Finish	Mates with Plug Housing Part Number (Using Socket Contacts)
	Standard Tail*	Standard Tail Polarized*	Long Tail**				
6	350431-1	641969-1	350585-1	94V-2	.550 13.97	Pre-Tin	1-480704-0
	350431-2	—	350585-2			Gold	
	350711-1	641970-1	350732-1	94V-0		Pre-Tin	350715-1
	350711-2	—	350732-2			Gold	
9	350432-1	641971-1	350586-1	94V-2	.800 20.32	Pre-Tin	1-480706-0
	350432-2	—	350586-2			Gold	
	350712-1	641972-1	350742-1	94V-0		Pre-Tin	350720-1
	350712-2	—	350742-2			Gold	
12	350433-1	641973-1	350587-1	94V-2	1.050 26.67	Pre-Tin	1-480708-0
	350433-2	—	350587-2			Gold	
	350713-1	641974-1	350737-1	94V-0		Pre-Tin	350735-1
	350713-2	—	350737-2			Gold	
15	350434-1	641975-1	350588-1	94V-2	1.300 33.02	Pre-Tin	1-480710-0
	350434-2	—	350588-2			Gold	
	350714-1	641976-1	350738-1	94V-0		Pre-Tin	350736-1
	350714-2	—	350738-2			Gold	

NOTES:

Housing Material: 94V-2 rating, natural color (NEMA colors available); 94V-0 rating, brick red.

Socket Material: Phos. Bronze, pre-tin plate or .000030 [0.0008] min. gold over .000050 [0.0013] min. nickel.

*Use Standard Tail for .062 [1.57] thick printed circuit board.
**Use Long Tail for .125 [3.18] thick printed circuit board.

Printed Circuit Board Header Assemblies

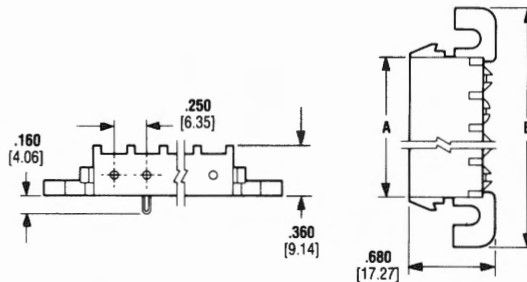
Right Angle Pin and Socket Header Assemblies

Contacts: Phos. Bronze

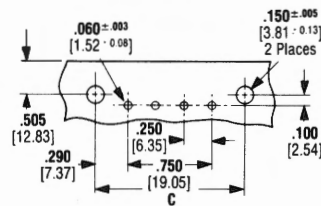
Dimensioning:

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millimetres.

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unless noted otherwise.



Board Layout



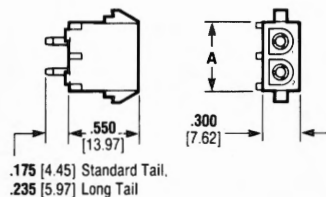
Use 6-32 UNC Pan Head Screw
3/8 [9.53] long for mounting

No. of Circuits	Dimensions			Part Numbers				Contact Finish	Mates with	
	A	B	C	Pin		Socket			94V-0	94V-2
				94V-2	94V-0	94V-2	94V-0			
2	.550	1.245	.830	1-350946-0	1-350942-0	643227-1	643226-1	Pre-Tin	350777-1	1-480698-0
	13.97	31.62	21.08	2-350946-0	2-350942-0	643227-2	643226-2	Gold		
3	.800	1.495	1.080	1-350947-0	1-350943-0	643229-1	643228-1	Pre-Tin	350766-1	1-480700-0
	20.32	37.97	27.43	2-350947-0	2-350943-0	643229-2	643228-2	Gold		
4	1.050	1.745	1.330	1-350948-0	1-350944-0	643231-1	643230-1	Pre-Tin	350779-1	1-480702-0
	26.67	44.32	33.78	2-350948-0	2-350944-0	643231-2	643230-2	Gold		
5	1.300	1.995	1.580	1-350949-0	1-350945-0	643233-1	643232-1	Pre-Tin	350809-1	1-480763-0
	33.02	50.67	40.13	2-350949-0	2-350945-0	643233-2	643232-2	Gold		
6	1.550	2.245	1.830	640587-1	640583-1	643235-1	643234-1	Pre-Tin	640581-1	640585-1
	39.37	57.02	46.48	640587-2	640583-2	643235-2	643234-2	Gold		
8	2.050	2.745	2.330	640588-1	640584-1	643237-1	643236-1	Pre-Tin	640582-1	640586-1
	52.07	69.72	59.18	640588-2	640584-2	643237-2	643236-2	Gold		

Printed Circuit Board Socket Header Assemblies

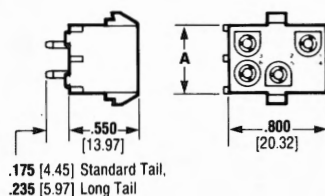
Dimensioning:
All dimensions in inches and millimetres.
Values in brackets are metric equivalents.
Charts contain dimensions in inches over millimetres.
Dimensional tolerances are $\pm .015$ [0.38]
unless noted otherwise.

2, 3, 4 and 5 Circuit



No. of Circuits	Socket Assembly Part Numbers			Housing Material	A Dim.	Socket Finish	Mates with Plug Housing Part Number (Using Pin Contacts)
	Standard Tail*	Standard Tail Polarized*	Long Tail**				
2	350759-4	643411-1	350986-4	94V-2	.550 13.97	Pre-Tin	1-480698-0
	350759-3	—	350986-3	94V-0		Gold	350777-1
	350824-1	643412-1	350831-1	94V-0		Pre-Tin	350777-1
	350824-2	—	350831-2	94V-0		Gold	350777-1
3	350760-4	643413-1	350987-4	94V-2	.800 20.32	Pre-Tin	1-480700-0
	350760-3	—	350987-3	94V-0		Gold	350766-1
	350825-1	643414-1	350832-1	94V-0		Pre-Tin	350766-1
	350825-2	—	350832-2	94V-0		Gold	350766-1
4	350761-4	643415-1	350988-4	94V-2	1.050 26.67	Pre-Tin	1-480702-0
	350761-3	—	350988-3	94V-0		Gold	350779-1
	350826-1	643416-1	350833-1	94V-0		Pre-Tin	350779-1
	350826-2	—	350833-2	94V-0		Gold	350779-1
5	640467-1	643417-1	643061-1	94V-2	1.300 33.02	Pre-Tin	1-480763-0
	640901-1	643418-1	643062-1	94V-0		Pre-Tin	350809-1
	640901-2	—	—	94V-0		Gold	350809-1

6, 9, 12 and 15 Circuits



No. of Circuits	Socket Assembly Part Numbers			Housing Material	A Dim.	Socket Finish	Mates with Plug Housing Part Number (Using Pin Contacts)
	Standard Tail*	Standard Tail Polarized*	Long Tail**				
6	350762-4	643423-1	350989-4	94V-2	.550 13.97	Pre-Tin	1-480704-0
	350762-3	—	350989-3	94V-0		Gold	350715-1
	350827-1	643424-1	350834-1	94V-0		Pre-Tin	350715-1
	350827-2	—	350834-2	94V-0		Gold	350715-1
9	350763-4	643425-1	350990-4	94V-2	.800 20.32	Pre-Tin	1-480706-0
	350763-3	—	350990-3	94V-0		Gold	350720-1
	350828-1	643426-1	350835-1	94V-0		Pre-Tin	350720-1
	350828-2	—	350835-2	94V-0		Gold	350720-1
12	350764-4	643427-1	350991-4	94V-2	1.050 26.67	Pre-Tin	1-480708-0
	350764-3	—	350991-3	94V-0		Gold	350735-1
	350829-1	643428-1	350836-1	94V-0		Pre-Tin	350735-1
	350829-2	—	350836-2	94V-0		Gold	350735-1
15	350765-4	643429-1	350992-4	94V-2	1.300 33.02	Pre-Tin	1-480710-0
	350765-3	—	350992-3	94V-0		Gold	350736-1
	350830-1	643430-1	350837-1	94V-0		Pre-Tin	350736-1
	350830-2	—	350837-2	94V-0		Gold	350736-1

NOTES:

Housing Material: 94V-2 rating,
natural color (NEMA colors avail-
able); 94V-0 rating, brick red.
Pin Material: Phos. Bronze, pre-tin
plate or .000030 [0.0008] min. gold
over .000050 [0.0013] min. nickel.

* Use Standard Tail for .062 [1.57] thick printed circuit board.
** Use Long Tail for .125 [3.18] thick printed circuit board.

Assembly Modules

Material and Finish:

94V-0 (brick red)

Max. Wire O.D.: .160 [4.06]

Assembly Instructions:

Snap module onto housing.
Fully insert contacts thru
module and into housing.

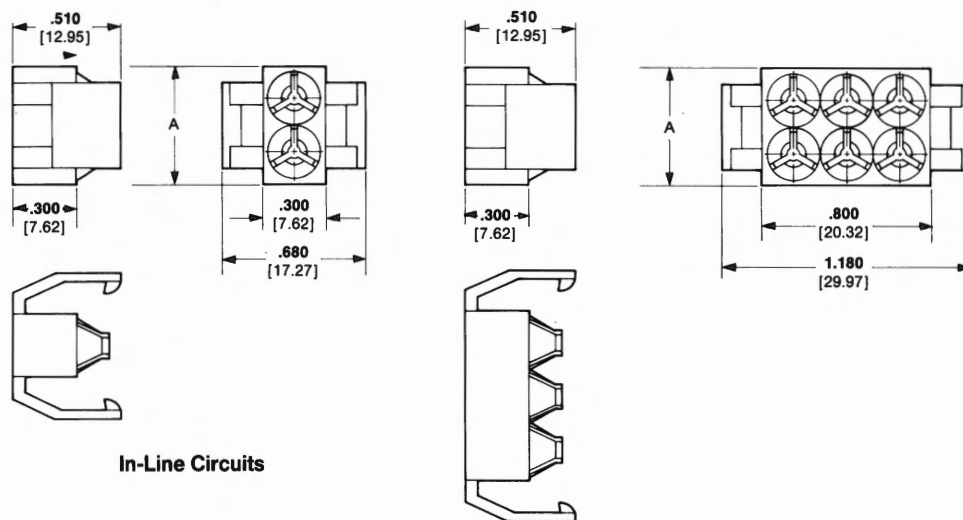
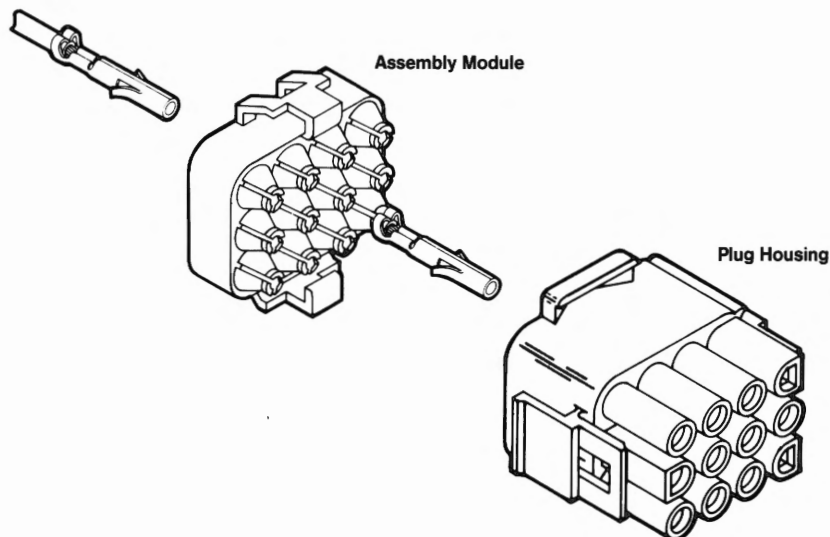
(Note: Several clicks can be heard as the
contact is pushed in place). Disengage
latches on module and slide back from end
of housing. Check for any contact not fully
inserted into housing; insert any contacts
not locked in housing.

Push module back against housing until
latches are engaged.

Dimensioning:

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

Chart contains dimensions in inches over
millimetres.



In-Line Circuits

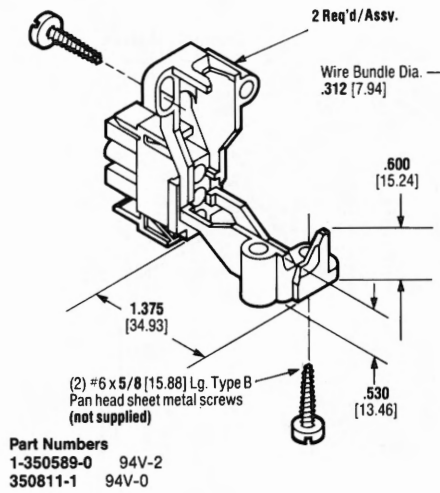
Multiple Row Circuits

Description	No. of Circuits	A Dim.	Part Numbers
In-Line Circuits	2	.550 13.97	643250-1
	3	.800 20.32	643251-1
	4	1.050 26.67	643252-1
	6	.550 13.97	643253-1
Multiple Row Circuits	9	.800 20.32	643254-1
	12	1.050 26.67	643255-1
	15	1.300 33.02	643256-1

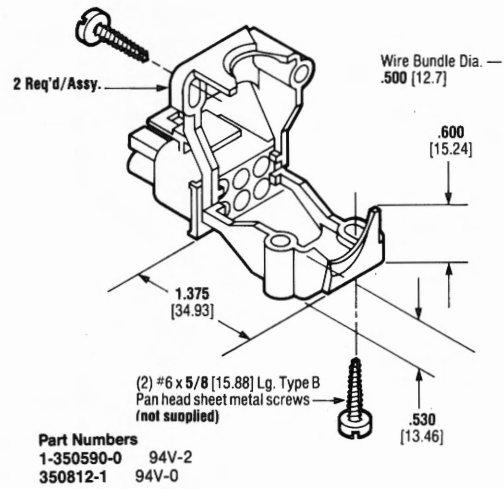
Strain Reliefs

Dimensioning:
All dimensions in inches and millimetres.
Values in brackets are metric equivalents.
Chart contains dimensions in inches over millimetres.
Dimensional tolerances are $\pm .015$ [0.38] unless noted otherwise.

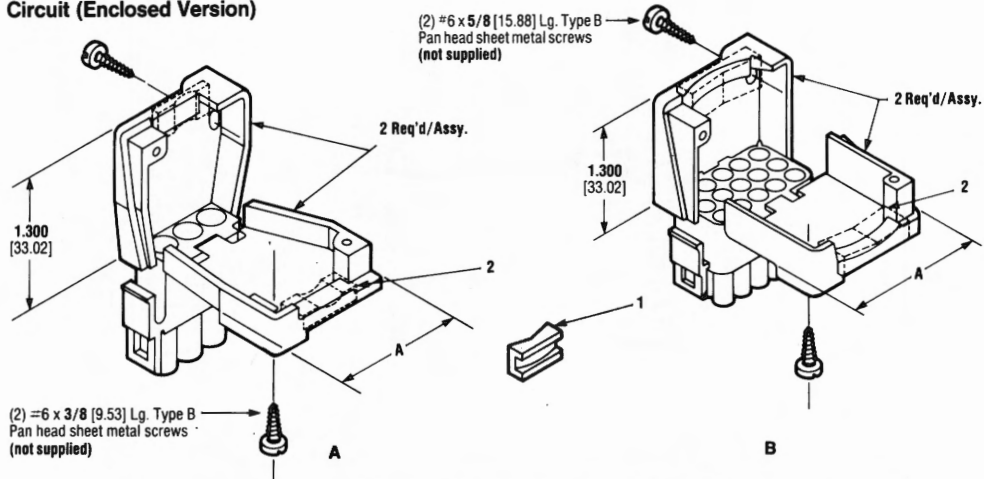
2, 3, 4 and 5 Circuit



6, 9, 12 and 15 Circuit



2, 3, 4, 5, 6, 9, 12 and 15 Circuit (Enclosed Version)



Type	No. of Circuits	A Dim.	Single Wire Dia. Range	Wire Bundle Dia. Range	Part Numbers	
					94V-2	94V-0
A	2	.960 24.38	.040-.190 1.02-4.83	—	1-640719-0	640713-1
	2	.960 24.38	—	.200-.350 5.08-8.89	1-640719-1	640713-2
	3	1.140 28.96	.040-.190 1.02-4.83	—	1-640720-0	640714-1
	3	1.140 28.96	—	.200-.350 5.08-8.89	641763-1	641945-1
	4	1.340 34.04	.040-.190 1.02-4.83	—	641775-1	641776-1
	4	1.340 34.04	—	.200-.350 5.08-8.89	641775-2	641776-2
	5	1.530 38.86	.040-.190 1.02-4.83	—	643030-3	643030-1
	5	1.530 38.86	—	.200-.350 5.08-8.89	643030-2	643030-4
	6	1.780 45.21	.040-.190 1.02-4.83	—	643585-1	643313-1
	6	1.780 45.21	—	.200-.350 5.08-8.89	643585-2	643313-2
	8	2.280 57.91	.040-.190 1.02-4.83	—	—	643314-1
	6	1.030 26.16	—	.120-.650 3.05-16.51	1-640721-0	640715-1
B	9	1.030 26.16	—	.120-.650 3.05-16.51	1-640722-0	640716-1
	12	1.280 32.51	—	.150-.750 3.81-19.05	1-640723-0	640717-1
	15	1.530 38.86	—	.200-.850 5.08-21.59	1-640724-0	640718-1

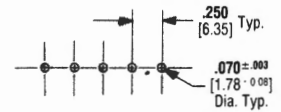
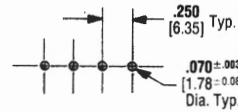
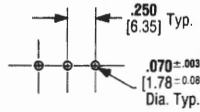
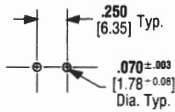
Notes:

1. Insert comes attached to strain relief. It can be used to provide additional adjustment for small wire bundles or discarded.
2. Insert to be positioned as shown by dotted lines.
3. Strain relief part numbers represent one-half of a strain relief. Two of a part number are required for one connector.

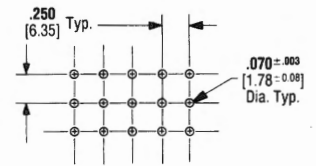
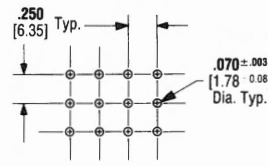
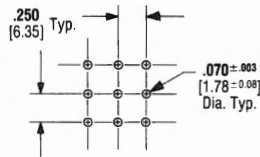
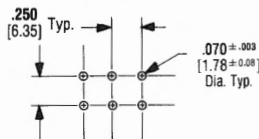
Printed Circuit Board Mounting Dimensions and Test Connectors

Dimensioning:
All dimensions in inches and millimetres.
Values in brackets are metric equivalents.
Chart contains dimensions in inches over
millimetres.
Dimensional tolerances are $\pm .015$ [0.38]
unless noted otherwise.

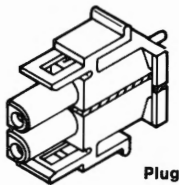
2, 3, 4 and 5 Position Pin or Socket Header Assemblies



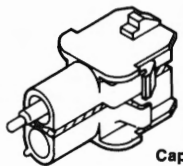
6, 9, 12 and 15 Position Pin or Socket Header Assemblies



2, 3, 4 and 5 Circuit Test Assemblies (with spring loaded contacts)



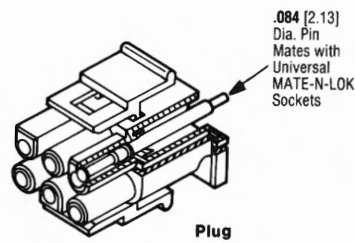
Plug



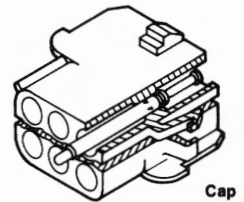
Cap

Note: Test probes have 5 amp Max. current rating

6, 9, 12 and 15 Circuit Test Assemblies (with spring loaded contacts)



Plug



Cap

Note: Test probes have 5 amp Max. current rating

Note: Housing Dimensions same as those on page 6.

No. of Circuits	Part Numbers			
	Plug 94V-2	Plug 94V-0	Cap 94V-2	Cap 94V-0
2	350772-2	350848-2	350773-2	350849-2
3	350772-3	350848-3	350773-3	350849-3
4	350772-4	350848-4	350773-4	350849-4
5	350772-5	350848-5	350773-5	350849-5
6	350772-6	350848-6	350773-6	350849-6
9	350772-9	350848-9	350773-9	350849-9
12	1-350772-2	1-350848-2	1-350773-2	1-350849-2
15	1-350772-5	1-350848-5	1-350773-5	1-350849-5

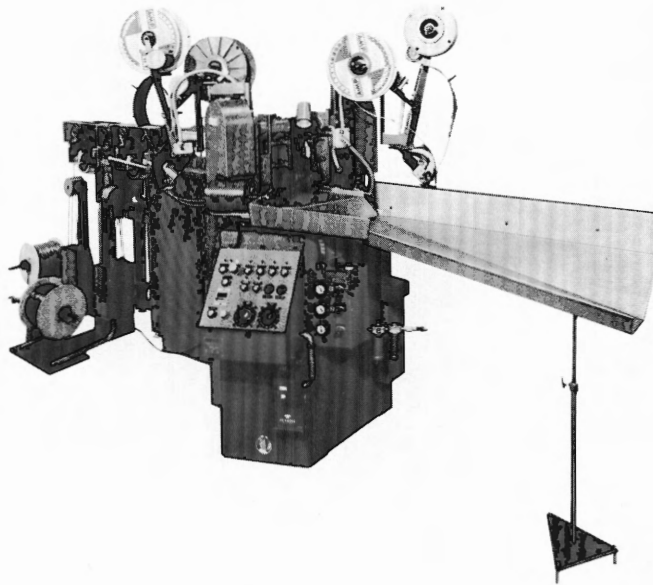
Application Tooling

AMPOMATOR

Lead Making Machines

AMP Incorporated provides five models of this machine. Similar in design, each contains two AMP Model "T" Terminating Devices adapted to the particular machine. Quick-change miniature applicators with dial settings permit product changeovers with minimal downtime.

Wire is fed into the machine through mechanical or electronic wire measuring devices. Depending on type of wire leads being produced, the leading end of the wire is stripped and terminated, then advanced through the machine to the programmed length. Upon completion of this operation, stripping and terminating of the trailing end is accomplished. Termination of the leading end of the wire is performed by one device and the trailing end by another, thereby making it possible to apply like to unlike terminals to a single wire lead. Machines incorporating two wire measuring devices can produce



Dimensioning:
Values in brackets are metric equivalents.

two wire leads of different lengths simultaneously, and apply up to four terminals in a single cycle of operation.

Specifications

Weight: 4000 lbs. [1814.4 kg] (approximately)

Height: 88" [223.5 cm]

Width: 74" [188 cm]

Length: 198" [502.9 cm]

Air Supply: 100 psi [6.89 bars] at 7 cfm [198.24 litres/min.]

Power Requirement: Several options available, contact AMP Inc.

Production:

Up to 5700 10" [25.4 cm] leads;
1020 150" [381 cm] leads
Model IV-B limited to 3900 leads
(Wire range 24-12 AWG [0.2-3 mm²])

Optional Accessories

- Partial strip kit
- Wire dereeler
- Short lead adaptor
- Wire marker
- Limp wire kit
- Soap tank for asbestos wire
- Long lead stacker

AMP-O-LECTRIC Terminating Machine with Standard or Miniature Applicators

The AMP-O-LECTRIC semi-automatic terminating machine is an easily moved, bench mounted unit designed to terminate a variety of reel-stored, open or closed barrel AMP products. The machine operates on standard 110 volt ac power and is actuated by a foot pedal. It operates as fast as the operator can insert the wire, up to 2,000 uniform, top quality terminations per hour are possible.

Specifications

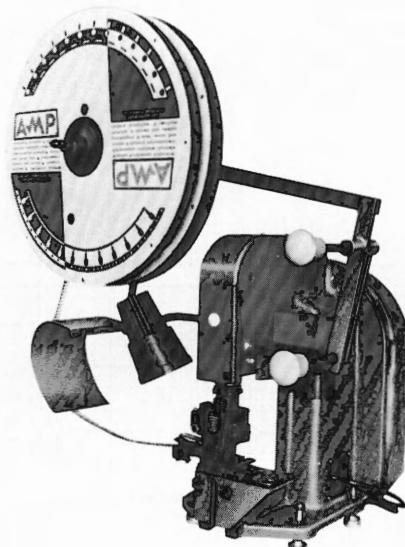
Power Required: 115 vac, 60 Hz

Weight: 230 lbs. [104.32 kg]

Height: 24" [60.96 cm]

Width: 21" [53.34 cm]

Depth: 20" [50.8 cm]



CERTI-CRIMP Hand Tool

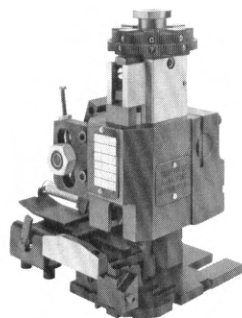


For limited production, prototype, experimental and servicing applications, CERTI-CRIMP hand tools are ideal. The ratchet device located between the tool handles assures precise pressure needed to form a proper crimp.

Application Tooling (Continued)

Dimensioning:
Values in brackets are metric equivalents.

Miniature Quick-Change Applicator

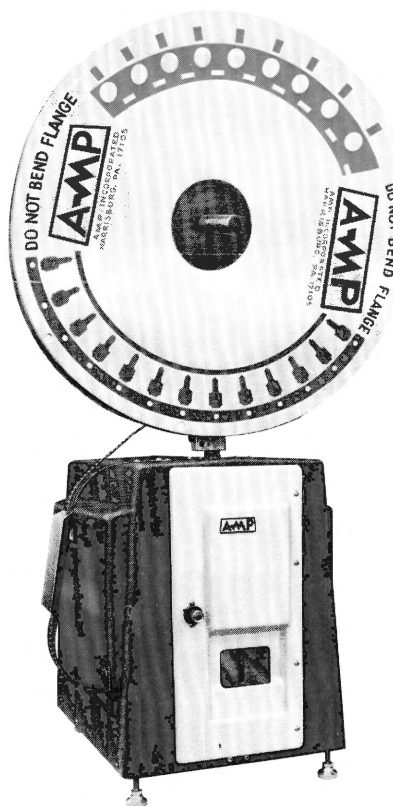


AMP Miniature Quick-Change Applicators are available for a wide variety of product applications and are adapted to be used with both fully automatic equipment and semi-automatic bench equipment. They are the most commonly used applicators produced by AMP Incorporated.

These applicators have many advantages over standard applicators:

- 1) quickly and easily replaced with another applicator to run different product using the same terminating device/machine, thereby keeping downtime to a minimum
- 2) easily repaired, thereby, reducing maintenance cost
- 3) capable of handling similar products and various wire sizes, simply by dialing in the exact wire and insulation crimp height settings.

AMP-O-MATIC Side Feed Stripper/Crimper Machine Part Number: 463345-1



This is a pneumatically operated bench-top machine capable of stripping wires and crimping side feed terminals. It is a compact machine and can be easily moved to other locations.

The machine is completely enclosed and the "target area" is visible through a slotted window in the door. Interchangeable applicators used in this machine are similar to

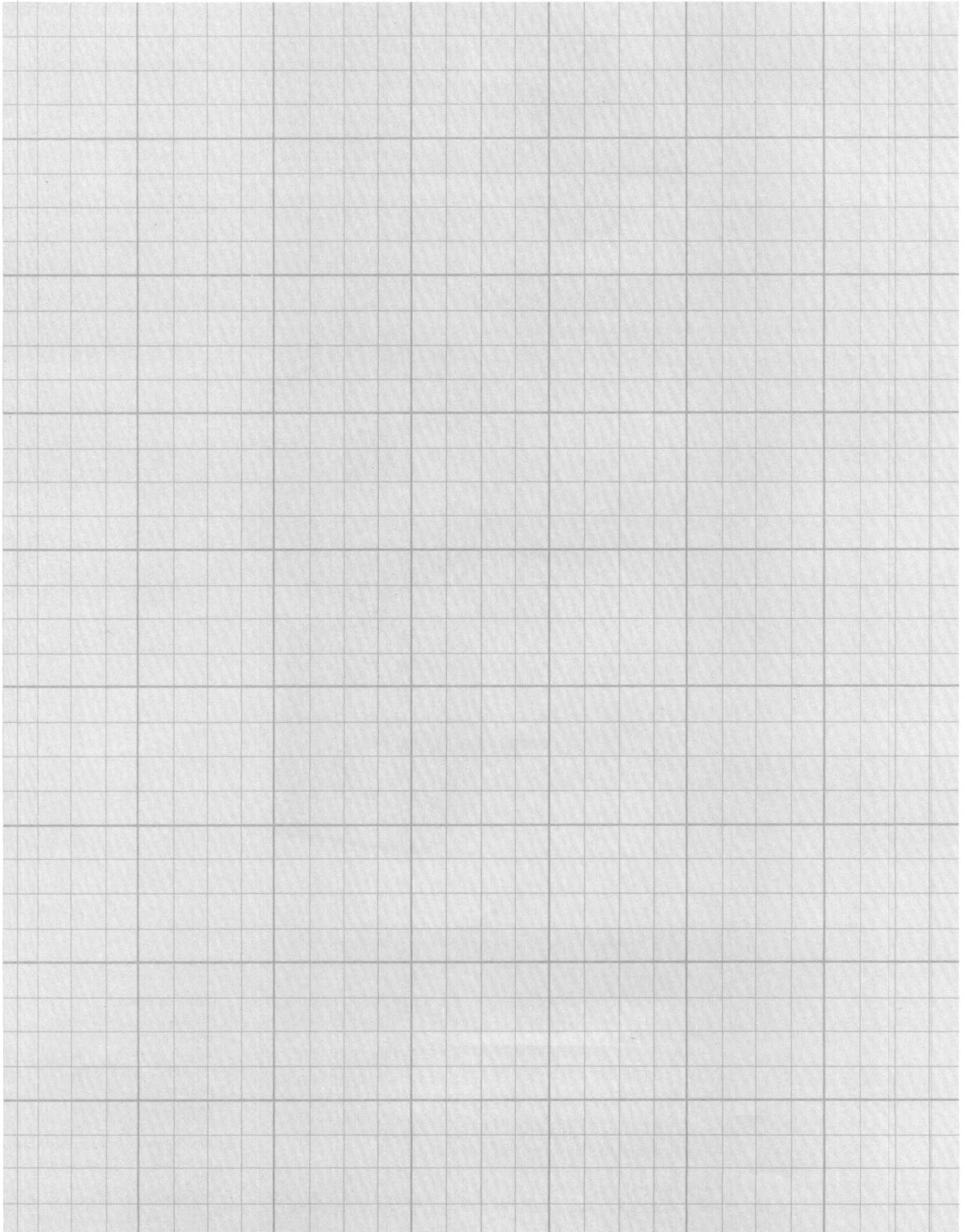
the quick-change type applicator. They feature wire and insulation crimp adjustment on the top of the applicator ram.

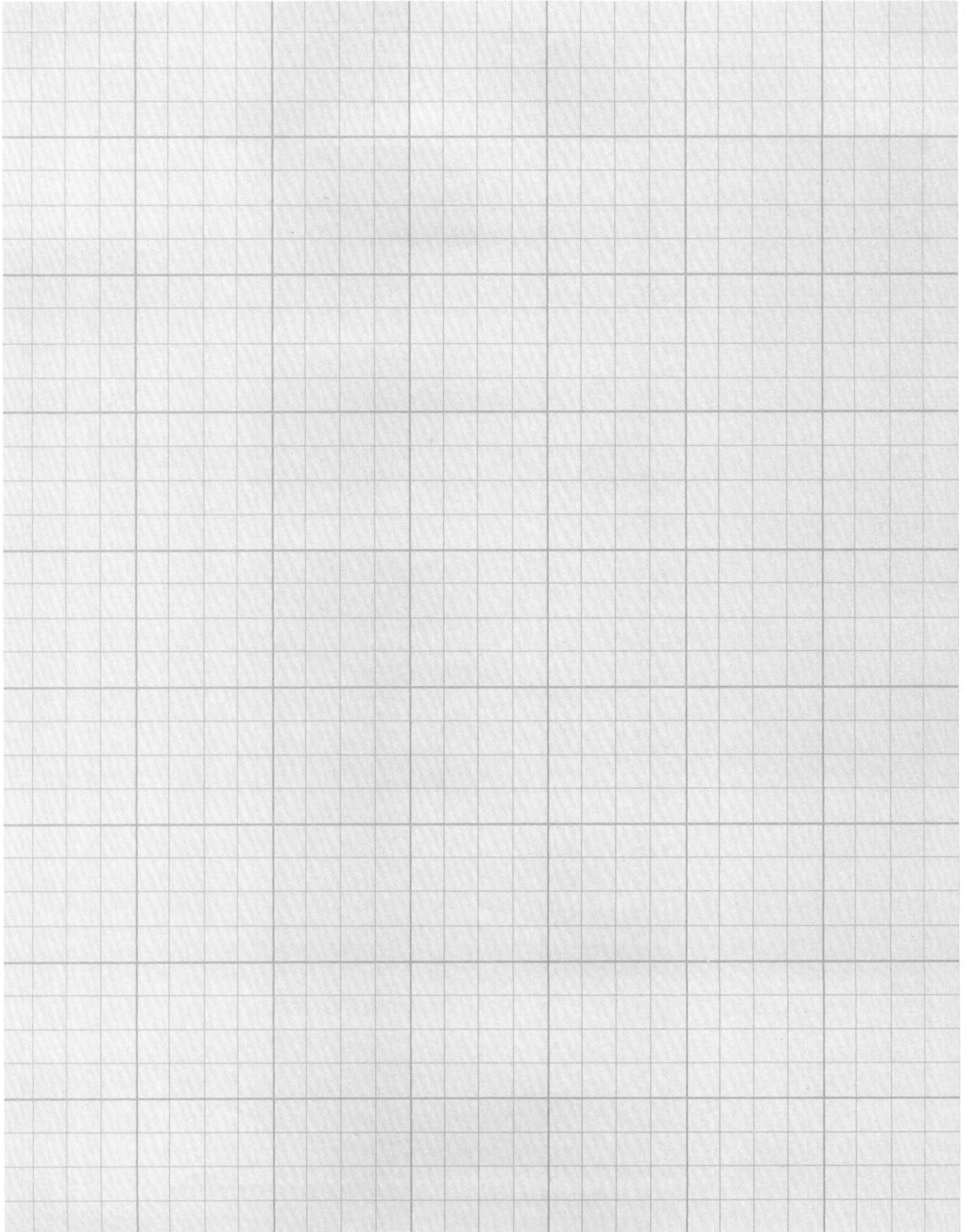
Unstripped wire is inserted and the foot valve depressed. The wire is automatically stripped and a terminal applied.

Depending on operator dexterity and work being processed rates in excess of 1,000 terminations/hour are attainable.

Specifications

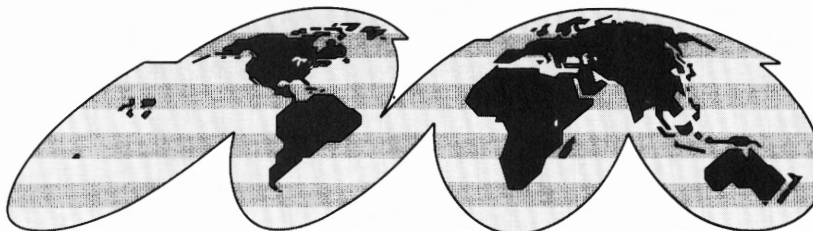
- Weight:** 95 lbs. [43.09 kg]
- Width:** 14" [35.6 cm]
- Height:** 33" [83.8 cm] (including reel support)
- Depth:** 18" [45.7 cm]
- Wire Range:** 32-16 AWG [0.03-1.4 mm²]
- Type Terminal:** Side feed open barrel
- Air Supply:** 80-100 psi [5.51-6.89 bars] at 1½ cfm
- Power Required:** 115 vac, 60 Hz
- NOTE:** Before ordering contact AMP Incorporated.

Engineering Notes

Engineering Notes

Numerical Index

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350430	8	350827	10	640587	9	643254	11
350431	8	350828	10	640588	9	643255	11
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350433	8	350830	10	640714	12	643313	12
350434	8	350831	10	640715	12	643314	12
350536	5	350832	10	640716	12	643405	8
350537	5	350833	10	640717	12	643406	8
350538	5	350834	10	640718	12	643407	8
350547	5	350835	10	640719	12	643408	8
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350582	8	350851	5	640724	12	643413	10
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350584	8	350866	6	640901	10	643415	10
350589	12	350867	6	641083	6	643416	10
350590	12	350868	6	641084	6	643417	10
350654	5	350871	5	641763	12	643418	10
350669	5	350873	5	641764	6	643423	10
350687	5	350874	5	641765	6	643424	10
350689	5	350877	5	641766	6	643425	10
350699	5	350918	5	641767	6	643426	10
350700	5	350919	5	641768	6	643427	10
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350706	5	350923	5	641770	6	643429	10
350707	5	350924	5	641771	6	643430	10
350711	8	350925	5	641775	12	643585	12
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350713	8	350943	9	641777	7		
350714	8	350944	9	641778	7		
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350732	8	350947	9	641831	8		
350735	6, 8, 10	350948	9	641832	8		
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350737	8	350986	10	641963	8		
350738	8	350987	10	641964	8		
350742	8	350988	10	641965	8		
350759	10	350989	10	641966	8		
350760	10	350990	10	641967	8		
350761	10	350991	10	641968	8		
350762	10	350992	10	641969	8		
350763	10	480696	6, 8, 10	641970	8		
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350786	8	480764	6	643229	9		
350787	8	640309	5	643230	9		
350789	8	640310	5	643231	9		
350790	8	640347	5	643232	9		
350792	8	640415	7	643233	9		
350793	8	640466	8	643234	9		
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350811	12	640582	6, 9	643237	9		
350812	12	640583	9	643250	11		



THE WIDE WORLD OF AMP

AMP manufacturing and/or direct marketing facilities are located in:

The Americas

United States of America
Worldwide Headquarters
AMP Incorporated
Harrisburg, Pennsylvania
U.S.A.
Phone: (717) 564-0100
Telex: 842313

AMP Products Corporation
Berwyn, Pennsylvania
U.S.A.
Phone: (215) 647-1000
Telex: 846405

AMP Keyboard
Technologies, Inc.
Milford, New Hampshire
U.S.A.
Phone: (603) 672-0470

Carroll Touch, Inc.
Round Rock, Texas
U.S.A.
Phone: (512) 244-3500
Telex: 881906

Argentina
AMP S.A. Argentina
Buenos Aires, Argentina
Phone: 54 1 752 4612
Telex: 26107

Brazil
AMP do Brasil Ltda.
São Paulo, Brazil
Phone: 55 11 864 3311
Telex: 1123507 AMPB BR

Canada
AMP of Canada, Ltd.
Markham (Toronto),
Ontario, Canada
Phone: (416) 475-6222

Mexico
AMP de Mexico, S.A.
Mexico City, Mexico
Phone: 90 5 398 7965
Telex: 1773126

Europe

Austria
AMP Österreich Ges.m.b.H.
Wien (Vienna), Austria
Phone: 43 222 782634
Telex: 131 246

Belgium
Branch in Brussels of
AMP Holland
Zaventem (Brussels), Belgium
Phone: 32 2 721 2020
Telex: 22-658

Denmark
AMP Danmark A/S
Viby, Denmark
Phone: 45 6 295 055
Telex: 68600

Finland
AMP Finland OY
Helsinki, Finland
Phone: 358 0 556 533
Telex: 12-2496 AMPFI

France
AMP de France
Pontoise (Val d'Oise),
France
Phone: 33 1 30 30 4550
Telex: 698205

Germany
AMP Deutschland G.m.b.H.
Bensheim, West Germany
Phone: 49 6251 1330
Telex: 468576

Great Britain
AMP of Great Britain Limited
Stanmore, (London),
Middlesex, England
Phone: 44 1 954 2356
Telex: 929547

Holland
AMP-Holland B.V.
's-Hertogenbosch,
The Netherlands
Phone: 31 73 20 0911
Telex: 50150

Ireland
AMP Ireland Limited
Dublin, Ireland
Phone: 353 1 51 7333
Telex: 852 92211 AMP EI

Italy
AMP Italia S.p.A.
Collegno (Turin), Italy
Phone: 39 11 7173 1
Telex: 210250

Norway
AMP Norge A/S
Rud (Oslo), Norway
Phone: 47 2 135 080
Telex: 19827

Spain
AMP Española, S.A.
Barcelona, Spain
Phone: 34 3 200 8466
Telex: 53034

Sweden
AMP Svenska AB
Stockholm-Jakobsberg,
Sweden
Phone: 46 7 581 0400
Telex: 10985

Switzerland
AMP A.G.
Lucerne, Switzerland
Phone: 41 41 57 0100
Telex: 72248

The Far East

Australia
Australian AMP Pty. Limited
Castle Hill, NSW 2154
Australia
Phone: 61 2 680 3377
Telex: 22195

Hong Kong
AMP Products Pacific Limited
Kowloon, Hong Kong
Phone: 852 3 744 0218
Telex: 37455 AMPHK HX

Japan
AMP (Japan), Ltd.
Tokyo, Japan
Phone: 81 3 404 7171
Telex: J22692

Carroll Touch International
Japan Branch
Tokyo 160, Japan
Phone: 81 3 345 8231

Korea
AMP Korea B.V.
Seoul, South Korea
Phone: 02 784 7171/5
Telex: K27457

New Zealand
New Zealand AMP Ltd.
Penrose (Auckland),
New Zealand
Phone: 64 9 [REDACTED]
Telex: NZ 60034

Singapore
AMP Singapore PTE. Ltd.
Singapore
Phone: 65 482 0311
Telex: RS26651 AMPORE

Taiwan
AMP Taiwan B.V.
Taipei, Taiwan
Republic of China
Phone 886 2 391 0294
Telex: 28454 AMPBV

NEW ZEALAND AMP LTD.
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