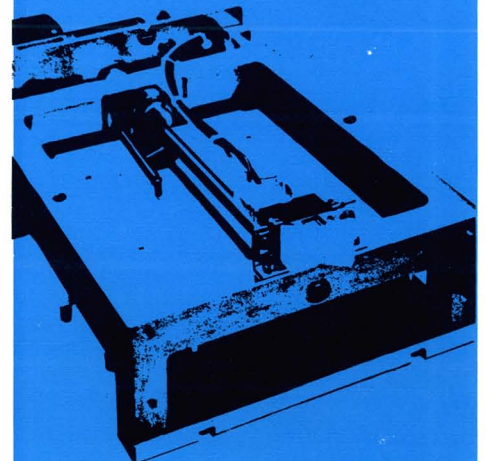
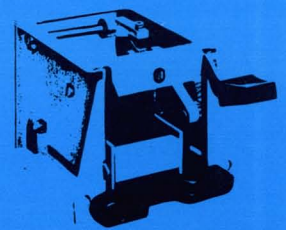


CAPITRON PRODUCTS

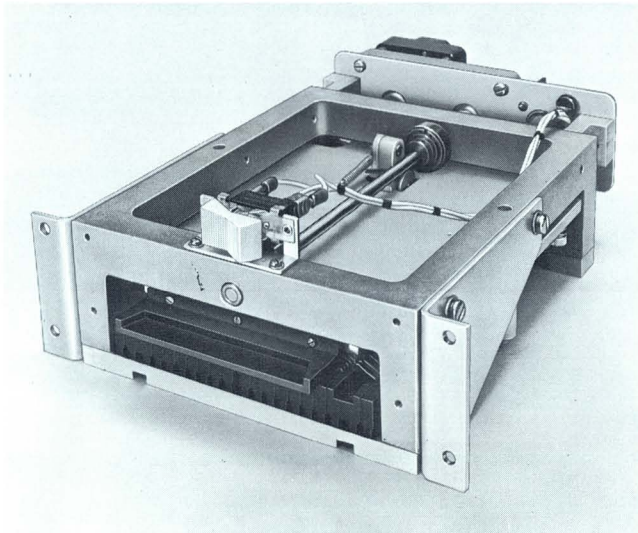
AMP offers a wide selection of data input and switch control devices for card reading and programming. Models are available for use with standard tabulating cards, credit and badge type plastic cards, and for special card controlled programming applications. AMP also is the manufacturer of a broad array of custom high and low voltage power supplies and high voltage leads, receptacles and assemblies to satisfy the most demanding environmental, complexity, performance and miniaturization requirements.

Tabulating card readers, Model 3980A and 2981A	19-3
Reader-Scanner assembly for serial output	19-7
Tabulating card readers, Model 2900A and 2901A	19-9
Credit card and badge readers, manually operated and solenoid powered	
Model 360,361 and all weather	19-13
Model 61, 161 and 261	19-17
Model 130	19-20
Hand card punch and cards	19-22
Magnetic card readers	
Model 210	19-24
Model 75	19-26
High voltage lead assemblies, receptacles and connectors	19-28
LGH High Voltage Lead Assemblies and Receptacles	
High voltage power supplies	
20 KV Multiple-Output CRT	19-77
5 VDC, 65 Ampere Multiple-Output	19-79
Hermetically Sealed Driver TWT	19-81
Miniature Hermetically Sealed CRT	19-83
Fast Switching, 8 KV to 16 KV	19-85
35 KV Multiple Output CRT	19-87
Hermetically Sealed Miniature CRT	19-89



Card Readers

Data Entry and Program Control Types

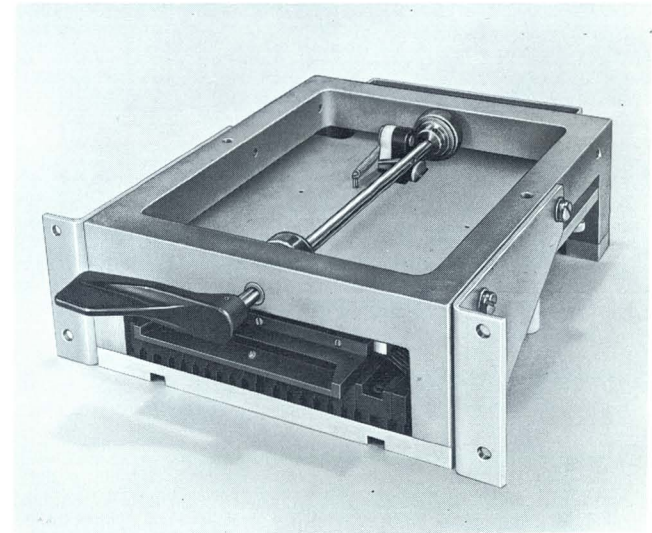


MODEL 2980A

The Models 2980A and 2981A are designed for economical commercial applications requiring a full card program. All 960 hole positions of a standard 80 column tabulating card are sensed.

The reader is designed for behind-panel mounting with either vertical or horizontal card aperture orientation. The low overall height of the reader makes it ideal for multiple installations in rack or panel enclosures.

The Model 2980A is motor operated with front panel and/or remote switch control. Model 2981A



MODEL 2981A

is manually operated by a rotating lever handle on the front panel. Enclosures for desk top mounting may be supplied upon request. Card entry is automatic following initial partial insertion and operation of the reader closure control. Card ejection is automatic following reader opening control. The 2980A can also be supplied with a card sense switching device. Card entry is then automatic without operating the reader closure control and gives partial ejection of the card when remotely triggered on command.

GENERAL SPECIFICATIONS

CARD: Standard 80 column tabulating card .007" to .015" thick

CONTACT FORM: Normally closed, 960 outputs (Switch closed with punched hole)

OUTPUT BUSSING: Type BC, Bussed by Column, Type BR, Bussed by Row, Type BSC, Bussed Split Column (Alphanumeric) Type B1/2C, Bussed Half Column

CONTACT RATINGS: 0.25 amperes DC resistive load when bussed by column, 0.50 amperes DC resistive load when bussed by half column

CONTACT INSULATION RESISTANCE: Greater than 10^4 megohms at 500 volts

CONTACT RESISTANCE: Less than 50 milliohms

CONTACTS: Gold over nickel, double wiping action

OVERALL SIZE: Model 2980A—
12.18" L x 8.75" W x 3.75" H
Model 2981A—
10.87" L x 8.75" W x 2.87" H

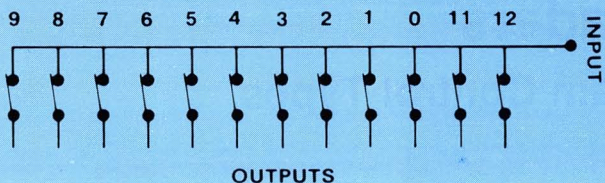
WEIGHT: Model 2980A—7.5 lbs.
Model 2981A—6.0 lbs.

OPERATION: Model 2980A—Motor Operated
Model 2981A—Manual handle rotation

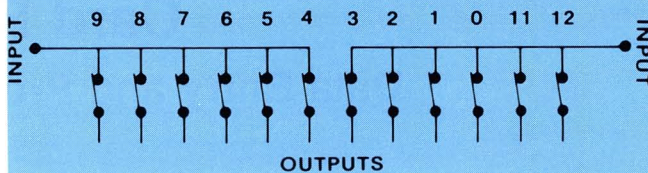
CAPACITANCE PIN TO PIN: 17 Pico Farads Max.

CONTACT WIRING: Straight or split matrix or individual outputs terminated to removable plug-in wiring assemblies. Examples illustrated on next page.

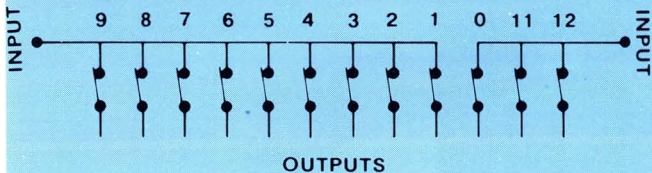
BUSSED BY COLUMN



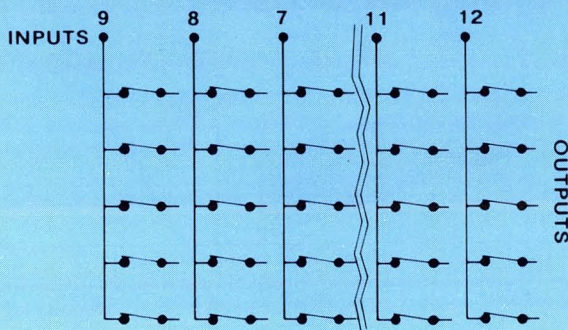
BUSSED HALF COLUMN



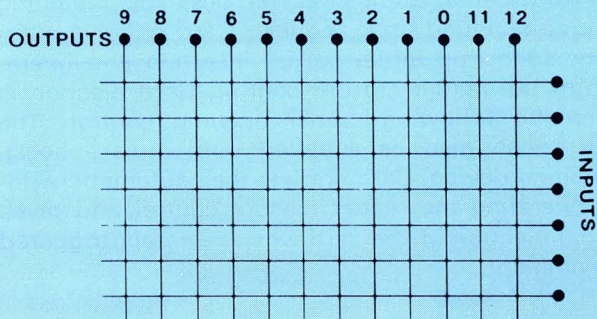
BUSSED SPLIT COLUMN



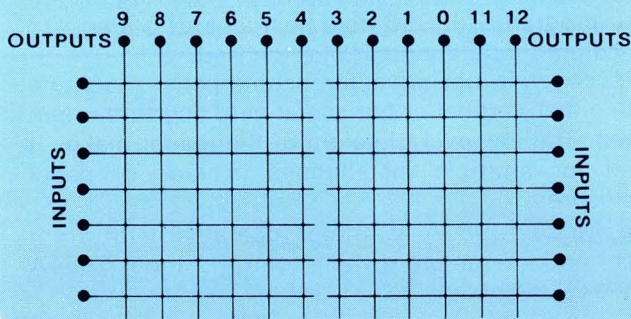
BUSSED BY ROW



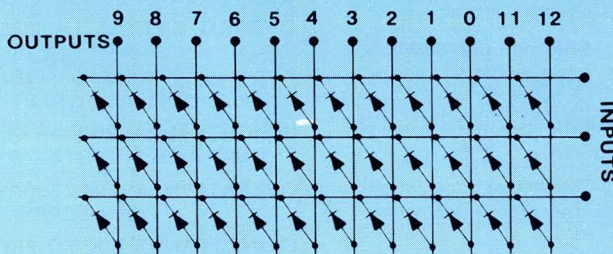
STRAIGHT MATRIX



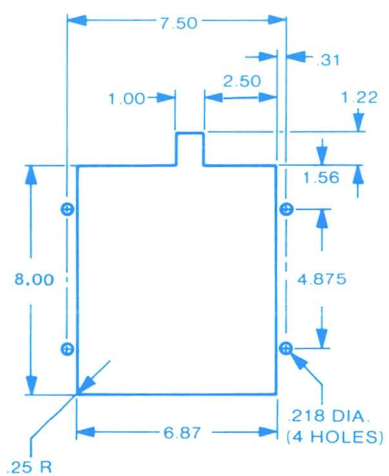
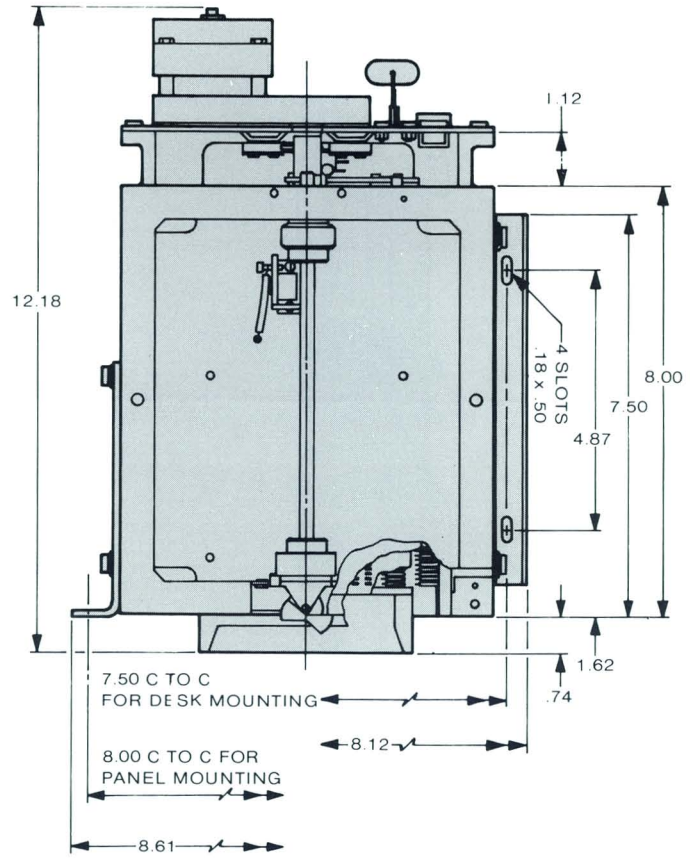
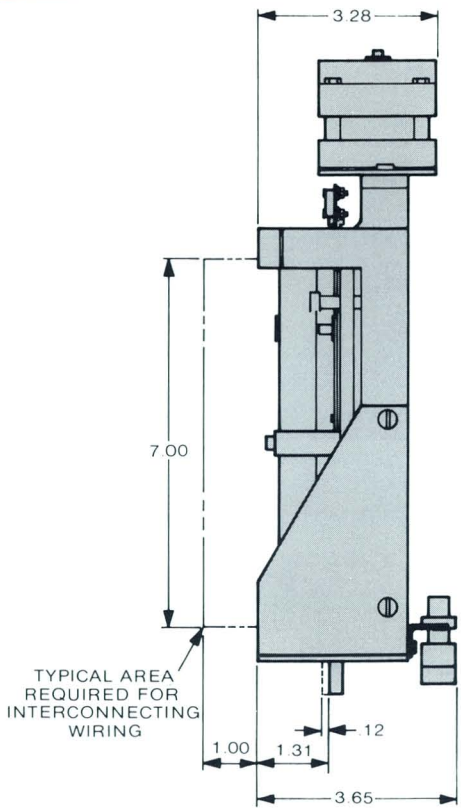
SPLIT MATRIX



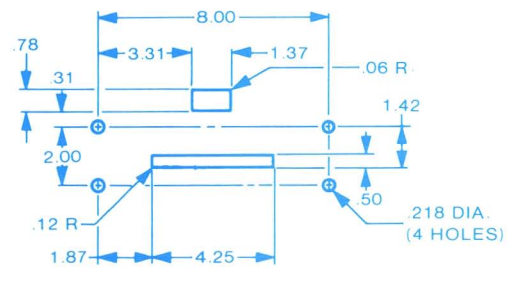
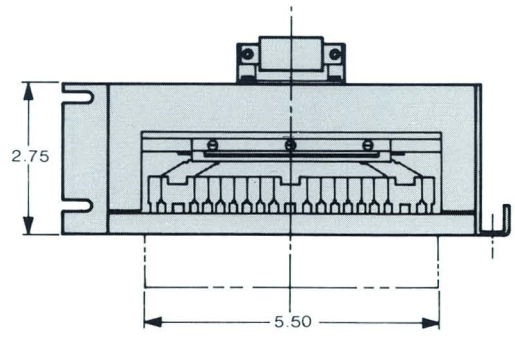
DIODE ISOLATED MATRIX



DIMENSIONAL SPECIFICATIONS – MODEL 2980A

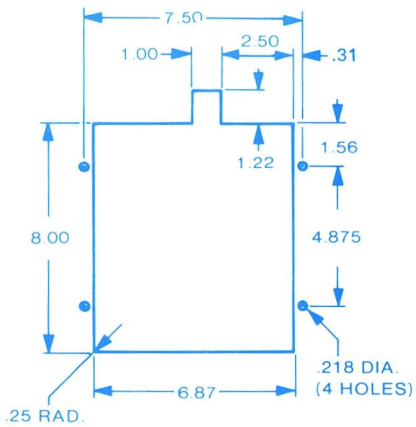
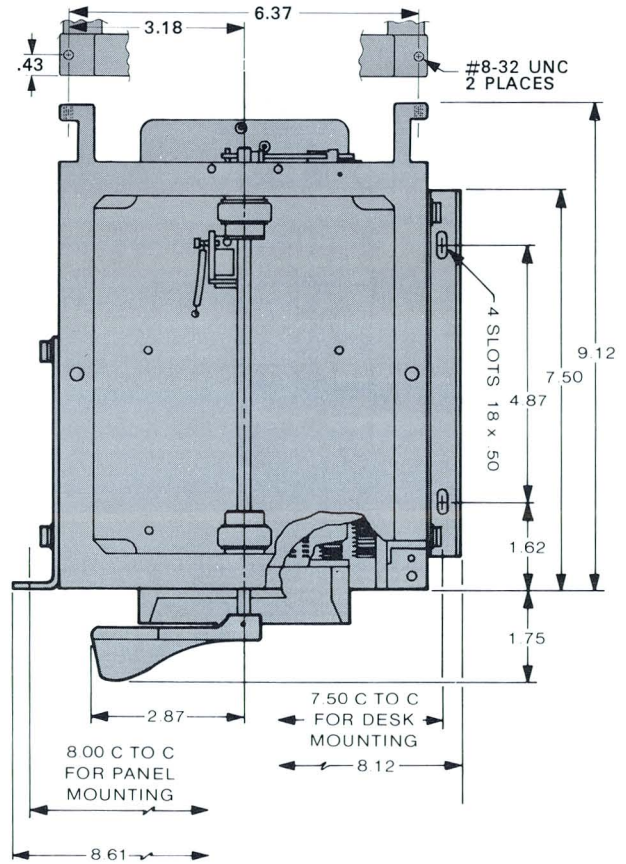
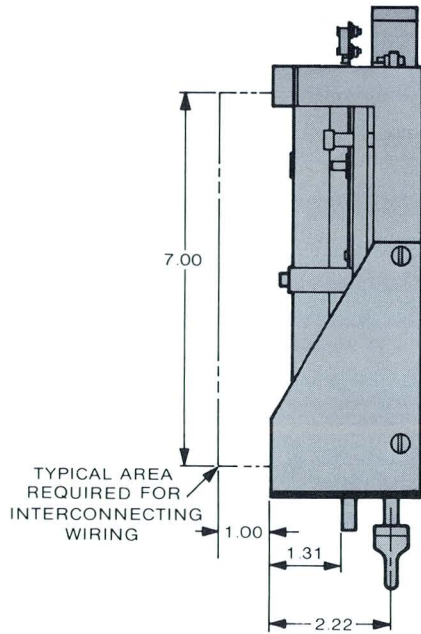


DESK MOUNTING

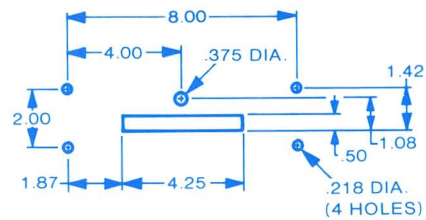
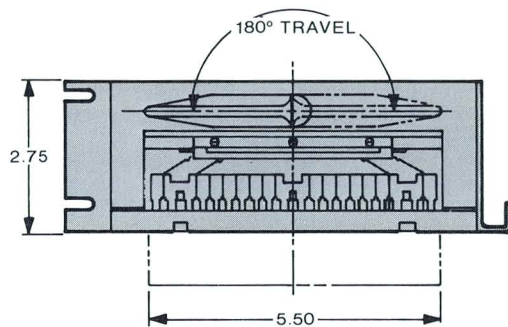


PANEL MOUNTING

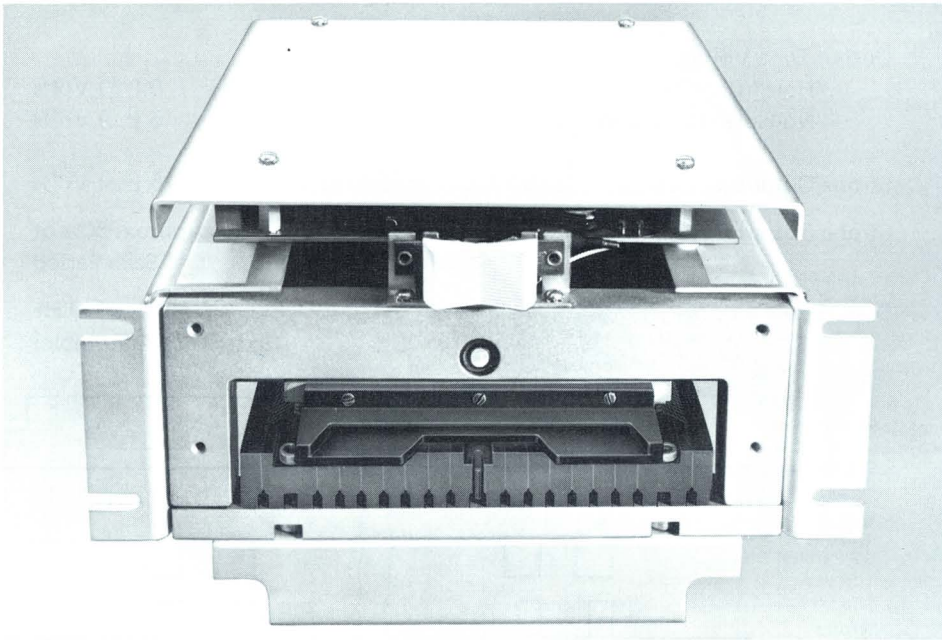
DIMENSIONAL SPECIFICATIONS – MODEL 2981A



DESK MOUNTING



PANEL MOUNTING



This AMP Card Reader/Scanner Assembly, equipped with a Model 2980 diode-isolated card reader, an electronic scanner, and a control circuit assembly, offers the combined capabilities of full card programming and high-speed character serial, bit parallel data sequencing. With the scanner sensing data from the 80-column tab card reader at speeds of up to 2000 characters per second, it can provide an output data rate equivalent to that of a 1500 card-per-minute serial card reader.

The assembly is designed for behind-panel mounting and operates from 110 VAC and 12 VDC power sources. The electronic scanner itself employs integrated circuitry and solid-state components for inherent reliability and has a low current requirement of 750 ma at 12 VDC. Its output levels are both DTL and TTL compatible. The reader/scanner assembly also features a triac-controlled motor to minimize internal RF generation.

Implementation of a typical operating mode begins with the insertion of a

card into the reader's card aperture and momentary actuation of a rocker switch. This causes the reader to close and the read-head to lower onto the card actuating a card insertion switch and read closure switch. The scanner then generates a voltage level output to signal that a scanning cycle can now be initiated.

Subsequent to an external signal, the scanner sequentially addresses each card reader column by applying 0 volts to each column position. The resulting 12-row output data (in character serial, bit parallel form) is present at 12 output pins of an "M" Series Connector; a 0 volt level indicating a "hole" condition and a 5 volt level indicating a "no hole" condition. A strobe pulse is also generated and present at the output to signify that data in each row is valid.

After all 80 columns have been addressed, the scanner automatically resets and signals the reader to open and release the card. Provision for a "manual reset" is also available to reset the scanner and open the card reader during a cycle.

Card Reader /Scanner Assembly

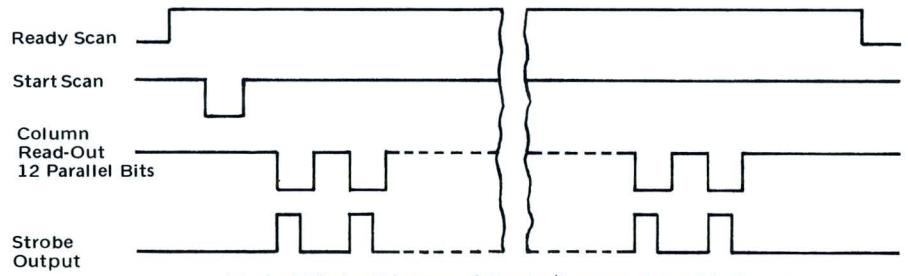
Features

- Full card program capability — all 960 hole positions of standard 80-column card are sensed.
- High-speed data sensing — electronic scanner provides character serial, bit parallel data at rates up to 2000 characters per second.
- Reader scanning rate externally adjustable within 10 Hz to 2000 Hz range.
- Operates on 110 VAC and 12 VDC.
- Integrated circuitry and solid-state components of scanner assure inherent reliability.
- Triac-controlled reader motor minimizes RF generation.
- Outputs compatible with DTL and TTL.
- All outputs available at "M" Series Connector pins.
- Strobe pulse signifies valid data for each row output.
- Reader automatically opens and releases card at end of cycle.
- "Manual reset" also available to reset scanner and open reader during a scanning cycle.
- Incremental scanning is an available option.

Specifications

Electrical

- Input Voltages:
 - Card Reader 110 Volts Ac
 - Electronic Scanner 12 Volts Dc, 750 Ma.
- Output Data Voltage Levels:
 - "Hole" Condition 0 (± 1 /₀) Volts
 - "No-Hole" Condition +5 ($\pm .5$) Volts
- Strobe Output +5 ($\pm .5$) Volts
- Strobe Output Duration Approx. 50% of Scan Period
- Scan Rate 10 Hz to 2000 Hz (Externally Adjustable)



Typical Timing Diagram of Reader/Scanner Assembly Outputs

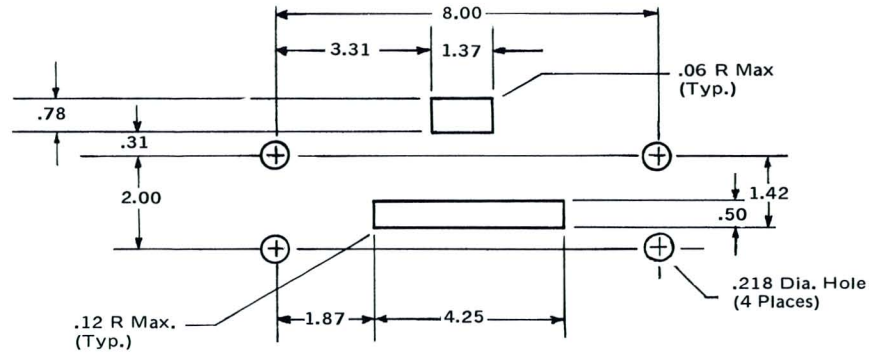
Outputs are available at the following "M" Series Connector pin locations:

- Pins A, B, C, D, E, F, H, J, K, L, M & N Data Rows 1 thru 12, respectively
- Pin P Start Scan
- Pin R Ready Scan
- Pin S Strobe Pulse
- Pin c Grd.
- Pin d +5 Volts Dc (Ref. Only)
- Pin Z 12 Volts Dc
- Pin T External reset

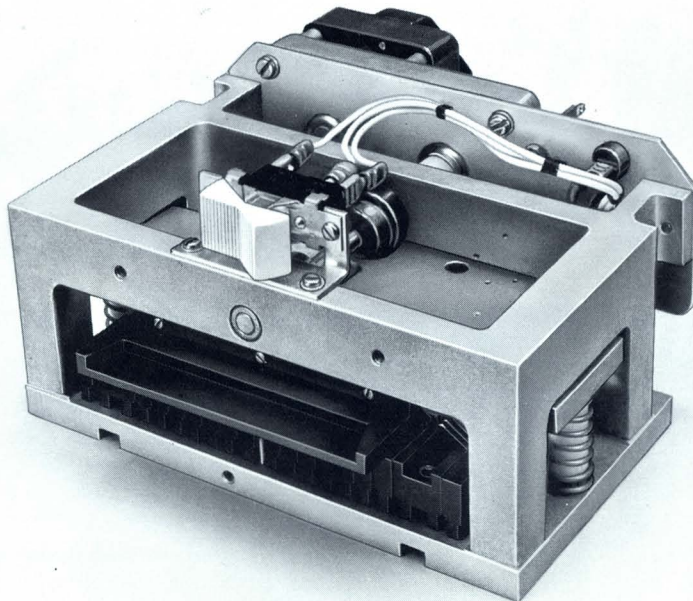
- Width 8 Inches (Approx.)
- Depth 12.71 Inches
- Height 5 Inches

Physical Dimensions

Mounting Dimensions

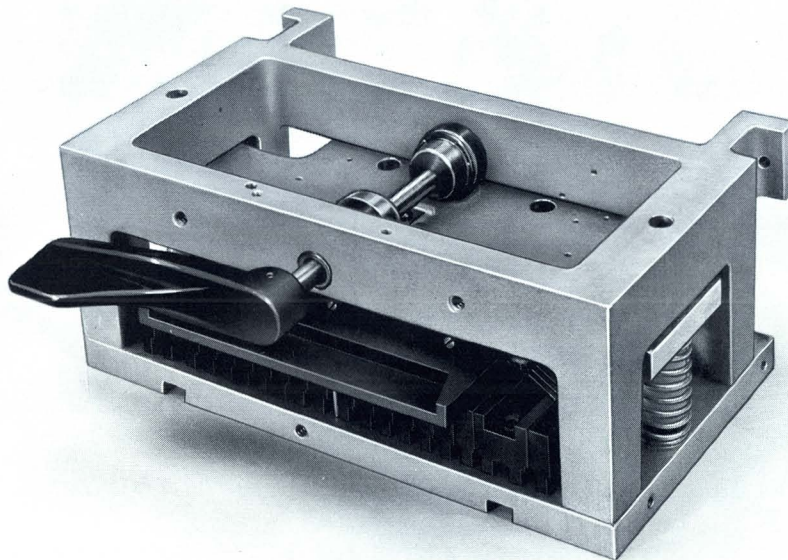


Card Readers

**MODEL 2900A**

The Models 2900A and 2901A are designed for economical commercial applications requiring less than a full

card program. The first twenty-two columns of an 80 column standard tabulating card are sensed.

**MODEL 2901A**

Features include switch actuated motor drive or manual insertion, compact rugged design, and mounting in any plane. Enclosure for desk top mounting supplied upon request.

card program. The first twenty-two columns of an 80 column standard tabulating card are sensed.

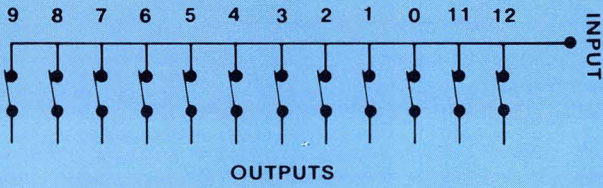
Card Readers Data Entry and Program Control Types

General Specifications

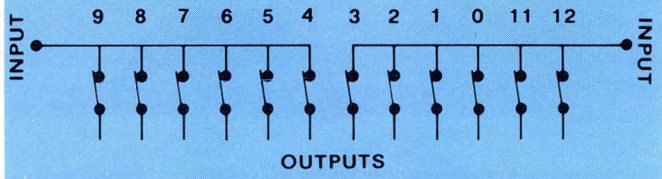
- **CARD:** Standard 80 column tabulating card .007" to .015" thick.
- **CONTACT FORM:** Normally closed, 264 outputs (Switch closed with punched hole).
- **OUTPUT BUSSING:** Type BC, Bussed by Column, Type BR, Bussed by Row, Type BSC, Bussed Split Column (Alphanumeric) Type B1/2C, Bussed Half Column.
- **CONTACT RATINGS:** 0.25 amperes DC resistive load when bussed by column, 0.50 amperes DC resistive load when bussed by half column.
- **CONTACT INSULATION RESISTANCE:** Greater than 10^4 megohms at 500 volts.
- **CONTACT RESISTANCE:** Less than 50 milliohms.
- **CONTACTS:** Gold on Gold Alloy, double wiping action.
- **OVERALL SIZE:**
Model 2900A — 7.50" L x 7.00" W x 3.75" H
Model 2901A — 6.13" L x 7.00" W x 2.87" H
- **WEIGHT:** Model 2900A — 4½ lbs.
Model 2901A — 3 lbs.
- **OPERATION:**
Model 2900A Motor Operated
Model 2901A Manual handle rotation
- **CAPACITANCE PIN TO PIN:** 17 Pico Farads Max.
- **CONTACT WIRING:** Straight or split matrix or individual outputs terminated to removable plug-in wiring assemblies. Examples illustrated on next page.

SPECIFICATIONS

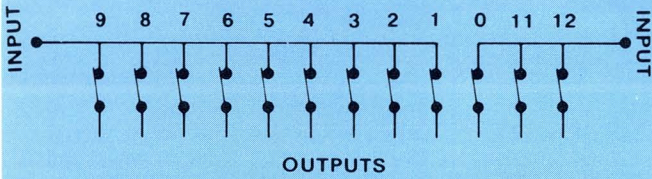
BUSSED BY COLUMN



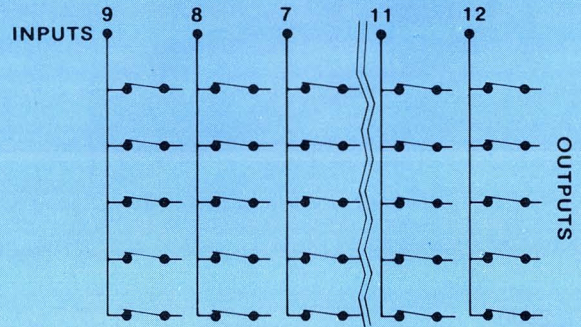
BUSSED HALF COLUMN



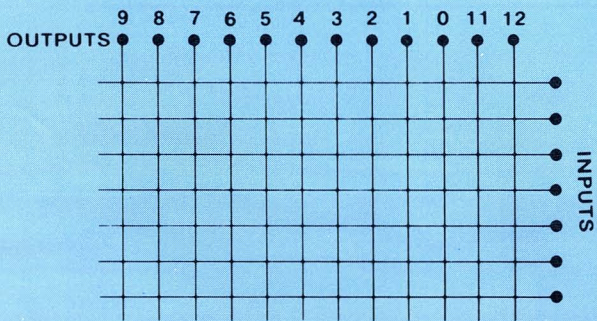
BUSSED SPLIT COLUMN



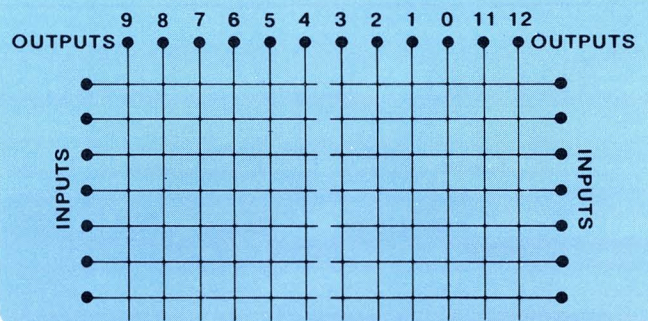
BUSSED BY ROW



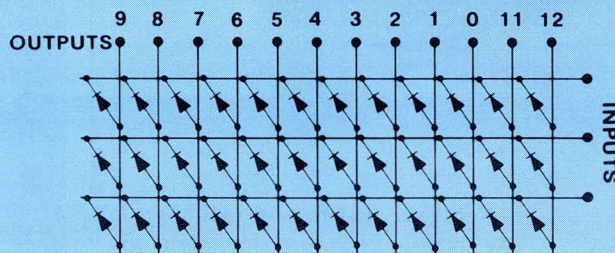
STRAIGHT MATRIX



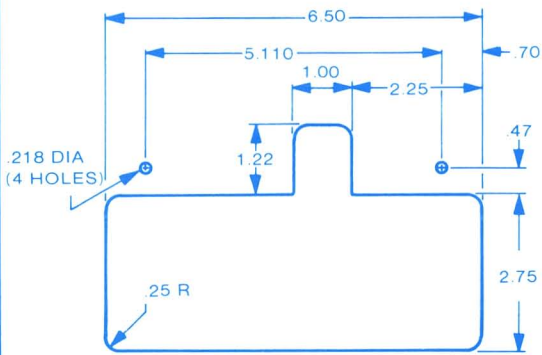
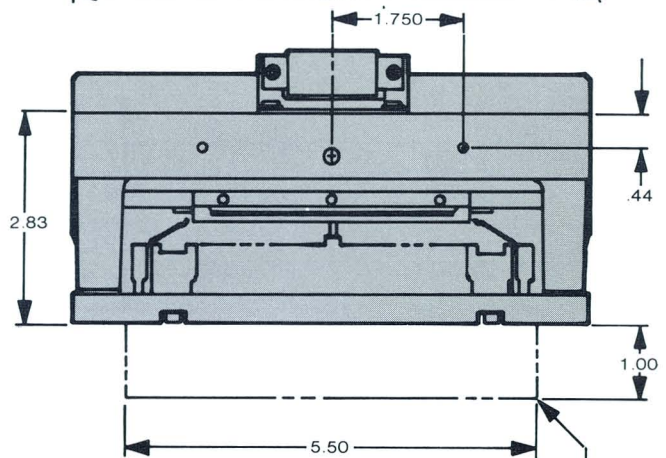
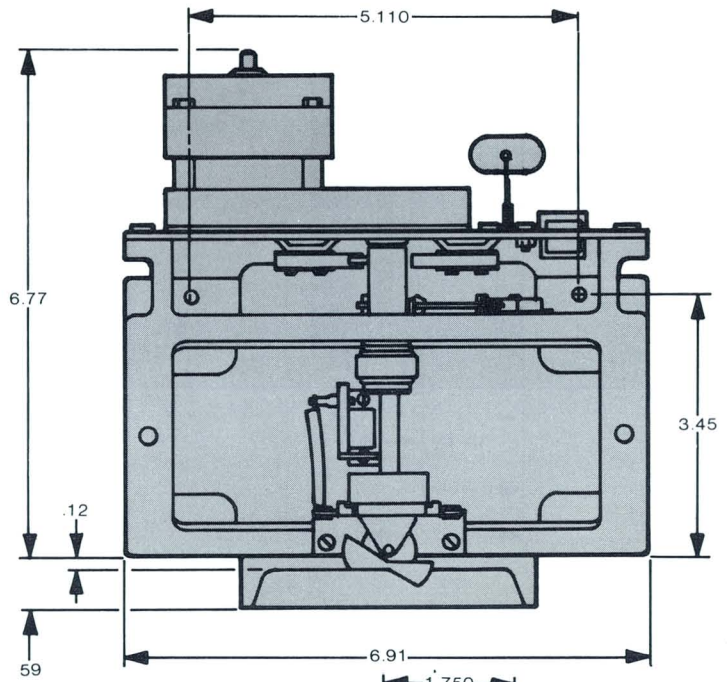
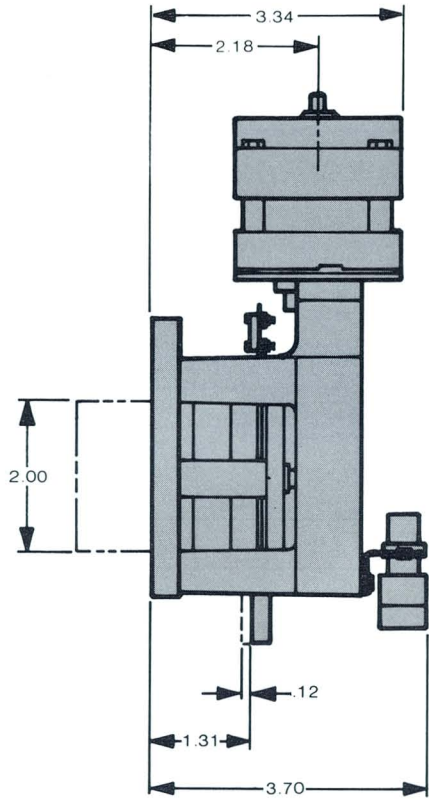
SPLIT MATRIX



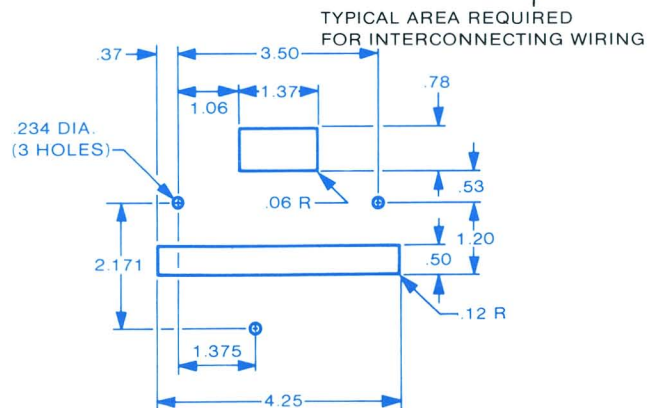
DIODE ISOLATED MATRIX



DIMENSIONAL SPECIFICATIONS – MODEL 2900A



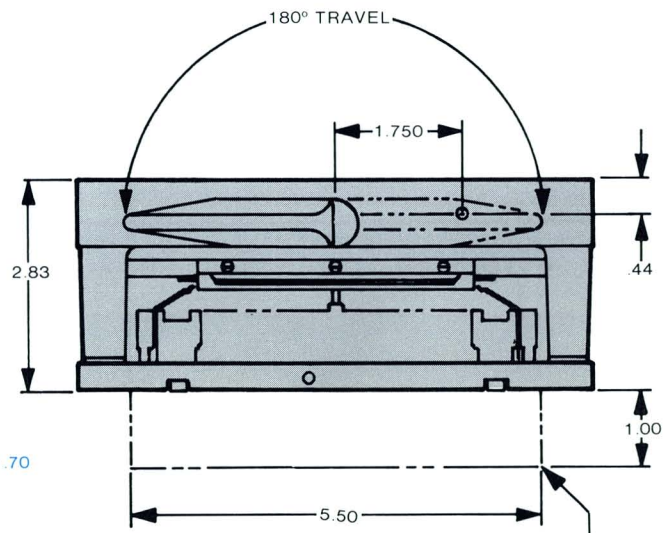
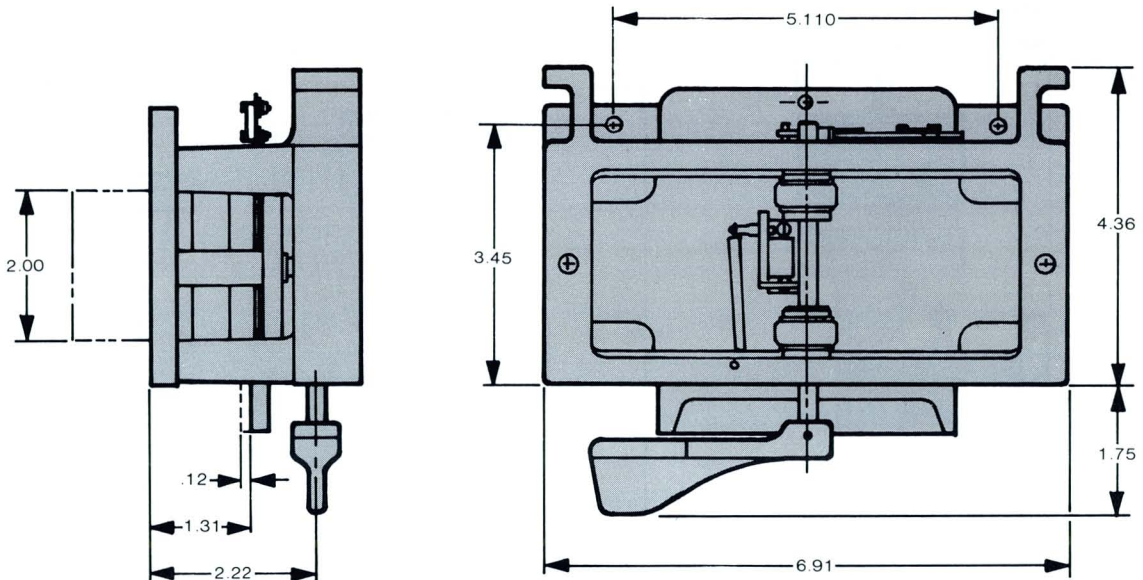
DESK MOUNTING



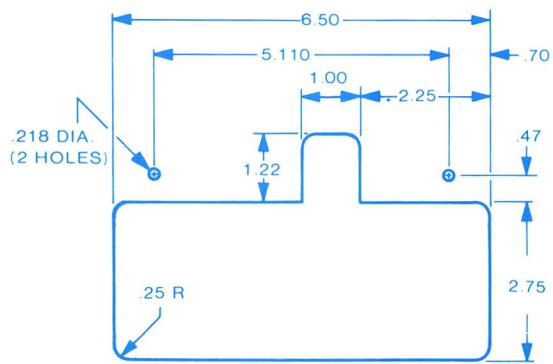
TYPICAL AREA REQUIRED FOR INTERCONNECTING WIRING

PANEL MOUNTING

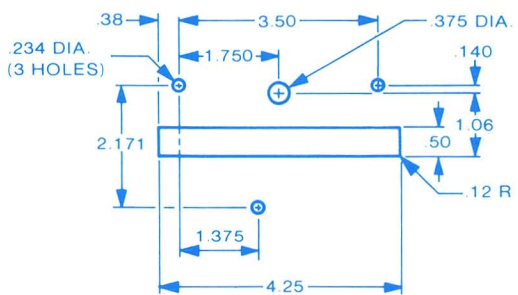
DIMENSIONAL SPECIFICATIONS – MODEL 2901A



TYPICAL AREA REQUIRED FOR INTERCONNECTING WIRING

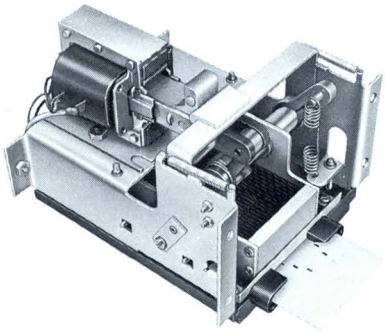


DESK MOUNTING



PANEL MOUNTING

Card Readers



The Model 360 Solenoid Powered Reader is designed for applications requiring automatic read head operation following insertion of the card. The reader is rated for continuous

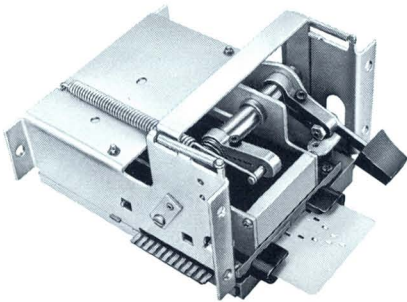
Model 360 Solenoid

duty and may be held in maintained contact state or pulsed briefly for contact scanning operations.

When the card is fully inserted into the aperture, the read head mechanism operates in less than 100 milliseconds. External circuit control is easily adapted to provide for local or remote card release.

Features of this unit include high card retention, full insertion and withdrawal interlocks, long life reliability under worst case conditions.

The reader as supplied is suitable for panel mounting in horizontal or vertical position with respect to the card entry axis. It may also be mounted within a desk top enclosure.



The Model 361 Manual Reader is designed for credit or badge card data source applications where manual operation of the read head mechanism is preferred.

Model 361 Manual

The reader may be mounted in any position and is especially suited to panel surface installations. No operating power is required.

Applications may include both portable and fixed systems as required for test sets, computer memory entry control, industrial process control, employee identification, and numerous others.

The reader includes means for positive card to switch registration, semi-automatic card ejections, maintained switch closures, card orientation, mechanical interlocks, and other features. The unit is basically designed for panel mounting but can be adapted to a desk top enclosure.



The All-Weather Reader is designed primarily for outdoor or other applications which require exposure of the reader unit to a wide range of weather environments.

All-Weather Model

The reader mechanism is solenoid operated and is rated for continuous or intermittent duty. Mechanical and electrical interlocks are used to insure correct card orientation and read head closure. Indicator lights and push button release is provided for local operation. The unit may also be controlled remotely.

The reader housing is cast aluminum rugged enough to withstand severe impact, vibration, and wide temperature changes. The closed door of the unit is sealed against water entry under force spray or driving rain conditions. Mounting may be either direct or conduit; or on a mounting bracket fixed to the housing.

Card Readers Credit and Badge Types

General Features

- Contacts are bifurcated, high pressure type with back wipe action.
- Contact mechanism is easily opened to clean or remove foreign particles from the card aperture.
- All bearings are designed for lifetime service without lubrication.
- Contact arrangements include either bussed rows or bussed columns with isolated outputs, or bussed matrix types up to 12 rows and 22 columns.
- Terminations are AMP FASTON tabs and pin disconnects. No wire unsoldering is required for unit disassembly.
- Readers accept Type I, II, III, IV, V or 51 plastic credit or badge type cards.
- Sense up to 264 data bits, 22-12 bit words or 66-BCD characters in parallel output.

GENERAL SPECIFICATIONS (All Types)

Electrical

Maximum Number of Isolated Outputs	264
Maximum Number of Contact Rows	12
Minimum Number of Contact Rows	10
Maximum Number of Contact Columns	22
Minimum Number of Contact Columns	5
Contact Life Expectancy	500,000 cycles
Contact Resistance (at 100 milliamperes, 10 volts D.C.)	50 Milliohms
Contact End of Life Resistance	2 Ohm
Contact Current Rating (Maximum)	.25 Ampere
Insulation Resistance (Minimum)	10,000 Megohms
Contact Capacitance: Between Bussed Columns	20 pf. max.
Between Isolated Contacts	2 pf. max.
Open Circuit Isolated Contact to Bus	1 pf. max.
Any Contact to Frame	25 pf. max.
Electrical Interlock Ratings	5.0 Ampere 250 vols A.C.

Material and Finish

Structural

Aluminum	—2024-T3, 5052-H32	—Clear Anodized
Stainless Steel	—302, 304	—Passivated
Cold Rolled Steel	—1020	—Cadmium Chromate

Insulation

POLYCARBAFIL* Nema Grade FR-4 Class III P.C.

Contacts

Spring Fingers —Beryllium Copper
Contact Pads Electroless Nickel

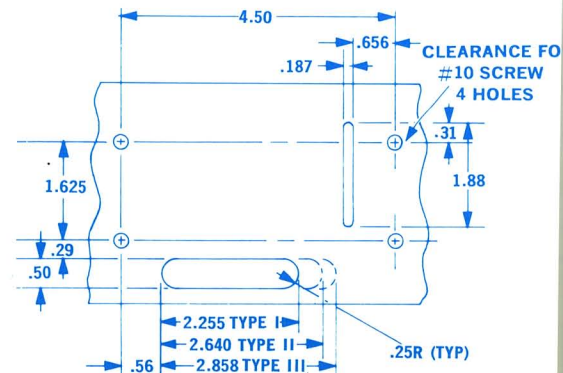
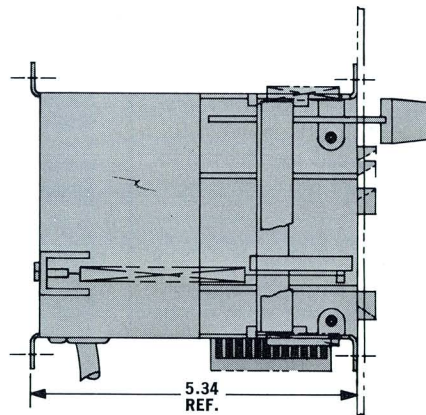
Bearings

OILITE**

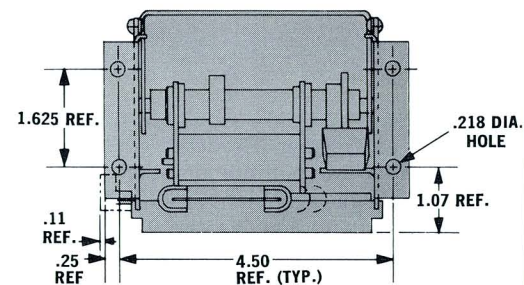
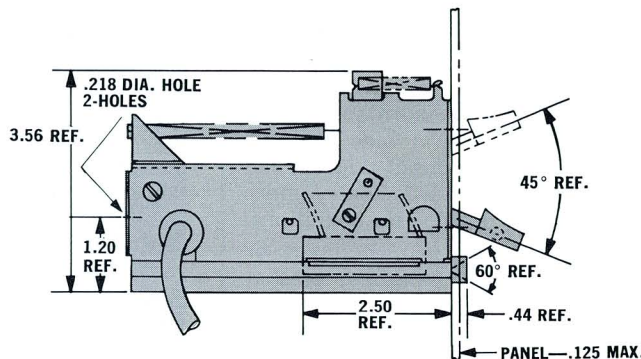
*Trademark of Fiberfil Inc.

**Trademark of Chrysler Corp.

Model 361 Manual

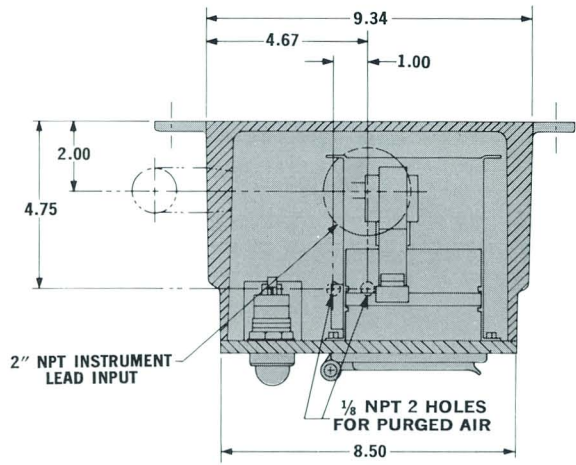


PANEL CUT-OUT

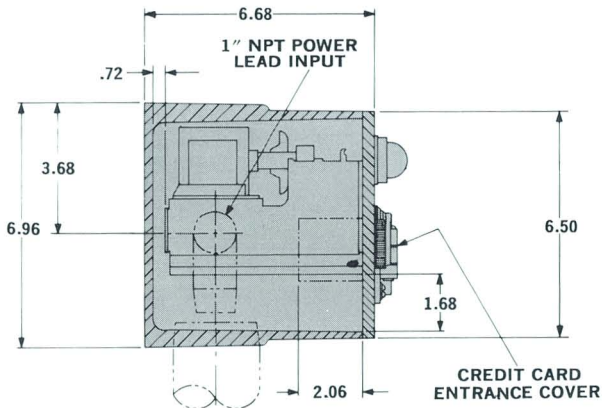


DIMENSIONAL SPECIFICATIONS

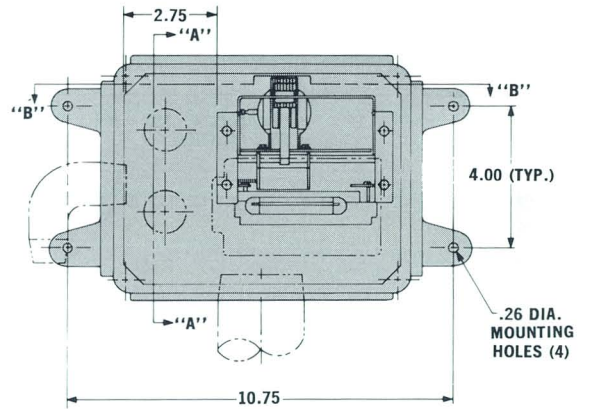
All-Weather Model



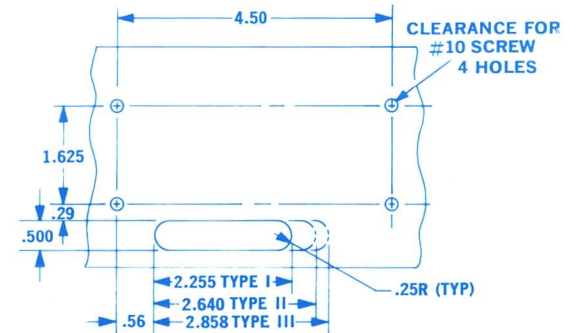
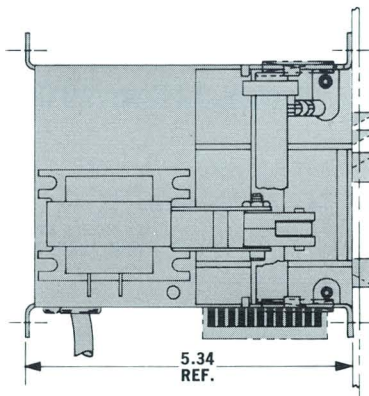
SECTION "B-B"



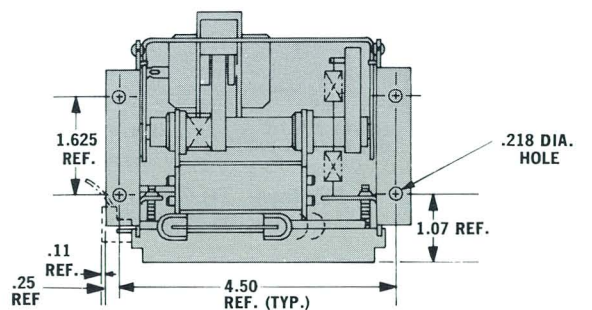
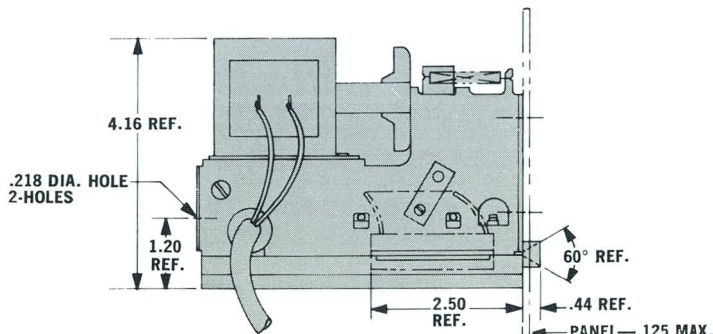
SECTION "A-A"



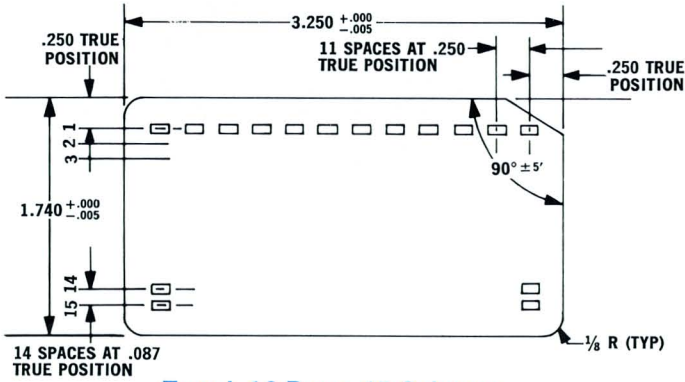
Model 360 Solenoid



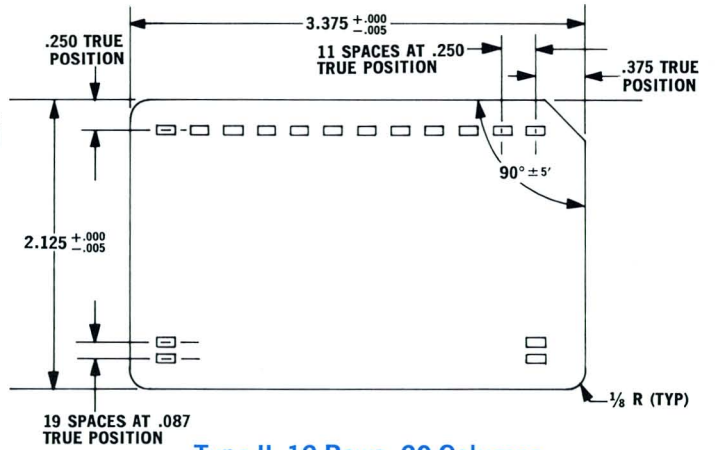
PANEL CUT-OUT



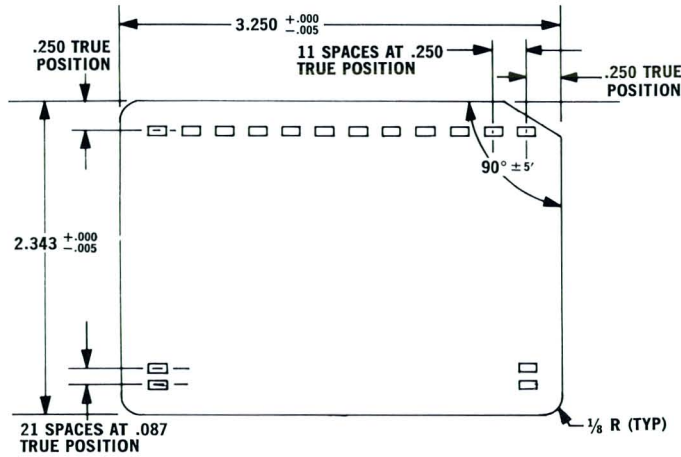
STANDARD BADGE AND CREDIT CARD SPECIFICATIONS



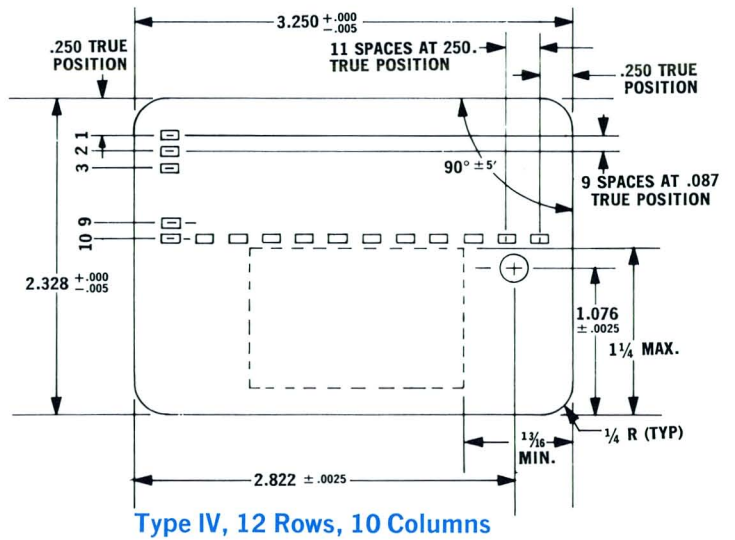
Type I, 12 Rows, 15 Columns



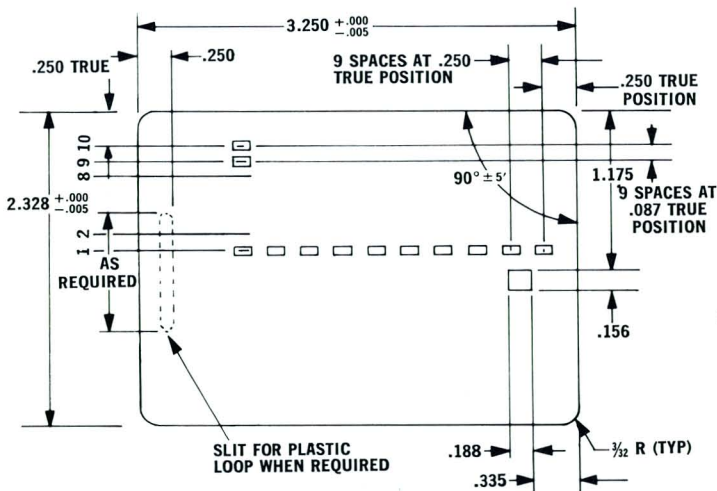
Type II, 12 Rows, 20 Columns



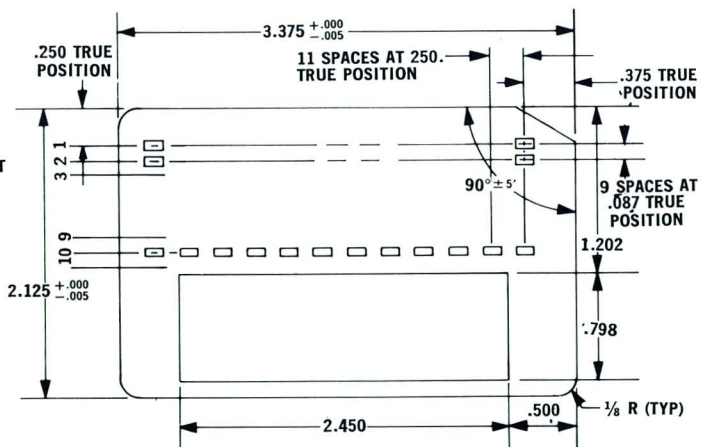
Type III, 12 Rows, 22 Columns



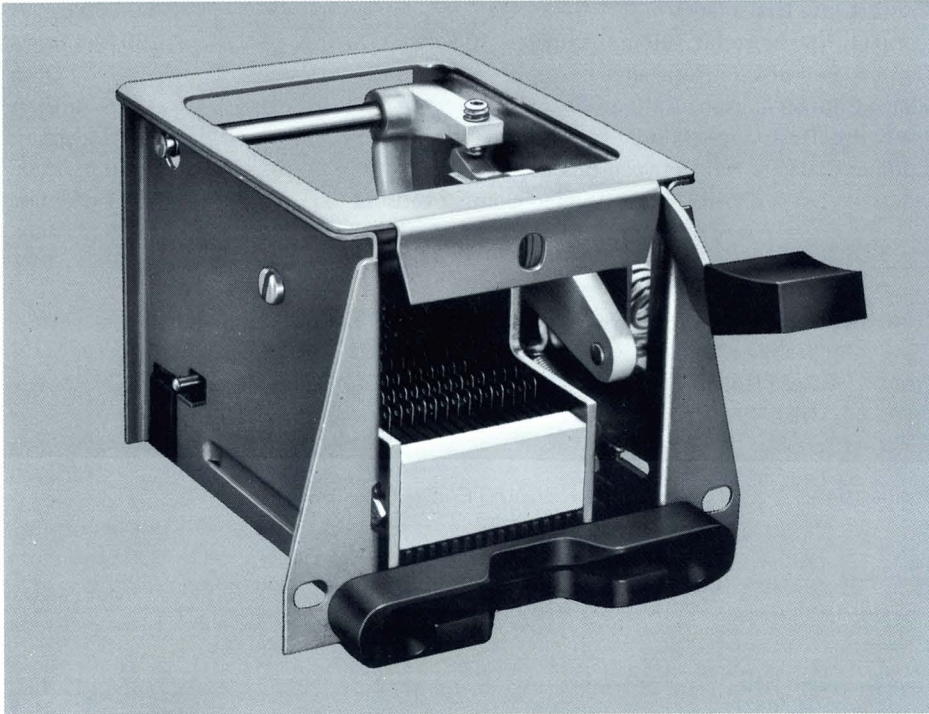
Type IV, 12 Rows, 10 Columns



Type V, 12 Rows, 10 Columns



Type 51, 12 Rows, 10 Columns



The models 61, 161 and 261 card readers have been designed to be used as data input devices for use in remote data processing terminals. Their small size and manual operation make them especially useful where space is limited and a matrix configuration is required. Simplicity of design has been built into the unit. Operation is initiated by inserting the badge card. As the card reaches the bottom of the travel, a trip mechanism causes the read head to lower and read the card.

When the reading operation is completed, the operating handle is depressed. This action opens the

reader, ejects the card, and stores up energy for the next closing cycle. The card ejection is such that the card protrudes about one inch beyond the receiver.

This unit is designed as a matrix reader, that is, bussed columns and bussed rows. This normally provides for one decimal digit per column. The column bussing can be split into groups of two or more switches so as to provide for split column, alphanumeric, and telephone dial coding on special order. The bussed row, however, is standard and individual outputs are not.

Card Readers – Credit and Badge Matrix Types

MODEL 61 –

The Model 61 credit and badge matrix reader is designed for use with a Type I badge card (15 column). Only 10 columns of the 15 can be read with this unit. This is the smallest badge reader available.

MODEL 161 –

The Model 161 credit and badge card reader is designed for use with the Type II (20 column) badge card. 15 columns of the possible 20 can be read with this unit. Models are available for the Type 51 credit card.

MODEL 261 –

The Model 261 credit and badge card reader is designed for use with the Type III (22 column) badge card. This reader senses a maximum of 17 columns of the 22 column badge.

Specifications

Electrical

Number of Contact Rows	12
Maximum Number of Contact Columns	17
Minimum Number of Contact Columns	10
Contact Life Expectancy	250,000 cycles
Contact Resistance (at 100 milliamperes, 10 volts D.C.)	200 Milliohms
Contact End of Life Resistance	2 Ohm
Single Contact Current Rating (Maximum)	3.0 Ampere
Insulation Resistance (Minimum)	100 Megohms
Contact Capacitance: Between Bussed Columns	20 pf. max.
Open Circuit Isolated Contact to Buss	1 pf. max.
Any Contact to Frame	25 pf. max.

Material and Finish

Structural Aluminum	— 2024-T3, 5052-H32	— Clear Anodized
Stainless Steel	— 410,304	
Cold Rolled Steel	— 1020	— Cadmium Chromate
DELFIN		

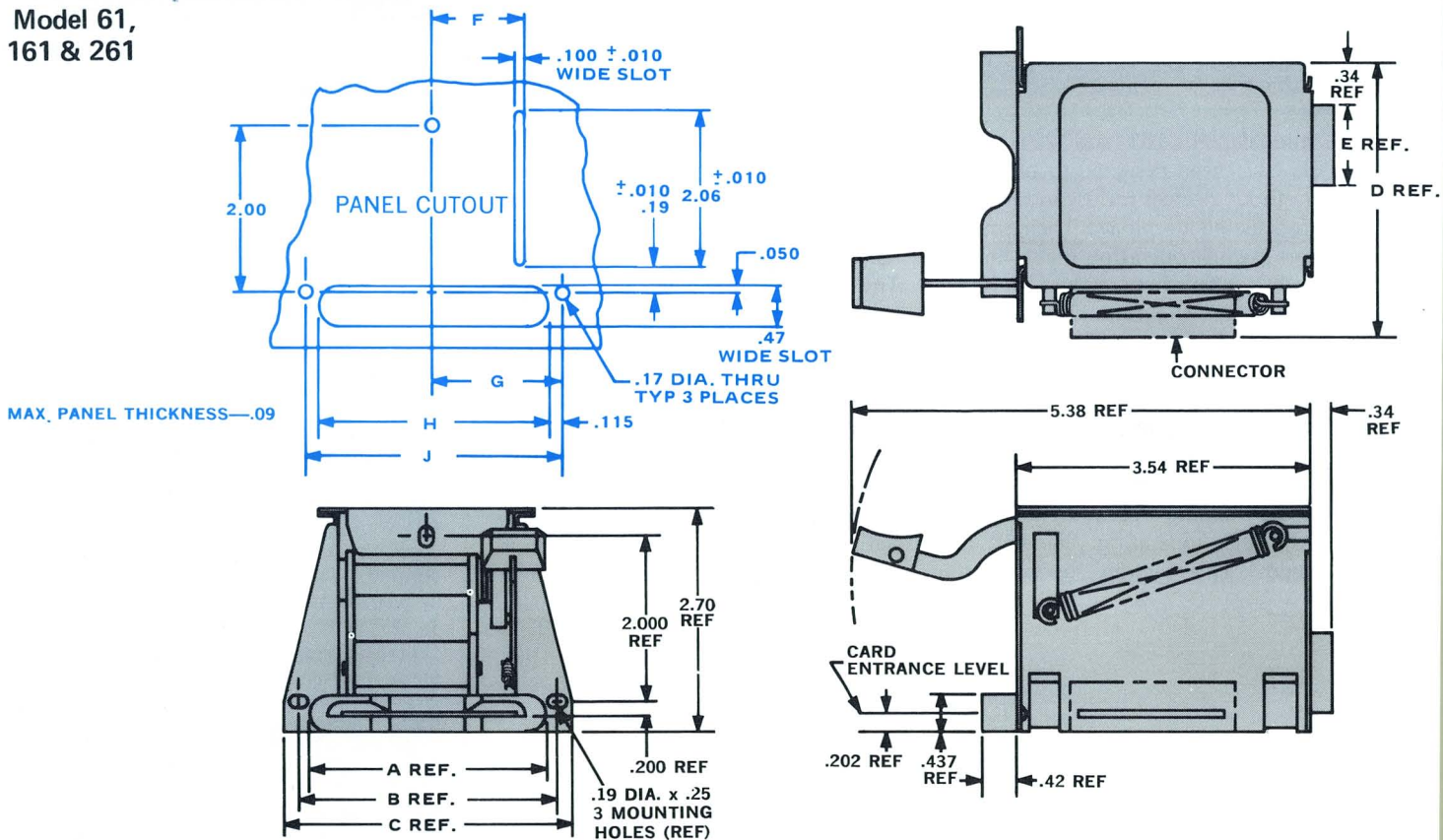
Insulation

POLYCARBONATE — Glass Filled
Glass Epoxy P.C.B.

Contacts

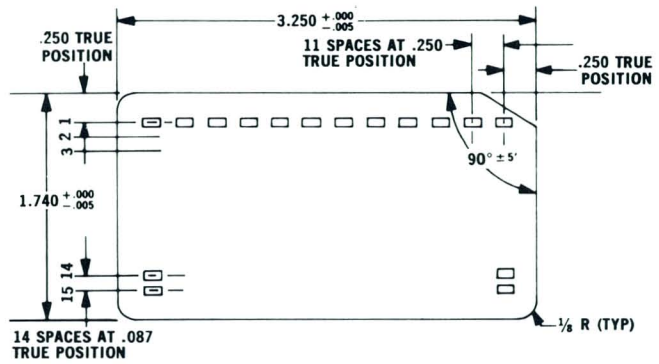
Spring Fingers — Beryllium Copper
Contact Pads — Electroless Nickel

Model 61,
161 & 261

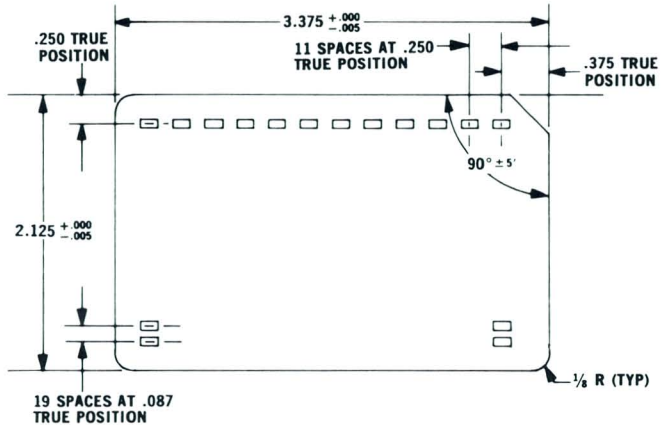


Reader Model	Reader Dimensions					Panel Cutout Dimensions			
	A	B	C	D	E	F	G	H	J
61	2.50	2.745	3.12	2.67	1.15	.892	1.372	2.52	2.745
161	2.88	3.130	3.50	3.05	1.58	1.085	1.565	2.90	3.130
261	3.10	3.345	3.72	3.27	1.75	1.192	1.672	3.12	3.345

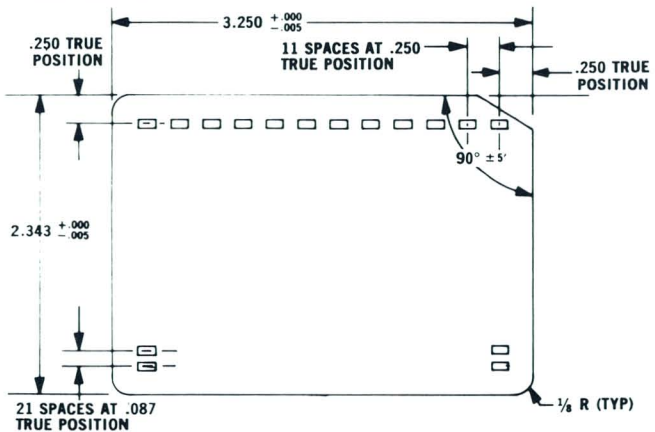
Type I, 12 Rows, 15 Columns
(Model 61)



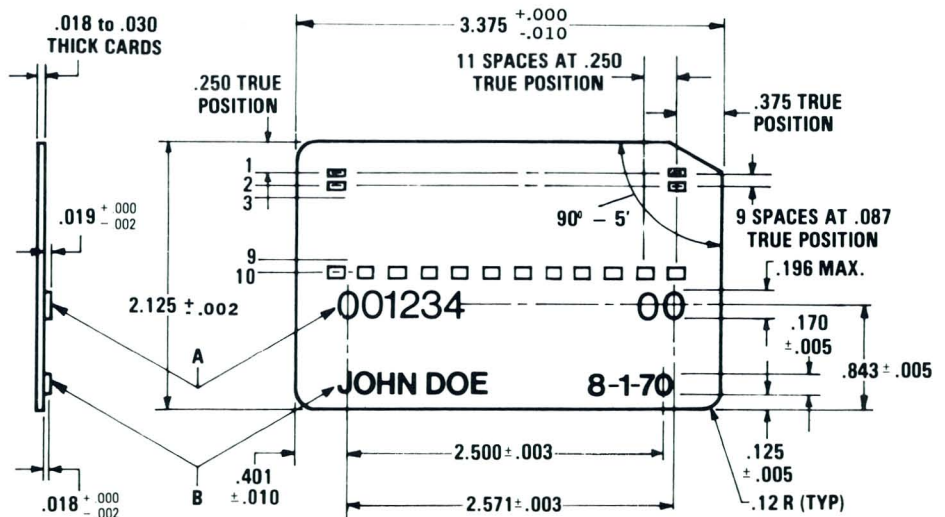
Type II, 12 Rows, 20 Columns
(Model 161)



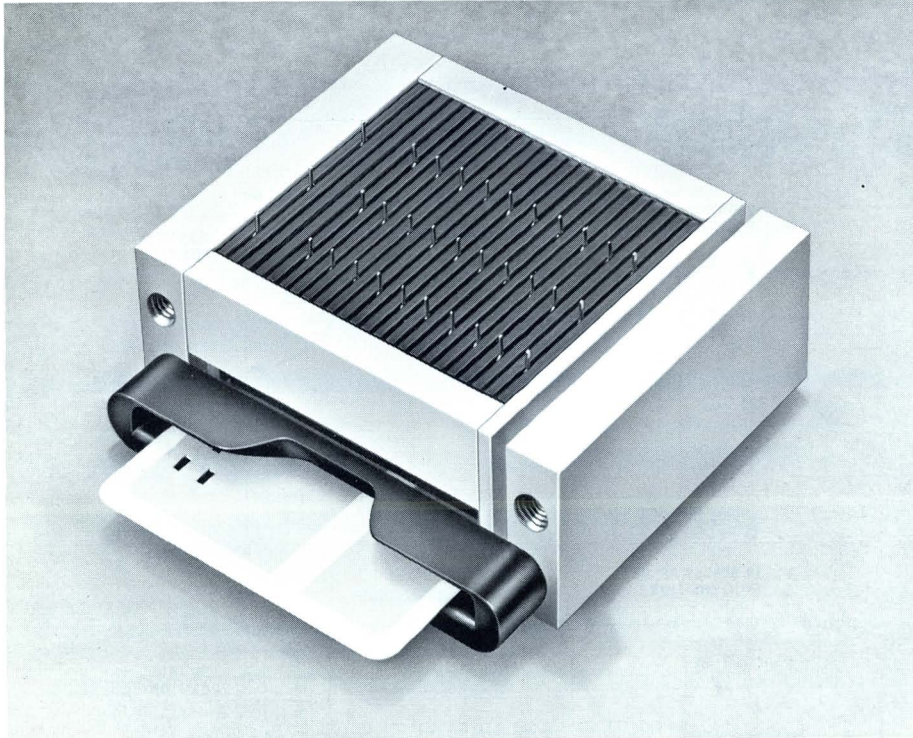
Type III, 12 Rows, 22 Columns
(Model 261)



Type 51, 12 Rows, 10 Columns
(Model 161)



A. Account Number line: 19 characters at 7/in.
B. Name line: 26 characters at 10/in.



The AMP Model 130 Card Reader is designed to be used in conjunction with a wide variety of data handling and personal identification systems requiring remote input of information or access control. This reader is ideally suited for applications requiring terminals be left unattended and where possible user abuse or environmental conditions preclude the use of more complex electronic or electro-mechanical input devices.

Equivalent to 20 BCD coded function switches, the reader can be used for other applications including static programming of portable or factory control equipment where panel space and accurate set up are important design considerations.

Operation is initiated by inserting a standard hollerith punched credit card to its maximum limit. Remote switch contacts are activated by the card, eliminating the need for external power or spring mechanism. A protective interlock switch insures proper card insertion

before the data can be read. The reader is deactivated when the card is withdrawn.

The reader has a maximum capacity of 80 data bits which can be read serially or in parallel as the application requires. Normal output configurations include numeric, alpha-numeric, BCD or discrete outputs. All input and output terminations are pluggable and may also be adapted to the latest packaging or wiring techniques.

For additional information on the AMP Model 130 Card Reader contact your AMP Capitron Sales Engineer or AMP Incorporated, Capitron Division, Elizabethtown, Pa. 17022

Card Reader Credit and Badge Type Model 130

Features

- Maximum reliability—Proven switch design and a minimum of moving parts.
- Compact rugged construction—Only two major assemblies insure long life in severe environment.
- Low temperature operation—Suitable for outdoor use to -40° F.
- No external power required—Reader operates with card insertion.
- No maintenance required—Designed to operate throughout life without adjustment or preventive maintenance.
- Direct switching—Contacts are rated at 1.0 amp for direct control of high current components.
- Accepts standard card—Reader accepts $2\frac{1}{8} \times 3\frac{3}{8}$ standard credit or badge type card. May be punched with manual or automatic equipment.
- Optional card coding—Available with 80 switches maximum in numeric, alpha-numeric, BCD, or discrete outputs.

Note: All dimensions in inches.

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

Specifications

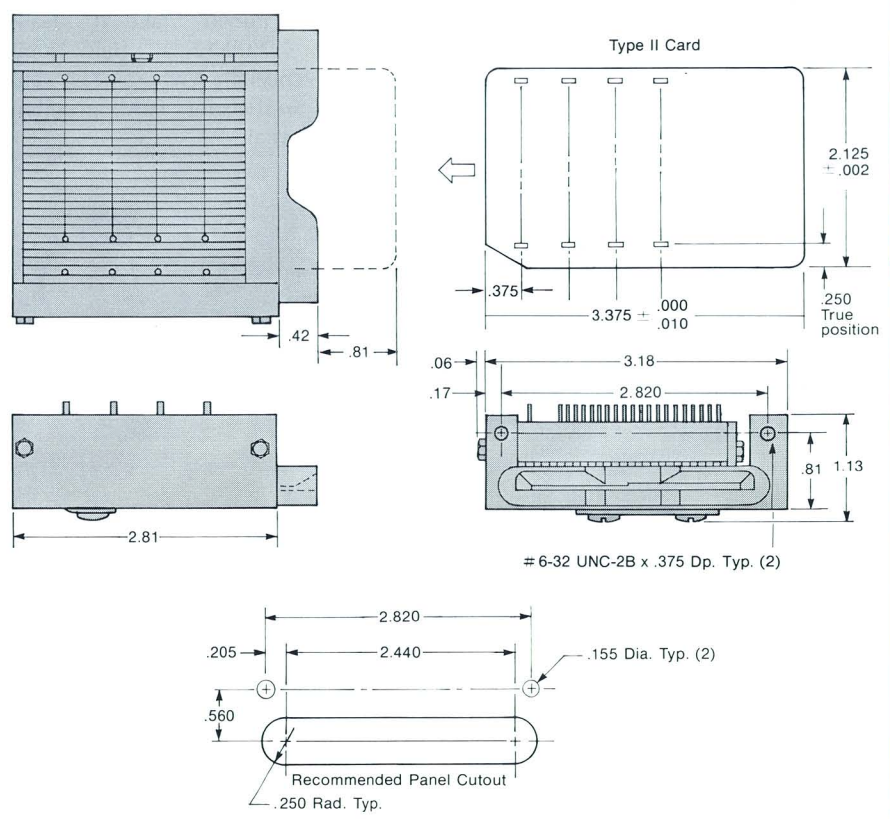
Electrical

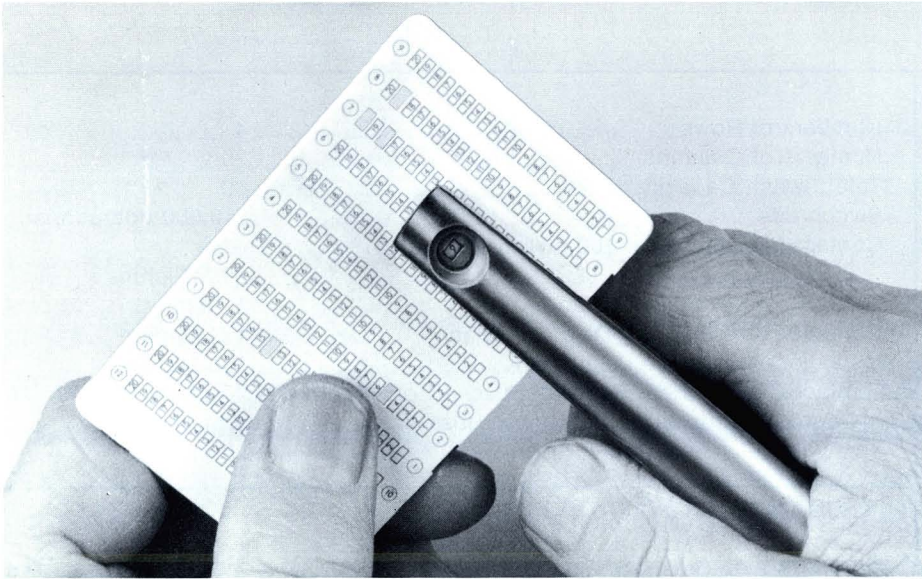
Numbers of Rows	4
Numbers of Columns	20
Total Switch Capacity	80
Switch Life	250,000 operations
Contact Resistance (at 100 milliamperes, 10 volts D.C.)	50 Milliohms
Contact End of Life Resistance	1 Ohm
Contact Current Rating Discrete Switch	1.0 Ampere
Insulation Resistance (Minimum)	100 Megohms
Contact Capacitance: Between Bussed Columns	20 pf. max.
Open Circuit Isolated Contact to Buss	1 pf. max.
Any Contact to Frame	25 pf. max.

Material and Finish

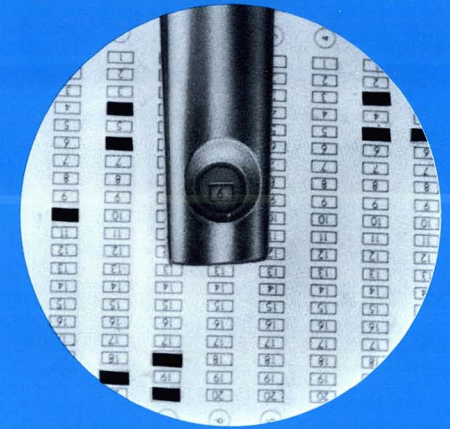
Structural	
Aluminum	6063-T6 (Clear Anodized)
Stainless Steel	410,304
Cold Rolled Steel	1020 (Cadmium Chromate)
Insulation	
Polycarbonate—Glass Filled	
Switch Contacts	
Phosphor Bronze—Gold Plated	

Model 130 Card Reader





AMP Hand Card Punch and Cards

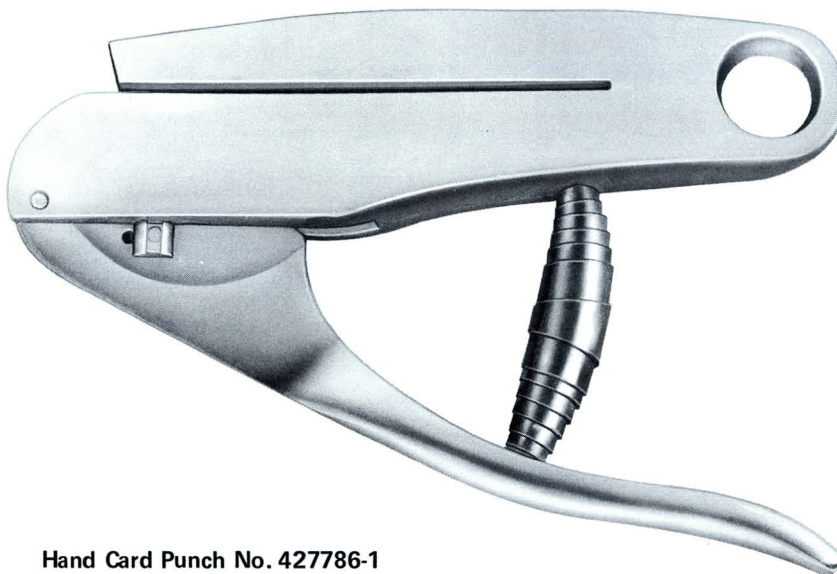


The AMP Hand Card Punch provides a simple yet highly reliable means of hand punching standard plastic badge and credit cards. Among its many features are: a rugged construction for long-time dependable performance; a light weight, compact design for easy, convenient handling; plus a high data density capability. It can be used for punching holes on .087" x .250" centers.

This top quality device also offers the benefits of low-cost, error-free operation. It can be operated with very little

effort and requires no special operator skills. To quickly and accurately align a card, the operator simply centers the hole of the punch over the printed block on the card. Each card row and column is numbered to facilitate block identification.

The combined features of the AMP Hand Card Punch make it ideally suited for virtually all field applications, especially where fast and accurate on-the-spot card programming is essential.



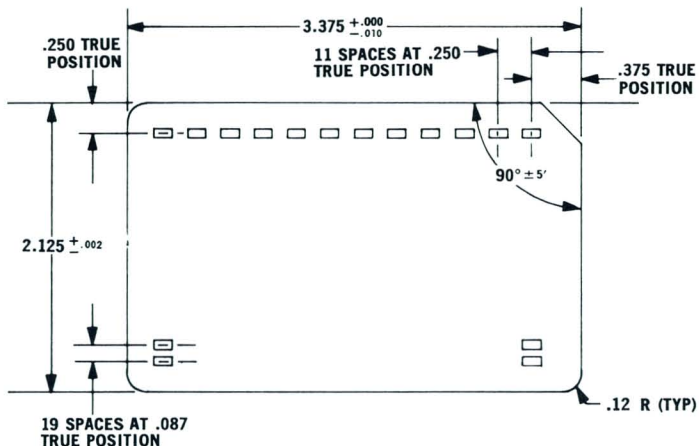
Hand Card Punch No. 427786-1

FEATURES

- High data density — capable of punching holes on .087" x .250" centers.
- Convenient method of programming standard badge and credit cards in the field.
- Cards marked by rows and columns for quick and accurate block identification.
- Easy to operate — requires no special skills.
- Rugged construction for dependable performance.
- Light weight, compact design.
- Low-cost, error-free operation.

Standard Badge
and Credit Card

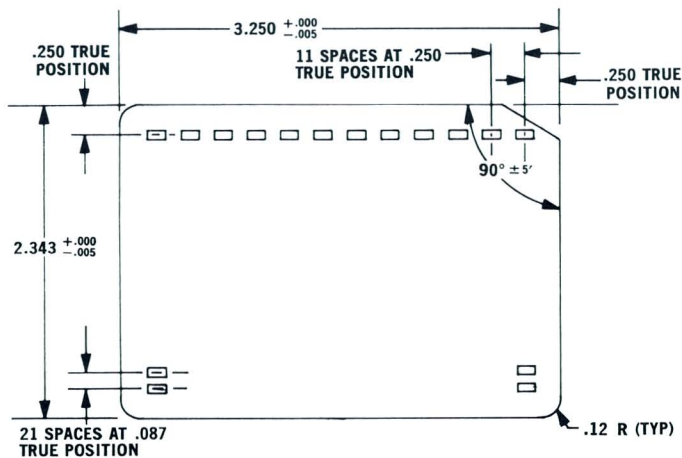
Specifications



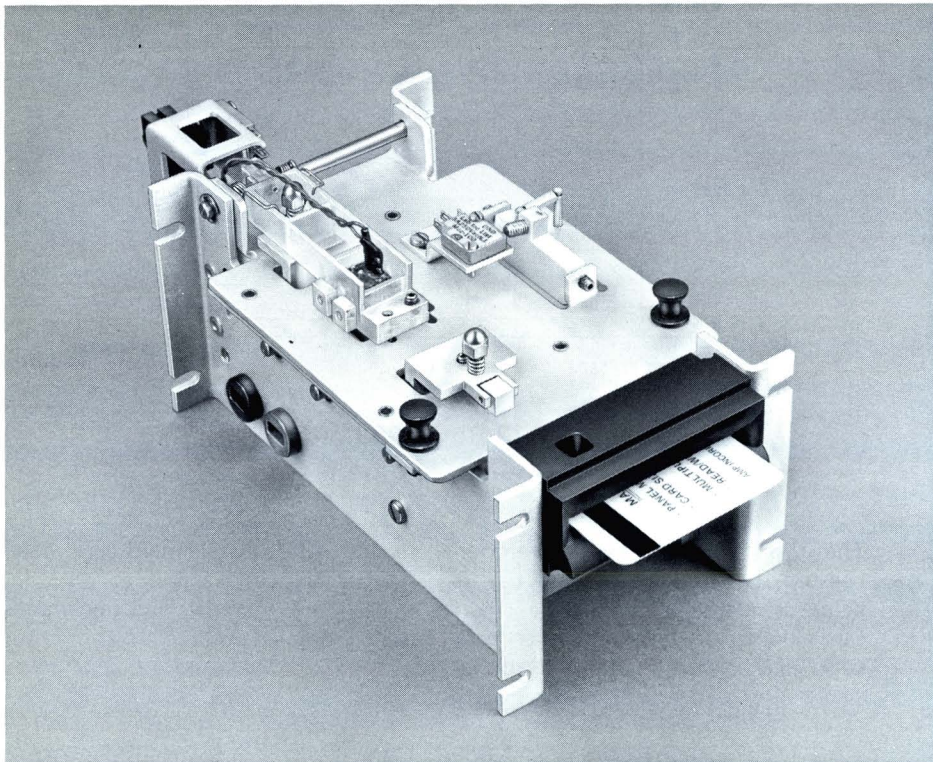
Type II, 12 Rows, 20 Columns
AMP Part No. 427818-1

The Type II card shown is preferred because it is of the same size that is being standardized within the credit card industry. However, other card sizes can be furnished upon special

request. Also, the standard card material is polyvinyl chloride, $.023$ in. thick. Other materials and thicknesses can be supplied upon request.



Type III, 12 Rows, 22 Columns
AMP Part No. 1-427817-1



Magnetic Card Reader Model 210

The AMP Magnetic Card Reader provides a reliable method of reading previously recorded data from a credit card having a magnetic stripe and meeting the requirements of current ABA and ATA/IATA specifications. This versatile, compact device is specially designed for panel mounting. It requires only 3.75" (width) x 3.25" (height) of front panel space and a maximum depth of 8.00". However, it can be supplied with an enclosure for counter-top use.

Basically the magnetic card reader consists of a card transport mechanism with integral machine control and a *single- or dual-track read head*. An optional logic package also is available with the reader for converting the ABA and/or ATA/IATA Aiken Codes into serial binary data. This decoding

logic extracts clock information with the encoded data.

In a typical operation, a magnetically encoded card is inserted into the reader slot. The card automatically actuates a "card sense" switch which starts the drive motor and causes the card to be transported under the read head. As the card passes under the read head, the encoded data is scanned and read serially (from right to left on the card). At the end of travel the drive motor reverses, and the card is ejected.

Encoded data is sensed each time the card passes under the read head. As a result, an output is also generated during rearward travel (ejection) of the card. This output, however, is not ordinarily used. Also, the "card sense" switch can be used for retrieving the data by remote control.

Features

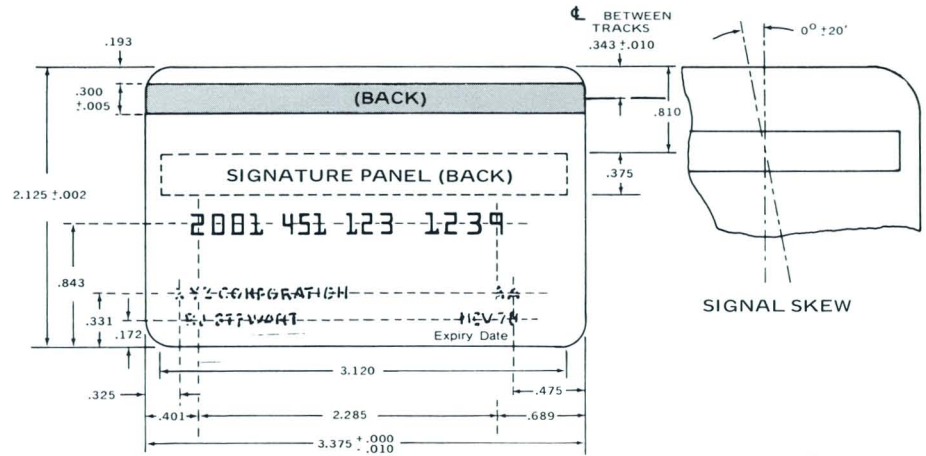
- **SIMPLE OPERATION** — Cards inserted into and retrieved from same reader slot. Slot design ensures proper orientation of embossed cards.
- **HIGH DATA DENSITY** — Aiken Codes at 220 bits per inch provides as many as 650 data bits across the card.
- **VERSATILE** — Single- or dual-track read head available.
- **LOW VOLTAGE REQUIREMENT** — Motor operating voltage is +12 volts dc.
- **MINIMUM SPACE REQUIREMENT** — When panel mounted, reader requires a minimal 3.75" x 3.25" of front panel space and a maximum depth of 8.00". Reader also supplied with enclosure for counter-top use.

Specifications

Embossed Card

DIMENSIONS

Height 2.125, ±.002
 Width 3.375, +.000 -.010
 Thickness 0.030, ±.003



Card Reader

ELECTRICAL

Input Voltage (Drive Motor) +12 Volts Dc, ±0.5
 Input Current (Drive Motor) 250 MA (Approx.)
 Stall Current (Drive Motor) 1.0 A (Max.)
 Signal Output, Read Head (NRZ Recording 440 Flux
 Changes/In. on Specified Card)5 MV, Pk-to-Pk (Min.)
 Voltages Required for Optional Decoding Logic
 (Independent of Drive voltage) +12 Volts, ± 250 MV (Max.) @ 500 MA
 -12 Volts, ± 250 MV (Max.) @ 100 MA
 Ripple & Noise 50 MV RMS (Max.)

Outputs from Optional Decoding Logic

Data }
 Data } TTL Compatible
 Clock } Positive Logic

Clock Pulse Duration 100µ Sec. Occuring 1/4 T After Leading Edge of
 Data Bit (T = Bit Cell Time Period)

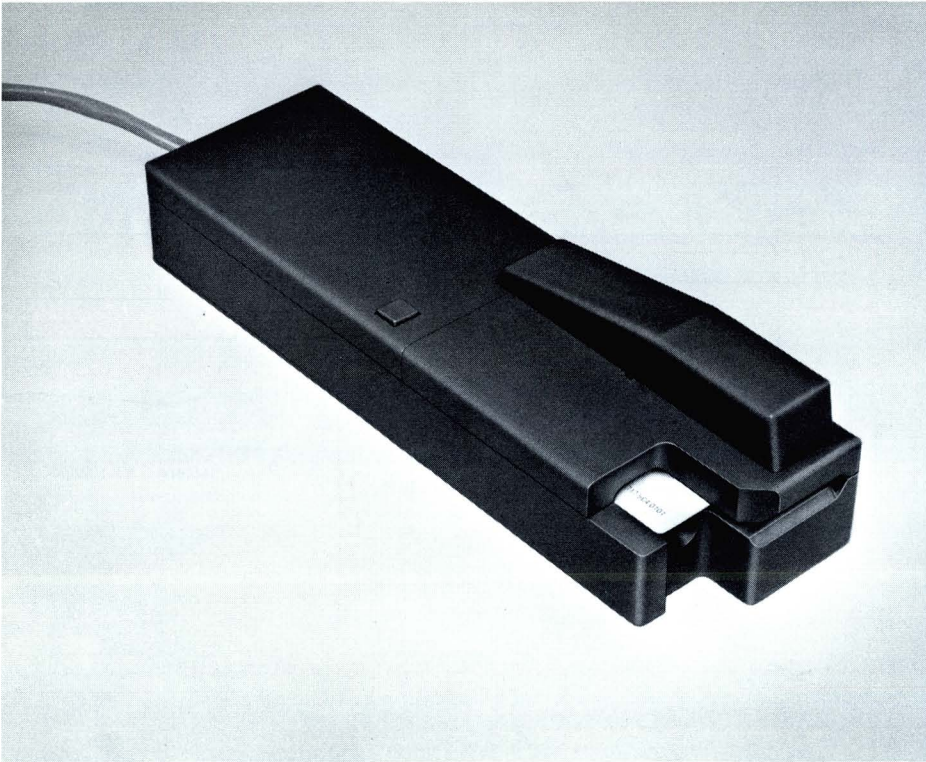
ENVIRONMENTAL

Operating:

Temperature 20°F to +110°F
 Humidity (Without Condensation) 10% to 80% RH

Non-Operating:

Temperature -50°F to + 150°F
 Humidity5% to 95% RH
 Vibration Per MIL-STD-810B, Category G



Magnetic Card Reader, Model 75

Features

- **Simplicity of Operation** — Cards inserted and retrieved from same reader slot. Slot design ensures easy entry and proper orientation of embossed cards.
- **Industry Standard Cards** — Reader accepts cards which meet ABA specifications.
- **Voltage Source** — Electronic interface operates on ± 12 volts, low current supply. No power required to drive card.
- **TTL Outputs** — Compatible with industry standards for ease-of-design interface.
- **Versatile** — Read head provides single- or two-track reading.
- **Unique Packaging Concept** — Electronic circuits contained within reader envelope; single connector interface; suitable for panel or desk top mounting.
- **Excellent Maintainability** — No adjustments; simple head replacement. Card cavity opens for cleaning purposes.
- **No Motor Required** — Mechanical drive eliminates RF generation.
- **Long Life** — Integrated circuitry and simple mechanical drive mechanism. Low pressure head extends card life.
- **Low Profile** — Excellent stability and ease of access.
- **Attractive Design** — Molded parts assure attractive lines to blend with present day designs.
- **Accessibility** — Card entrance permits easy removal of card during power failure.

The AMP Magnetic Card Reader provides a reliable method of reading previously recorded data from a credit card having a magnetic stripe and meeting the requirements of current ABA specifications. This versatile compact unit is designed for either panel mounting or desk top use.

The magnetic card reader consists of a card transport mechanism, a single dual-track read head, and a "read only" electronics package mounted within the reader envelope. All input and output connections are made through one connector.

The electronic package converts the ABA Aiken Code into serial binary data. A clock pulse, coinciding with the data, is provided for synchronous

operation. The card transport mechanism is a mechanical driving device which requires no electrical power. A mechanical latch holds the card in the ready-to-read position until the read button is actuated. A set of switch contacts is provided to indicate the card is in the ready-to-read position.

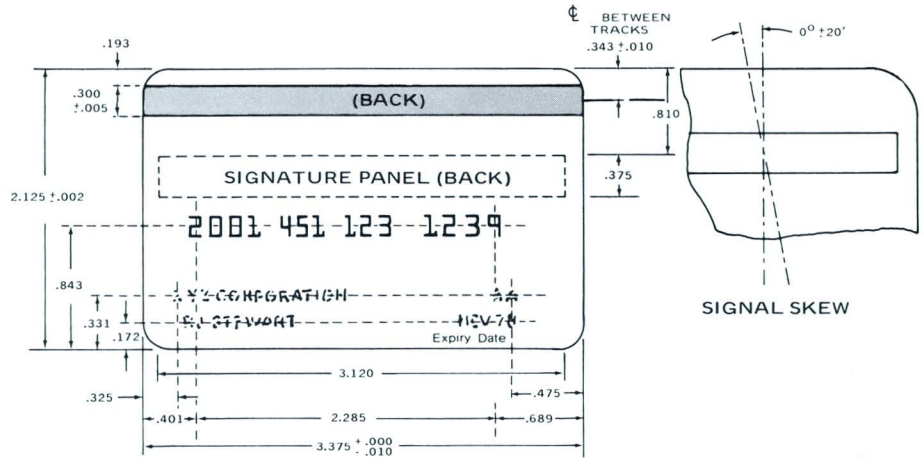
In a typical operation, a magnetically encoded card is inserted into the reader slot. The card automatically actuates the ready-to-read switch when the card is fully inserted. The mechanical latch holds the card in this position. Actuating the read button will release the card and engage the drive mechanism which transports the card under the head. As the card passes under the read head, the encoded data is scanned and read serially.

Specifications

Embossed Card

DIMENSIONS:

Height 2.125, ±.002 Inches
 Width 3.375, +.000 - .010 Inches
 Thickness 0.030, ±.003 Inch



Card Reader

DIMENSIONS:

Length 10-1/8 Inches
 Width 3-1/8 Inches
 Height 2-3/8 Inches
 WEIGHT Approximately 1 lb.
 CARD SPEED 10 Inches per second
 READ HEAD OUTPUT 20 MV, Pk-to-Pk (Min.)
 VOLTAGE REQUIREMENTS (ELECTRONIC) +12V, ± 1V @ 125 MA
 -12V, ± 1V @ 10 MA

OUTPUTS FROM DECODING LOGIC:

Data } TTL Compatible
 Clock }
 Clock Pulse Duration 30 μ Sec.

OPERATING:

Temperature +40°F to +110°F
 Humidity (Without Condensation) 10% to 85% RH

NON-OPERATING:

Temperature -50°F to +150°F
 Humidity 5% to 95% RH
 Vibration Per MIL-STD-810B, Category G

NOTE: All dimensions in inches unless indicated otherwise.

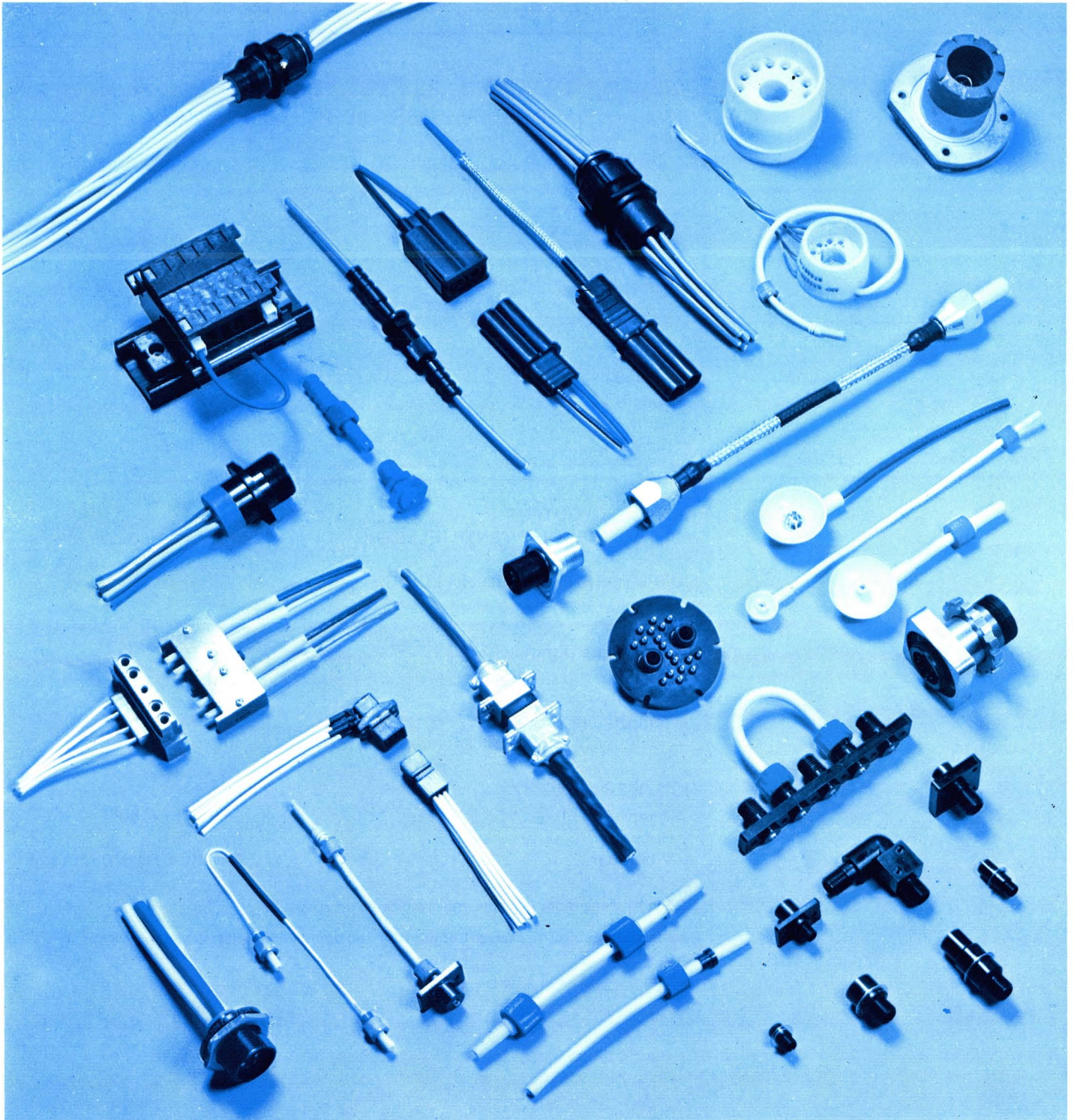
Specifications subject to change. Consult AMP Incorporated for latest design specifications.

19

AMP

High Voltage Interconnection Devices

LGH High Voltage
Lead Assemblies and
Receptacles



Introduction

Long a respected and dependable name in the field of electrical/electronic terminations, AMP Incorporated has continually expanded its product line over the years. From our origin as a manufacturer of solderless terminals and connectors, the engineering and research talents of AMP have reached out into a variety of circuit packaging techniques, subsystems for electronic programming and other products for special industrial applications.

An important part of this development was the creation of the AMP Capatron Division for the sale and service of high voltage components and subassemblies.

In the field of high voltage applications, AMP Incorporated has conducted extensive research, development, quality studies and reliability programs resulting in many standard high voltage products for various requirements, both military and industrial.

The introduction of LGH high voltage lead assemblies and receptacles and hermetically sealed connectors to this industry represents two major advances that AMP has pioneered in the science of high voltage application. As a result, AMP Incorporated is today's leading manufacturer of high voltage, high altitude and high temperature lead assemblies, receptacles and connectors.

Military Requirements

The electrical/electronics industry in recent years has been challenged with tremendous growth due to the accelerated breakthroughs in technology. Products, processes, and techniques have changed radically and, in many cases, have appeared as entirely new concepts. Much of this activity was the result of military requirements to broaden and strengthen a modern day arsenal including weapons systems, weapon control systems and defense equipment that reflects space age advances.

AMP's LGH lead assemblies and receptacles are used in many systems designed to meet or exceed military specifications. A sampling of some of these specifications is listed below. For complete information contact AMP Incorporated, Capatron Division.

- High Temperature Test: per MIL-E-5272, Para. 4.1, Proc. II, Para. 4.1.2.
- Low Temperature Test: per MIL-E-5272, Para. 4.2, Proc. II, Para. 4.2.2.
- Humidity Test: per MIL-E-5272, Para. 4.4, Proc. I, Para. 4.4.1.
- Salt Spray Test: per MIL-E-5272, Para. 4.6, Proc. I, Para. 4.6.1.
- Vibration Test: per MIL-E-5272, Para. 4.7, Proc. XII, Para. 4.7.12.
- Shock Test: per MIL-E-5400, Para. 3.2.24.6.
- Dielectric Withstanding Test: per MIL-C-5015, Para. 4.7.4.

Dimensioning:

All dimensions in inches unless indicated otherwise.

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

Ordering Catalog Items

The following information is designed to speed the processing of your order.

When Ordering LGH**Lead Assemblies:**

1. Identify item.
2. List AMP part number.
3. Specify quantity.
4. State desired length. (The dash number assigned to a lead assembly part number does not indicate a special lead length.)
5. Specify color. Normal insulation color is white. Color coding is available by specifying the proper code as follows:

Code	Color
B	Blue
Bl	Black
Br	Brown
G	Green
Gr	Gray
Or	Orange
R	Red
V	Violet
Y	Yellow

A typical example:

Item: LGH 1I double-end lead assembly

Part Number: 834254

Quantity: 5,000

Length: 60 inches

Color: Br

When Ordering LGH Receptacles:

1. Identify item.
2. List AMP part number.
3. Specify quantity.

Note: Special packaging and/or special marking of leads and receptacles are available upon request.

Some connectors are designed to a customer's specific requirements. For connectors to meet your exacting needs, consult AMP Incorporated, Capatron Division.

Features

Designed for use in the commercial, industrial and military component fields, LGH leads and receptacles are finding wide application wherever high voltage is required and hostile environment is a factor. Lightweight and miniature in size, LGH leads and receptacles provide extreme reliability and maintain peak performance. They are equally applicable to low-temperature, low-altitude, high-voltage devices.

The leads and receptacles depicted are the most frequently used items, and do not constitute the only design options available. For complete information on any high voltage connector requirement, contact AMP Incorporated, Capitron Division, Elizabethtown, Pa. 17022.

Molded End Lead Assembly and Mating Receptacle

The voltage ratings shown at the right apply with an LGH molded end lead assembly properly inserted into the appropriate receptacle and with the back end of the receptacle properly potted or protected.

Among the many design and performance features offered by the LGH leads and receptacles are:

- Safety — no exposed high voltage parts.
- Space saving — maximum performance from the minimum size and weight.
- Fast connect and disconnect.
- Wide temperature range (–55°C to +125°C, continuous).*
- Positive mating of lead into receptacle.
- Hermetically sealed.
- RFI shielding — optional.
- Fungus, moisture, oil, and chemical resistant.
- High altitude operation — at any altitude without voltage derating.
- Excellent mechanical strength — resistant to vibration and shock.
- High dielectric strength.
- Preassembled — no tools required.
- High reliability — operates under extreme environmental conditions.
- Versatile — top-access, splice, or bulkhead application.
- Corona resistant — virtually unaffected by ozone or corona.
- Radiation resistant.
- Lead wire remains flexible to –55°C.
- Non-toxic insulation — if burned does not give off toxic fumes.
- Excellent shelf life.
- Meets applicable military specifications.
- Color coded for easy identification.
- Quick, easy installation.

* Higher temperature components available up to 400°C upon request.

Series	Volts (DC)	Load (amps)	Test Altitude (feet)	Hipot, Voltage (DC) 3 Min. — Altitude and Temp. Extremes ^o
LGH ½I	10 KV	10	70,000	15 KV
LGH ½LI	15 KV	10	70,000	23 KV
LGH 1I	20 KV	10	70,000	30 KV
LGH 1LI	25 KV	10	70,000	38 KV
LGH 2I	30 KV	10	70,000	45 KV
LGH 3I	40 KV	10	70,000	60 KV
LGH 4I	50 KV	10	70,000	75 KV
LGH 30	30 KV	30	70,000	45 KV

^oQualification voltage only. Normal production testing is accomplished at sea level and under room temperature conditions.

LGH lead assemblies are manufactured to any length, based on the specific application. Leads described in this catalog are silicone insulated; however, a wide variety of lead types can be manufactured for special requirements. As a guard against severe abrasion, each lead can have the added protection afforded by an outer jacket of silicone or glass braid.

In addition to the silicone insulated wire available, AMP also has the capability to mold lead configurations using TEFLON† insulation and other oil-resistant insulation materials. Wire variations are available upon request from AMP Capatron Division.

Bend Radius, Nominal No covering over the Silicone Insulation

LGH ½ I, ½ LI	.25 in.
LGH 1I, 1LI, 3I	.50 in.
LGH 2I, 4I	1.00 in.
LGH 30	1.50 in.

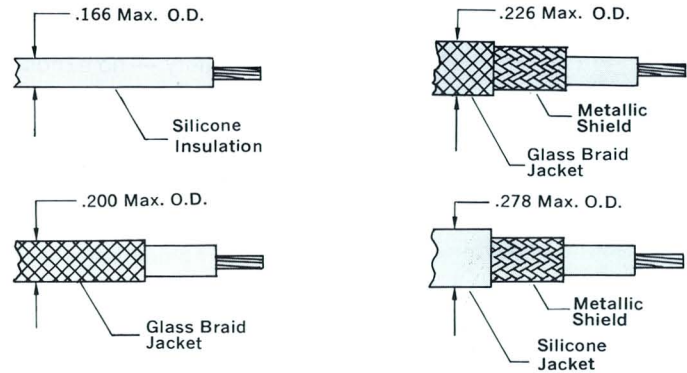
Normal Capacitance of Shielded Leads

LGH ½ I, ½ LI	55 pf/ft.
LGH 1I, 1LI, 3I	35 pf/ft.
LGH 2I, 4I	44 pf/ft.
LGH 30	41 pf/ft.

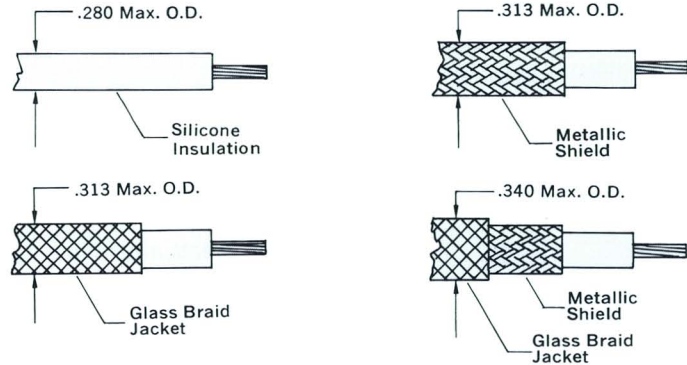
Maximum Conductor Resistance (1000 ft. @ 25°C)

LGH ½ I thru 4I	4.75 ohms/1000 ft.
LGH 30	1.1 ohms/1000 ft.

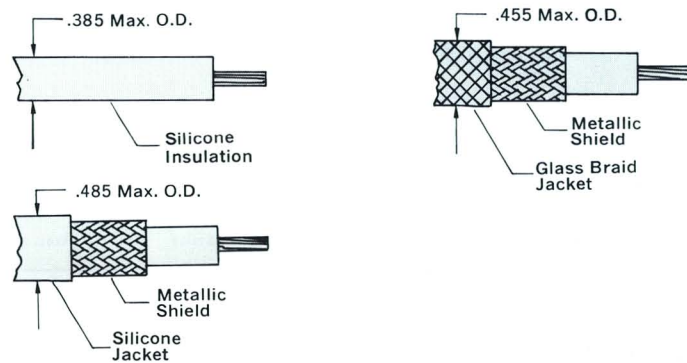
LGH ½ I and ½ LI



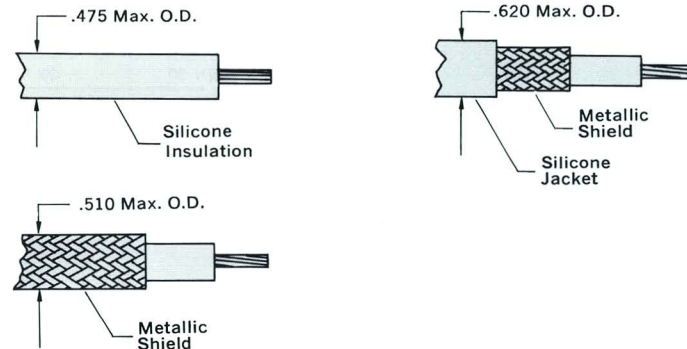
LGH 1I, 1LI and 3I



LGH 2I and 4I



LGH 30



Lead Length and Tolerance (including pigtail) — Up to 24", $\pm \frac{1}{8}$ "; 24" and up, $\pm 1\%$ of length.

Lead Insulation — Silicone rubber, durometer 60 to 70 (reference MIL-W-16878, Type FF). Color — White per MIL-STD-104. LGH $\frac{1}{2}$ I, $\frac{1}{2}$ LI, 1I, 1LI and 3I Series also available with yellow, brown, red, orange, green, violet, blue, black or gray color coding. Color other than white must be specified when ordering. Also, other lead insulations such as PVC, TEFLON insulation, etc. are available upon request.

Conductor (per MIL-W-16878) — LGH $\frac{1}{2}$ I, $\frac{1}{2}$ LI, 1I, 1LI and 3I Series: 41 strands min. of #32 AWG wire, silver plated; #16 AWG stranded .06" nominal O.D. — LGH 2I and 4I Series: 19 strands min. of #29 AWG wire, silver plated; #16 AWG stranded .06" nominal O.D. Silver plated per ASTM-B298-58T.

Pigtail — Solder dipped.

Socket — Bronze per ASTM-140, Alloy B; gold plated per MIL-G-45204, Type II (.000030" gold over .000030" nickel per QQ-N-290). (Crimped to lead wire.)

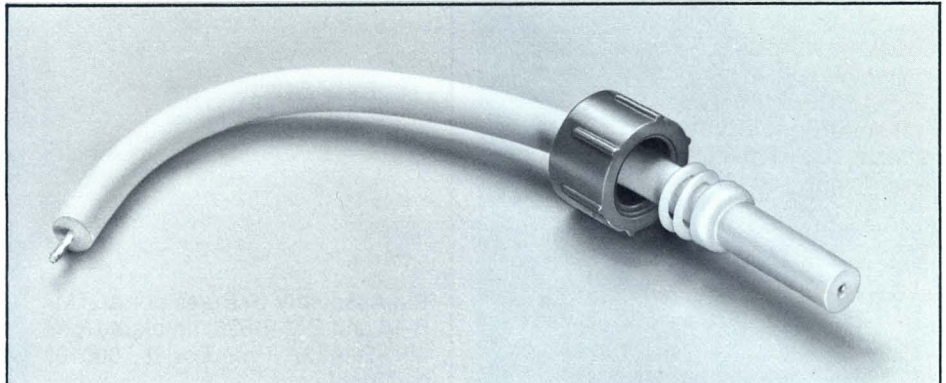
Cap Material — Type "A": LEXAN†† red polycarbonate per L-P-393 — Type "C": molded glass epoxy per MIL-M-24325 (Ships), GEI-5.

Molded End — Silicone rubber per ZZ-R-765, Class IIa and IIb, grade 60.

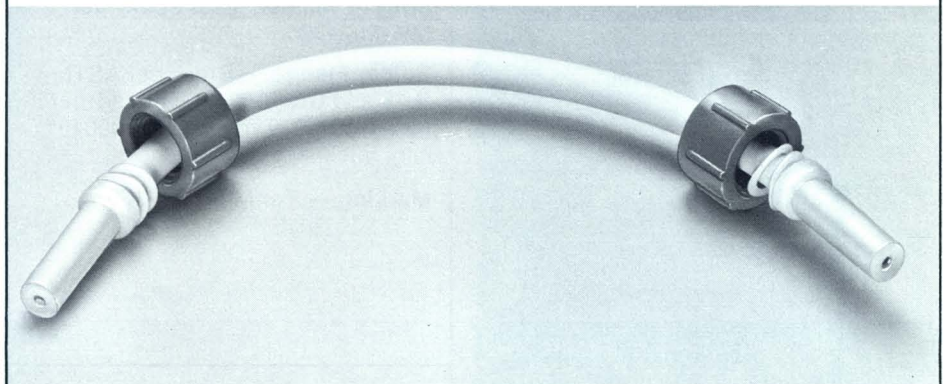
Washer — TFE electrical grade.

Ferrule, Positive Stop — Glass-filled polyester, 94V-0 rated.

Marking — Per MIL-STD-130.



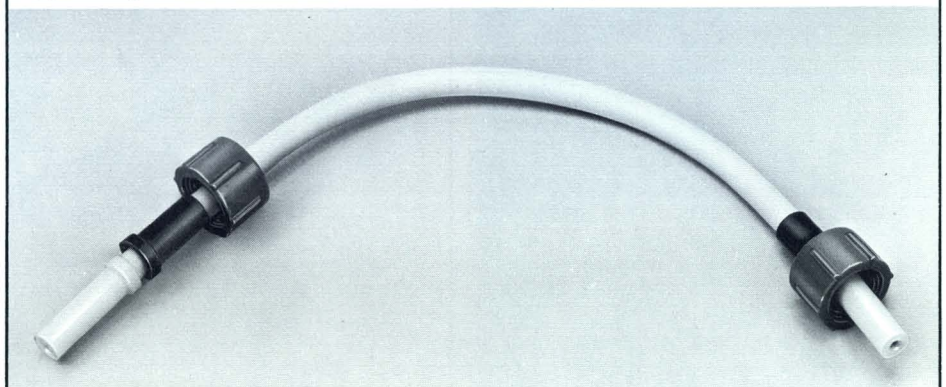
Typical Single Molded End Lead Assembly



Typical Double Molded End Lead Assembly



Typical Single Molded End Lead Assembly with Positive Stop Ferrule



Typical Double Molded End Lead Assembly with Positive Stop Ferrule

LGH Receptacles are manufactured in molded glass epoxy. When used with LGH leads they offer the ultimate in dependability even under the most hostile environmental conditions.

LGH Glass Epoxy Receptacles for hermetically sealed, gas or oil-filled,* metallic canned units are manufactured and tested to the strictest quality control standards. The product specifications listed at the right are applicable to the solder flange line of LGH receptacles.

LGH Glass Epoxy Receptacles for cast or encapsulated units are used when a metallic can is not required. The following product specifications are applicable to the glass epoxy line of LGH receptacles.

Pin Assembly — Brass per ASTM-B-16 and QQ-B-626; tin plated per MIL-T-10727, Type I or II, .00010" min. thickness.

Body — Molded glass epoxy per MIL-M-24325 (Ships), GEI-5.

Marking — Per MIL-STD-130.

*Also recommended for canned units filled with potting compound. CAUTION: Follow manufacturer's instructions on preparing and handling potting. LGH voltage ratings only apply when a proper bond is achieved between the back end of the receptacle and the compound.

Pin Assembly — Brass per ASTM-B-16 and QQ-B-626; tin plated per MIL-T-10727, Type I or II, .00010" min. thickness.

Body — Molded glass epoxy per MIL-M-24325.

Solder Flange — Brass per ASTM-B-16 and QQ-B-626; tin plated per MIL-T-10727, Type I or II, .00010" min. thickness.

Marking — Per MIL-STD-130.



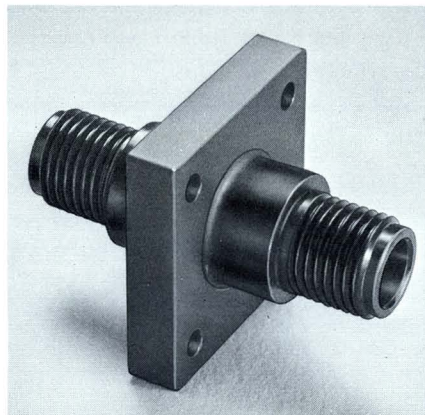
Receptacle (Glass Epoxy) for canned units



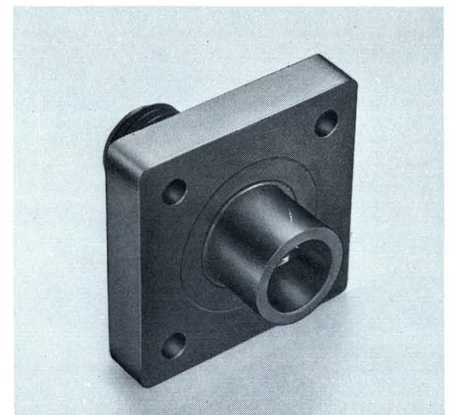
Receptacle (Glass Epoxy) for encapsulated units



Receptacle (Glass Epoxy) for splice applications



Receptacle (Glass Epoxy) flanged, for bulkhead splice applications



Receptacle (Glass Epoxy) flanged, for bulkhead applications

Molded End Type

Fig.	Cap Material (Type)*	Weight 12 In. Typ. (Grams)	Min. Length (Inches)	Part No.
1	C	9	4	830611
2		10	5	830612
3		9	4	862545
4		10	5	862546

* For cap material, refer to page 19-33.

Note: Type A caps are also available for these lead assemblies upon request. See page 10 for type A cap configuration.

Molded End Type (Shielded)

Fig.	Cap Material (Type)*	Weight 12 In. Typ. (Grams)	Min. Length (Inches)	Protective Outer Jacket	Part No.
1	C	22	8	Glass	846985
2		23	10	Braid	858885

*For cap material, refer to page 19-33.

Molded End Type (RFI Shielded)

Fig.	Protective Outer Jacket	Part No.
1	Shielded,	861807
2	Glass Braid	861808

Note: RFI shielded lead assemblies mate with receptacle no. 861252-1, page 19-36.

Consult AMP Capatron Division for details on a wide variety of LGH lead assemblies and receptacles that are available, but not shown.

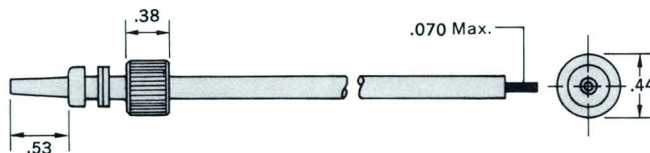


Fig. 1. Single End Lead Assembly

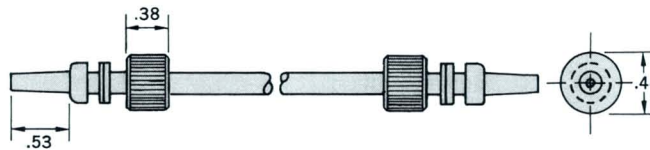


Fig. 2. Double End Lead Assembly

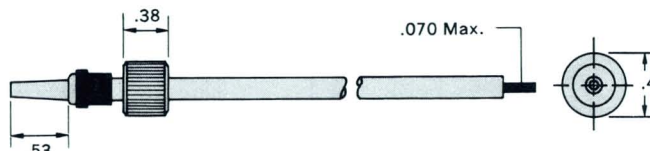


Fig. 3. Single End Lead Assembly with Positive Stop Ferrule

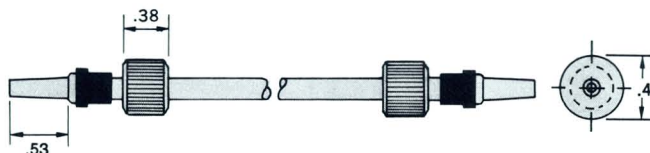


Fig. 4. Double End Lead Assembly with Positive Stop Ferrule

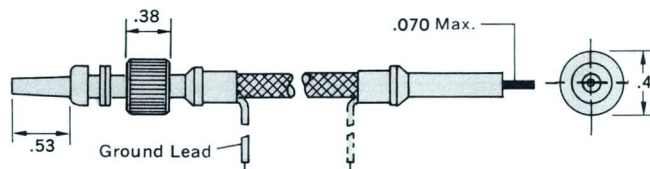


Fig. 1. Single End Lead Assembly

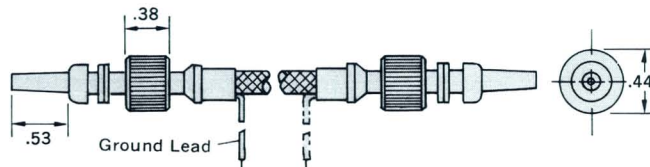


Fig. 2. Double End Lead Assembly

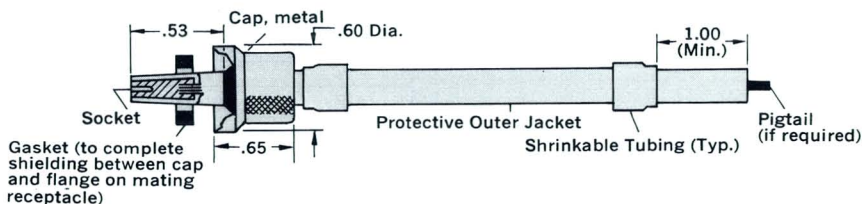


Fig. 1. Single End Lead Assembly

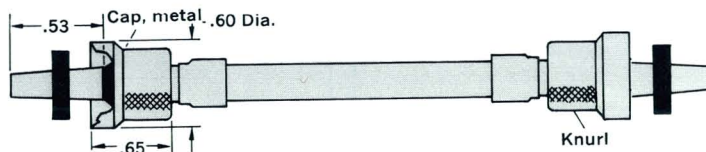
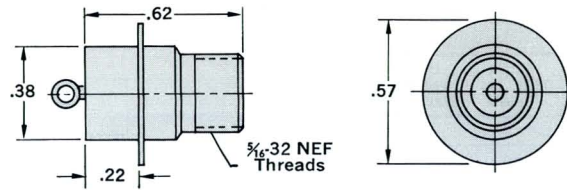


Fig. 2. Double End Lead Assembly

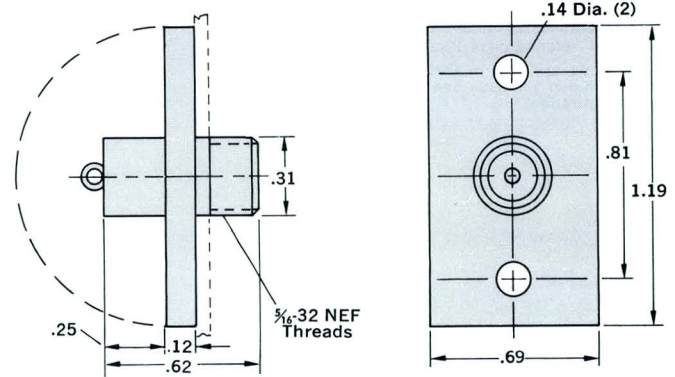
**Flanged,
Glass Epoxy,
Hermetic Seal**

Barrel Depth	Weight (Grams)	Part No.
.53	2	861252-1



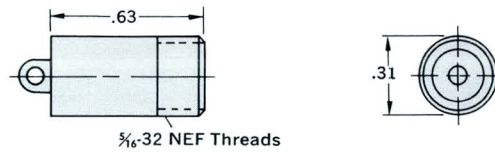
**Flanged,
Glass Epoxy,
Bolt-Mount**

Barrel Depth	Weight (Grams)	Part No.
.53	4.2	830395-1



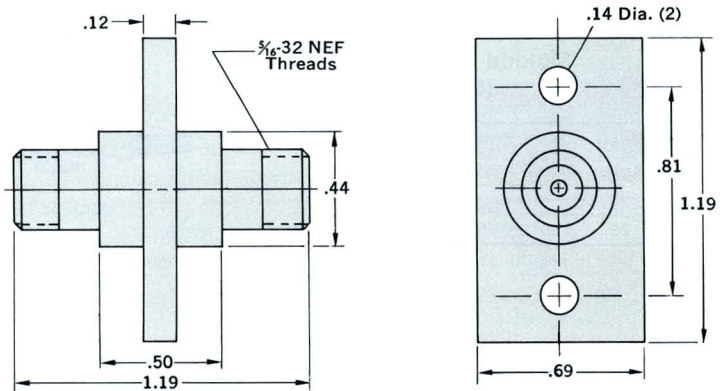
**Glass Epoxy
(For Encapsulated Units)**

Barrel Depth	Weight (Grams)	Part No.
.53	1.2	830178-1



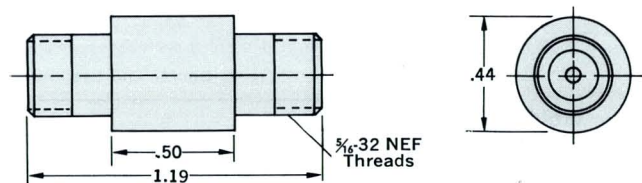
**Glass Epoxy,
Bolt-Mounted Feed-Thru**

Barrel Depth	Weight (Grams)	Part No.
.53	5.8	830174-1



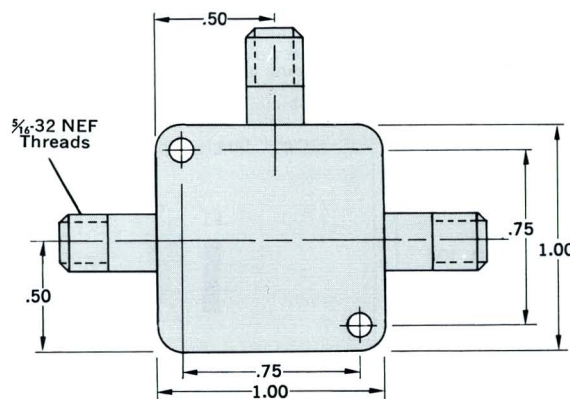
**Glass Epoxy,
Splice**

Barrel Depth	Weight (Grams)	Part No.
.53	3.5	830177-1



**Glass Epoxy,
'T' Connector**

Barrel Depth	Weight (Grams)	Part No.
.53	15	849418-1



Molded End Type

Fig.	Cap Material (Type) *	Weight 12 In. Typ. (Grams)	Min. Length (Inches)	Part No.
1		9	4	830613
2	C	10	5	830614
3		9	4	862547
4		10	5	862548

* For cap material, refer to page 19-33.

Note: Type A caps are also available for these lead assemblies upon request. See page 10 for type A cap configuration.

Molded End Type (Shielded)

Fig.	Cap Material (Type) *	Weight 12 In. Typ. (Grams)	Min. Length (Inches)	Protective Outer Jacket	Part No.
1		22	8	Glass	858886
2	C	23	10	Braid	858945

* For cap material, refer to page 19-33.

Molded End Type (RFI Shielded)

Fig.	Protective Outer Jacket	Part No.
1	Shielded,	861809
2	Glass Braid	861810

Note: RFI shielded lead assemblies mate with receptacle no. 861253-1, page 19-38.

Consult AMP Capatron Division for details on a wide variety of LGH lead assemblies and receptacles that are available, but not shown.

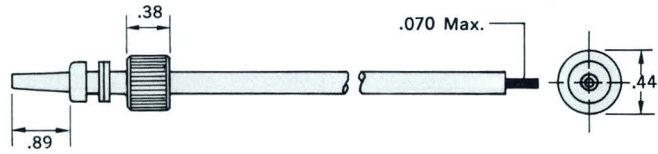


Fig. 1. Single End Lead Assembly

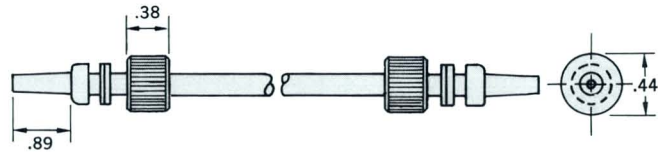


Fig. 2. Double End Lead Assembly

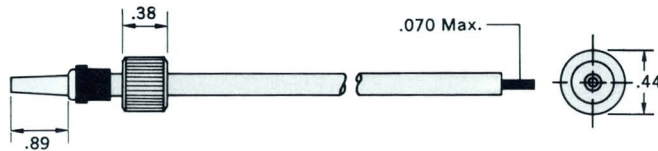


Fig. 3. Single End Lead Assembly with Positive Stop Ferrule

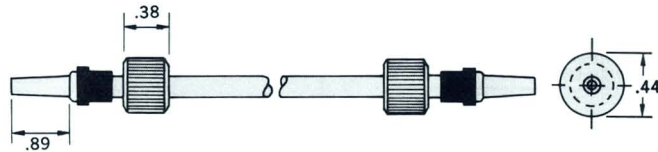


Fig. 4. Double End Lead Assembly with Positive Stop Ferrule

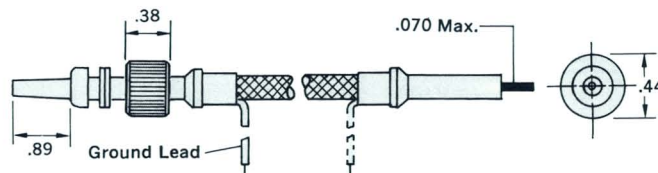


Fig. 1. Single End Lead Assembly

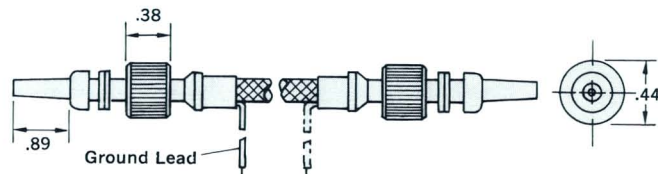


Fig. 2. Double End Lead Assembly

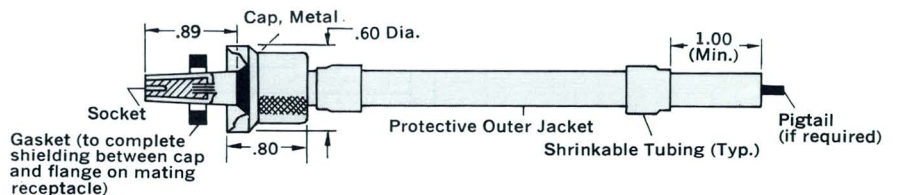


Fig. 1. Single End Lead Assembly

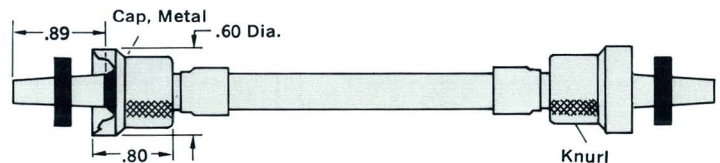


Fig. 2. Double End Lead Assembly

**Flanged,
Glass Epoxy,
Hermetic Seal**

Barrel Depth	Weight (Grams)	Part No.
.89	3	861253-1

**Flanged,
Glass Epoxy,
Bolt-Mount**

Barrel Depth	Weight (Grams)	Part No.
.89	6	858857-1

**Glass Epoxy
(For Encapsulated Units)**

Barrel Depth	Weight (Grams)	Part No.
.89	3	858855-1

**Glass Epoxy,
Bolt-Mounted Feed-Thru**

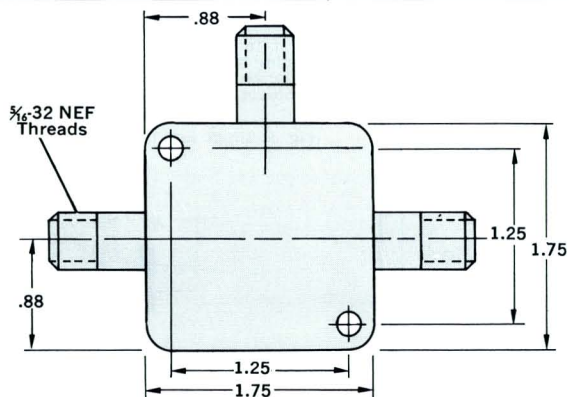
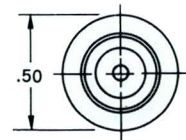
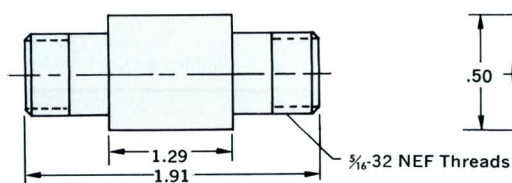
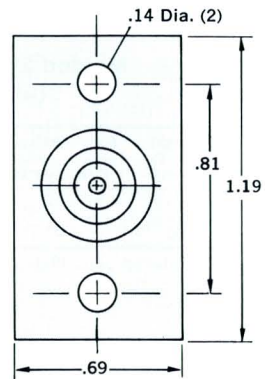
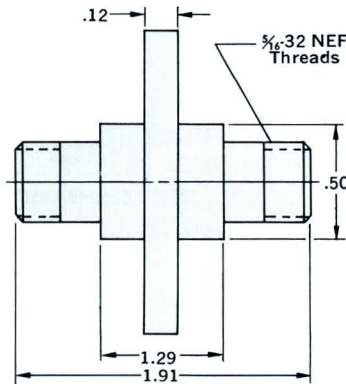
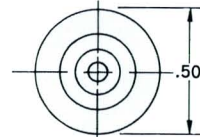
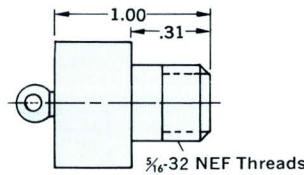
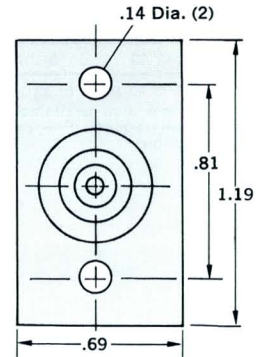
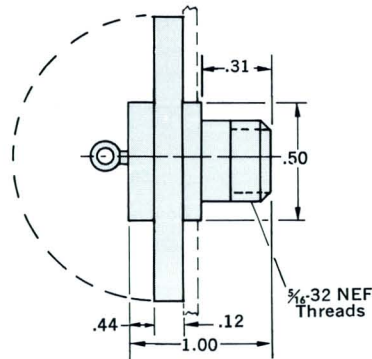
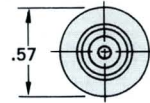
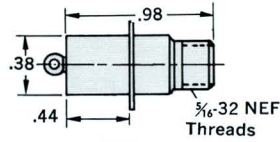
Barrel Depth	Weight (Grams)	Part No.
.89	14	858856-1

**Glass Epoxy,
Splice**

Barrel Depth	Weight (Grams)	Part No.
.89	10.5	858082-1

**Glass Epoxy,
"T" Connector**

Barrel Depth	Weight (Grams)	Part No.
.89	23	850736-1



Molded End Type

Fig.	Cap Material (Type)*	Weight 12 In. Typ. (Grams)	Min. Length (Inches)	Part No.
1	A	21	4	837655
2		24.5	5	830126
3		21	4	862549
4		24.5	5	862550

* For cap material, refer to page 19-33.

Molded End Type (Shielded)

Fig.	Cap Material (Type)*	Weight 12 In. Typ. (Grams)	Min. Length (Inches)	Protective Outer Jacket	Part No.
1	C	37	8	Glass	849103
2		42	10	Braid	849104

* For cap material, refer to page 19-33.

Molded End Type (RFI Shielded)

Fig.	Protective Outer Jacket	Part No.
1	Shielded,	861811
2	Glass Braid	861812

Note: RFI shielded lead assemblies mate with receptacle no. 861254-1, page 19-40.

Consult AMP Capatron Division for details on a wide variety of LGH lead assemblies and receptacles that are available, but not shown.

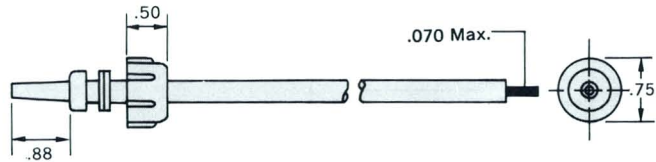


Fig. 1. Single End Lead Assembly

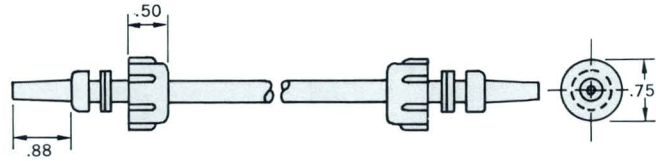


Fig. 2. Double End Lead Assembly

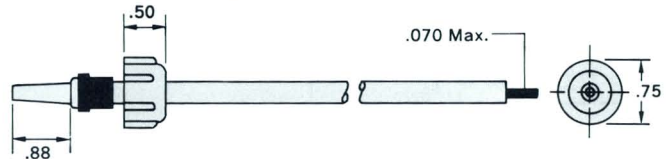


Fig. 3. Single End Lead Assembly with Positive Stop Ferrule

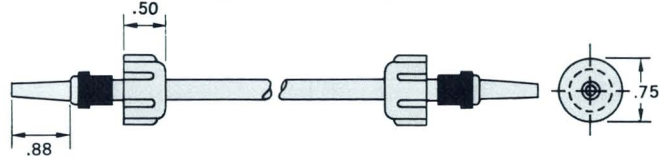


Fig. 4. Double End Lead Assembly with Positive Stop Ferrule

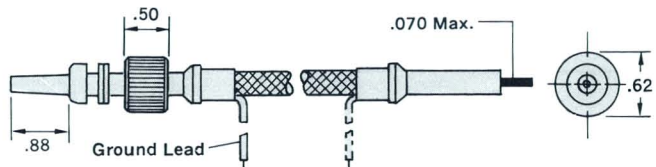


Fig. 1. Single End Lead Assembly

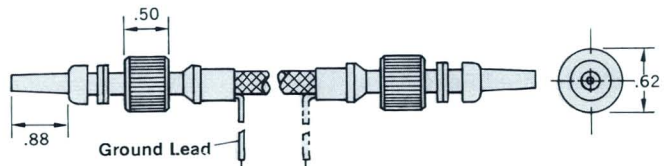


Fig. 2. Double End Lead Assembly

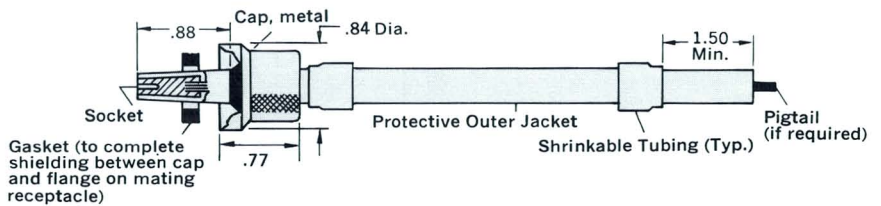


Fig. 1. Single End Lead Assembly

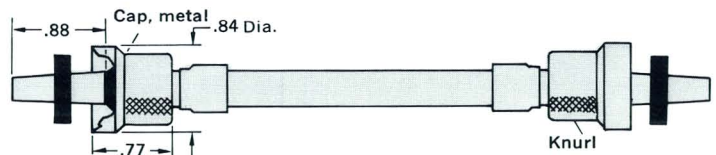
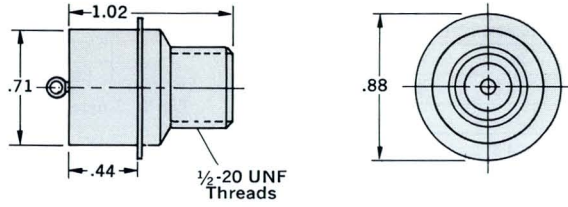


Fig. 2. Double End Lead Assembly

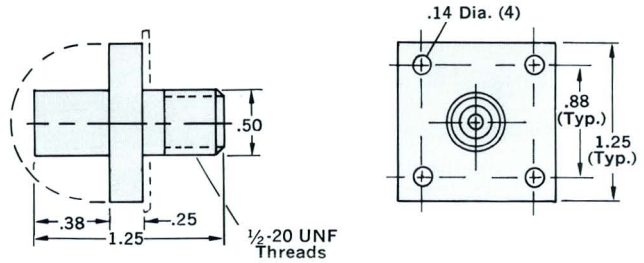
Flanged, Glass Epoxy, Hermetic Seal

Barrel Depth	Weight (Grams)	Part No.
.88	5	861254-1



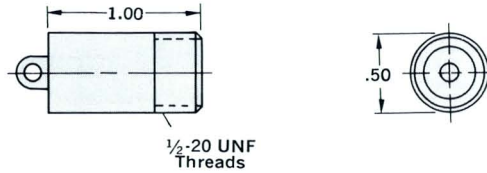
Flanged, Glass Epoxy, Bolt-Mount

Barrel Depth	Weight (Grams)	Part No.
.88	16	858827-1



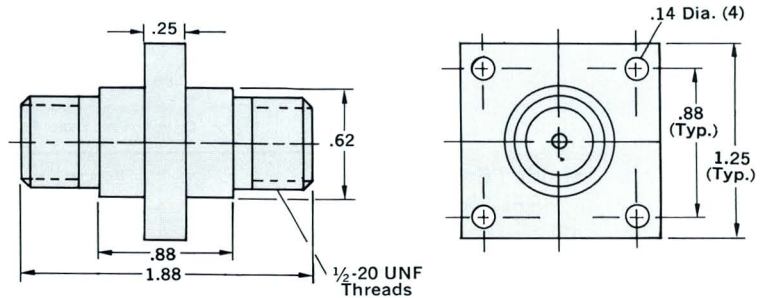
Glass Epoxy (For Encapsulated Units)

Barrel Depth	Weight (Grams)	Part No.
.88	4	834333-2



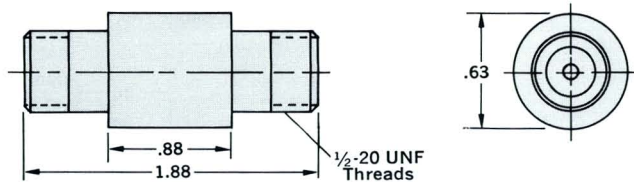
Glass Epoxy, Bolt-Mounted Feed-Thru

Barrel Depth	Weight (Grams)	Part No.
.88	23	846793-1



Glass Epoxy, Splice

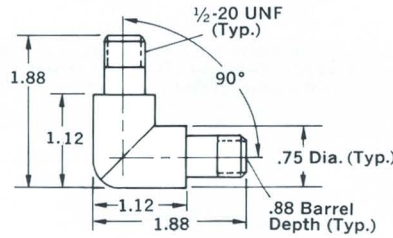
Barrel Depth	Weight (Grams)	Part No.
.88	10	830149-1



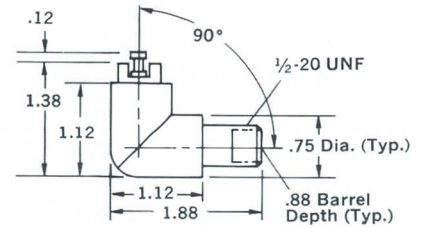
LGH "L"—"T"—"Y" type receptacles are specifically designed for splice applications and for use with encapsulated units where multiple outputs are required and only a single source termination is available. Constructed of molded glass epoxy, these receptacles offer the

same performance characteristics as the standard LGH 1I series glass epoxy receptacles. When properly mated with LGH 1I series lead assemblies, they carry the same voltage, temperature, current and altitude ratings.

"L" Type

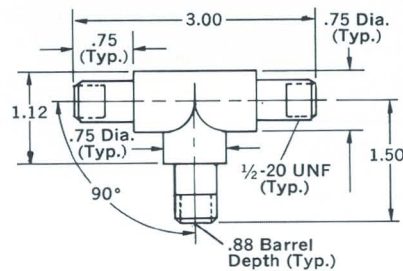


LGH 1I Receptacle for Splice Applications
Part Nos. 849662-1 (Tin Plated Pins)
and 849662-2 (Gold Plated Pins)

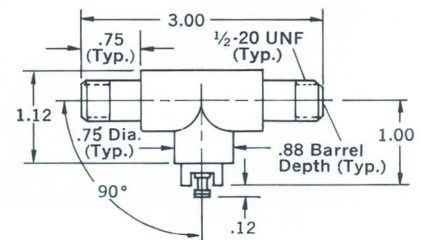


LGH 1I Receptacle for Encapsulated Units
Part Nos. 849668-1 (Tin Plated Pins)
and 849668-2 (Gold Plated Pins)

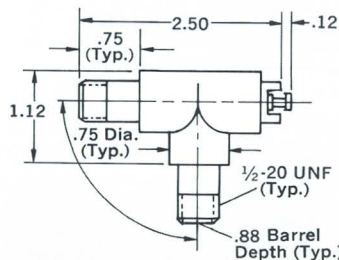
"T" Type



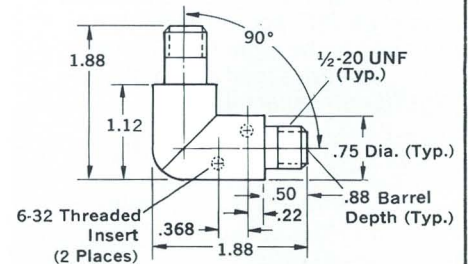
LGH 1I Receptacle for Splice Applications
Part Nos. 849671-1 (Tin Plated Pins)
and 849671-2 (Gold Plated Pins)



LGH 1I Receptacle for Encapsulated Units
Part Nos. 849682-1 (Tin Plated Pins)
and 849682-2 (Gold Plated Pins)



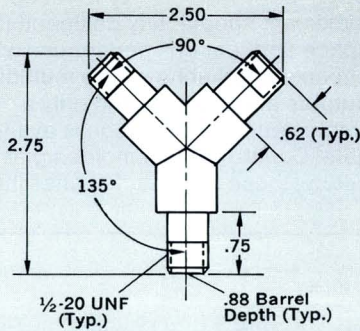
LGH 1I Receptacle for Encapsulated Units
Part Nos. 848500-1 (Tin Plated Pins)
and 848500-2 (Gold Plated Pins)



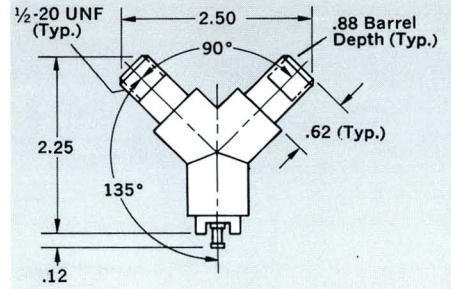
LGH 1I Receptacle for Splice Applications, Screw Mounted
Part Nos. 862406-1 (Tin Plated Pins)
and 862406-2 (Gold Plated Pins)

Consult AMP Capatron Division for details on a wide variety of LGH lead assemblies and receptacles that are available, but not shown.

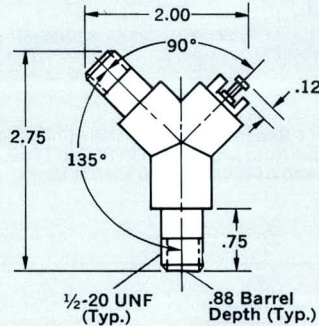
"Y" Type



LGH 1I Receptacle for Splice Applications
Part Nos. 849693-1 (Tin Plated Pins)
and 849693-2 (Gold Plated Pins)



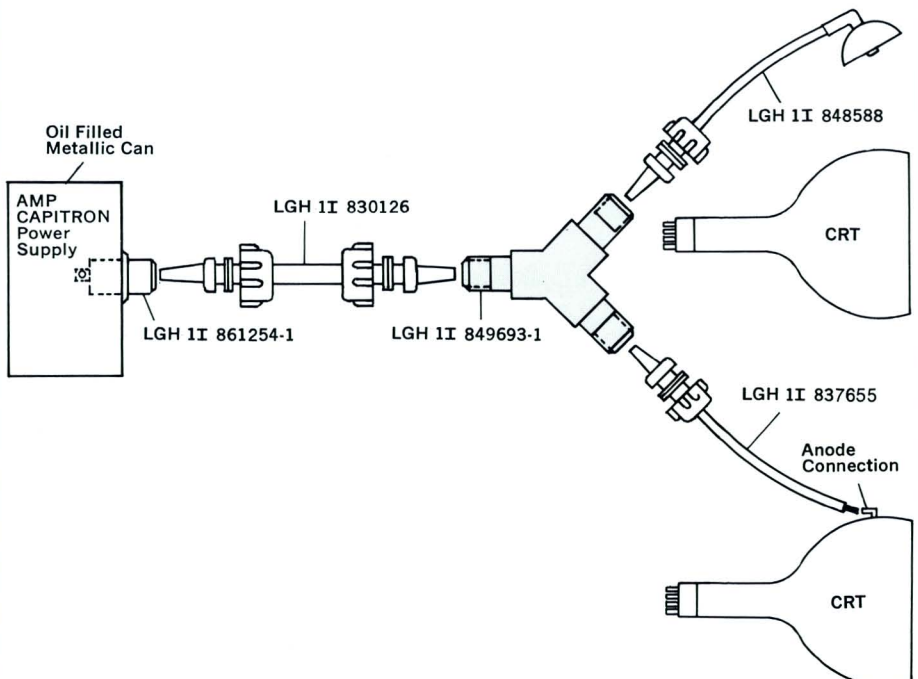
LGH 1I Receptacle for Encapsulated Units
Part Nos. 849694-1 (Tin Plated Pins)
and 849694-2 (Gold Plated Pins)



LGH 1I Receptacle for Encapsulated Units
Part Nos. 848504-1 (Tin Plated Pins)
and 848504-2 (Gold Plated Pins)

Typical Application of "Y" Type Receptacle (Splice Application)

This example shows anode voltage being supplied to two cathode ray tubes using an AMP Capitron power supply with one output receptacle. If quick disconnect is not required, the pigtail end of the LGH 1I series lead can be soldered to the anode connection. If quick disconnect is a factor, the Capitron Division could supply a CRT booted assembly bonded to the pigtail end of the LGH 1I series lead assembly. See CRT Lead Assemblies.



Molded End Type

Fig.	Cap Material (Type)*	Weight 12 In. Typ. (Grams)	Min. Length (Inches)	Part No.
1	A	21	4	830637
2		24.5	6	830638
3		21	4	862551
4		24.5	6	862552

* For cap material, refer to page 19-33.

Molded End Type (Shielded)

Fig.	Cap Material (Type)*	Weight 12 In. Typ. (Grams)	Min. Length (Inches)	Protective Outer Jacket	Part No.
1	C	37	8	Glass Braid	846938
2		42	12	Braid	849616

* For cap material, refer to page 19-33.

Molded End Type (RFI Shielded)

Fig.	Protective Outer Jacket	Part No.
1	Shielded, Glass Braid	861813
2	Shielded, Glass Braid	861814

Note: RFI shielded lead assemblies mate with receptacle no. 861255-1, page 19-44.

Consult AMP Capatron Division for details on a wide variety of LGH lead assemblies and receptacles that are available, but not shown.

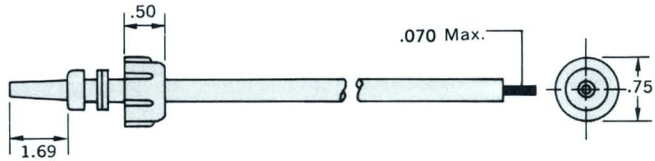


Fig. 1. Single End Lead Assembly

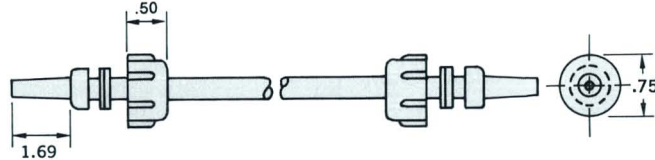


Fig. 2. Double End Lead Assembly

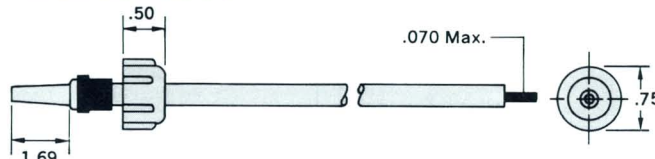


Fig. 3. Single End Lead Assembly with Positive Stop Ferrule

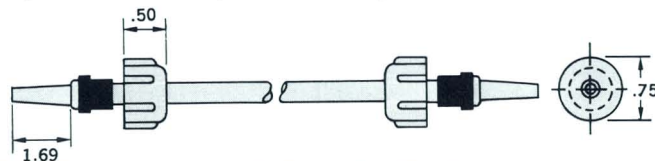


Fig. 4. Double End Lead Assembly with Positive Stop Ferrule

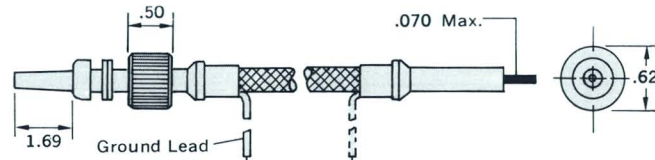


Fig. 1. Single End Lead Assembly

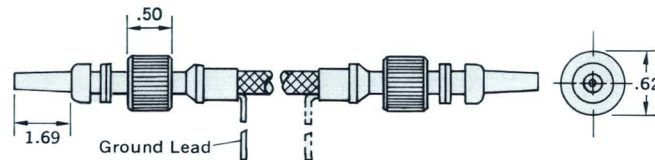


Fig. 2. Double End Lead Assembly

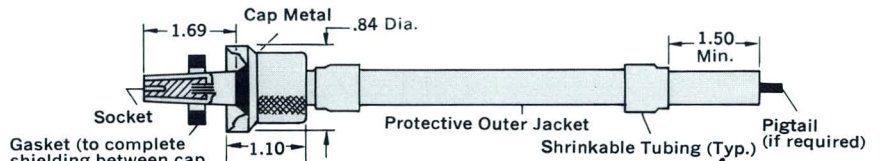


Fig. 1. Single End Lead Assembly

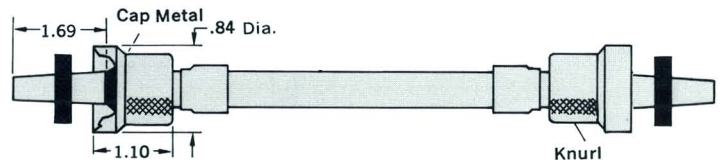
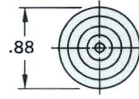
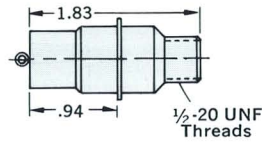


Fig. 2. Double End Lead Assembly

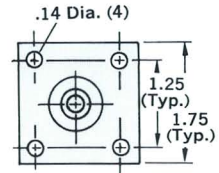
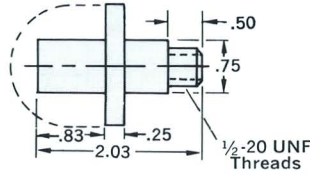
Flanged, Glass Epoxy, Hermetic Seal

Barrel Depth	Weight (Grams)	Part No.
1.69	17	861255-1



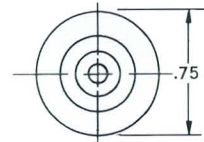
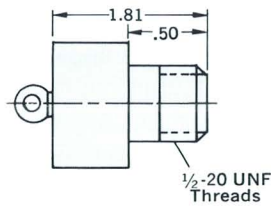
Flanged, Glass Epoxy, Bolt-Mount

Barrel Depth	Weight (Grams)	Part No.
1.69	32	846814-1



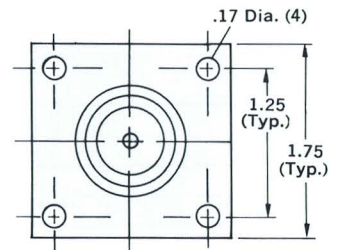
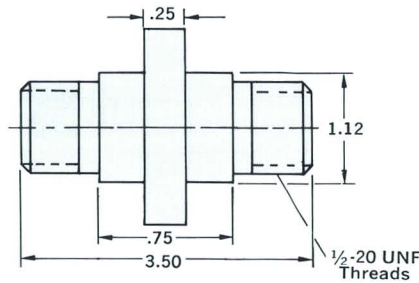
Glass Epoxy (For Encapsulated Units)

Barrel Depth	Weight (Grams)	Part No.
1.69	15	858868-1



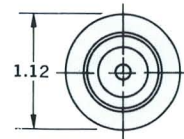
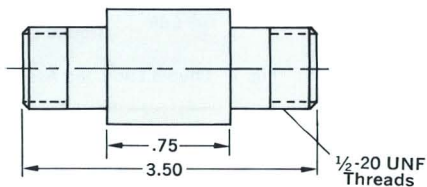
Glass Epoxy, Bolt-Mounted Feed-Thru

Barrel Depth	Weight (Grams)	Part No.
1.69	70	858873-1



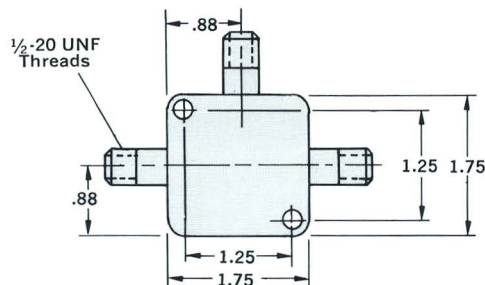
Glass Epoxy, Splice

Barrel Depth	Weight (Grams)	Part No.
1.69	52	858030-1



Glass Epoxy, 'T' Connector

Barrel Depth	Weight (Grams)	Part No.
1.69	110	830699-1



Molded End Type

Fig.	Cap Material (Type) *	Weight 12 In. Typ. (Grams)	Min. Length (Inches)	Part No.
1	C	47	4	839564
2		58	8	839565

*For cap material, refer to page 19-33.

Molded End Type (Shielded)

Fig.	Cap Material (Type) *	Weight 12 In. Typ. (Grams)	Min. Length (Inches)	Protective Outer Jacket	Part No.
1	C	65	12	Silicone	849371
2		76	14		848075

*For cap material, refer to page 19-33.

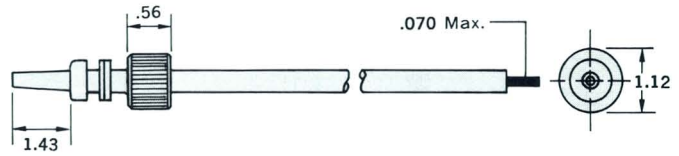


Fig. 1. Single End Lead Assembly

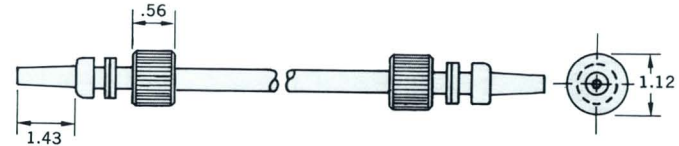


Fig. 2. Double End Lead Assembly

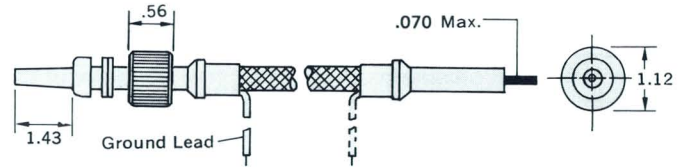


Fig. 1. Single End Lead Assembly

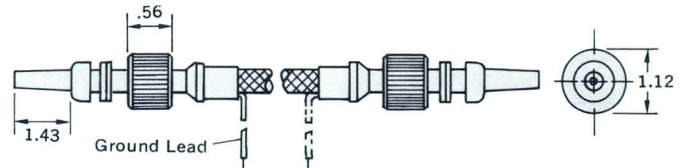
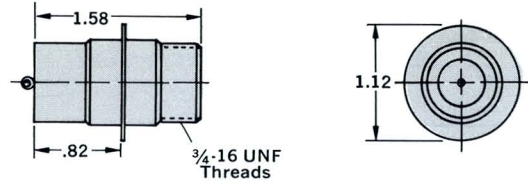


Fig. 2. Double End Lead Assembly

Consult AMP Capatron Division for details on a wide variety of LGH lead assemblies and receptacles that are available, but not shown.

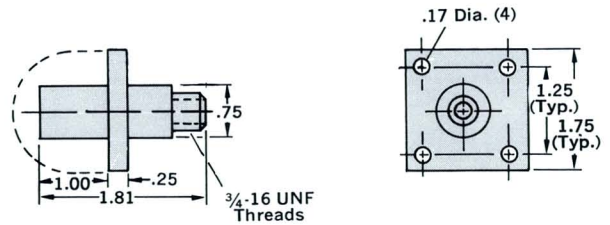
Flanged, Glass Epoxy, Hermetic Seal

Barrel Depth	Weight (Grams)	Part No.
1.44	20	861256-1



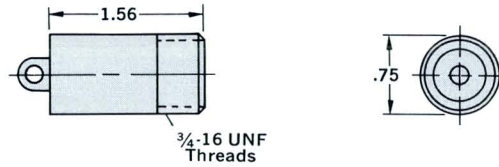
Flanged, Glass Epoxy, Bolt-Mount

Barrel Depth	Weight (Grams)	Part No.
1.44	42	850910-1



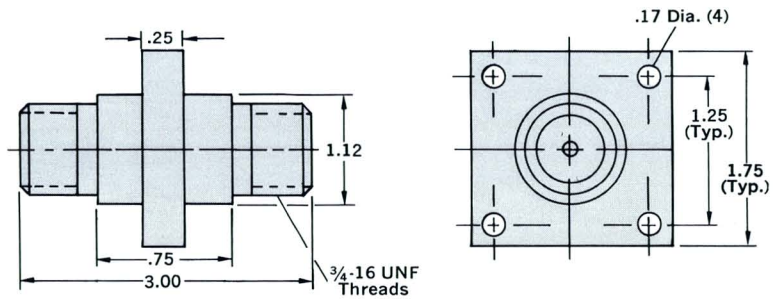
Glass Epoxy (For Encapsulated Units)

Barrel Depth	Weight (Grams)	Part No.
1.44	17	1-849587-1



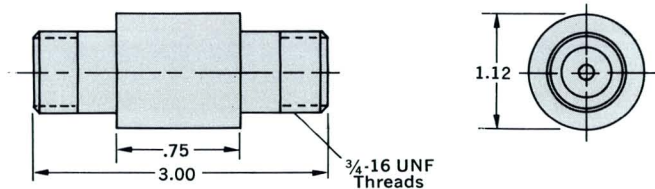
Glass Epoxy, Bolt-Mounted Feed-Thru

Barrel Depth	Weight (Grams)	Part No.
1.44	70	850735-1



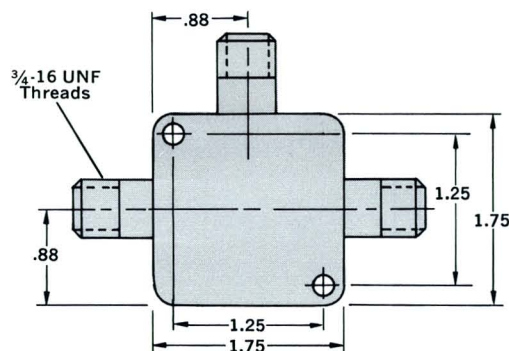
Glass Epoxy, Splice

Barrel Depth	Weight (Grams)	Part No.
1.44	43	850555-1



Glass Epoxy, "T" Connector

Barrel Depth	Weight (Grams)	Part No.
1.44	128	849372-1



Molded End Type

Fig.	Cap Material (Type)*	Weight 12 In. Typ. (Grams)	Min. Length (Inches)	Part No.
1	C	31	6	837975
2		44	10	830649

*For cap material, refer to page 19-33.

Molded End Type (Shielded)

Fig.	Cap Material (Type)*	Weight 12 In. Typ. (Grams)	Min. Length (Inches)	Protective Outer Jacket	Part No.
1	C	47	14	Glass	848076
2		60			848077

*For cap material, refer to page 19-33.

Consult AMP Capatron Division for details on a wide variety of LGH lead assemblies and receptacles that are available, but not shown.

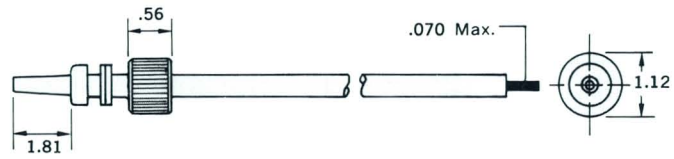


Fig. 1. Single End Lead Assembly

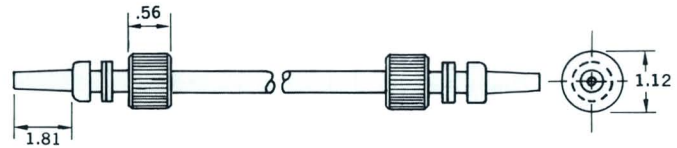


Fig. 2. Double End Lead Assembly

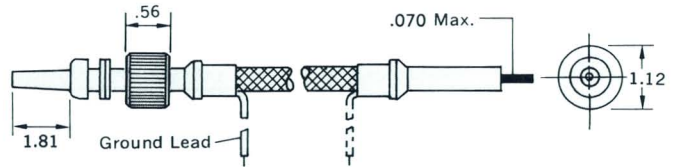


Fig. 1. Single End Lead Assembly

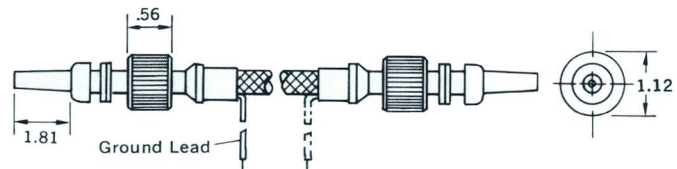
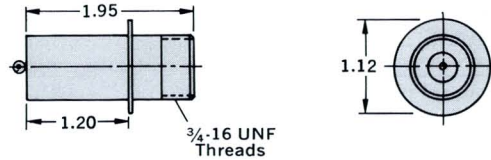


Fig. 2. Double End Lead Assembly

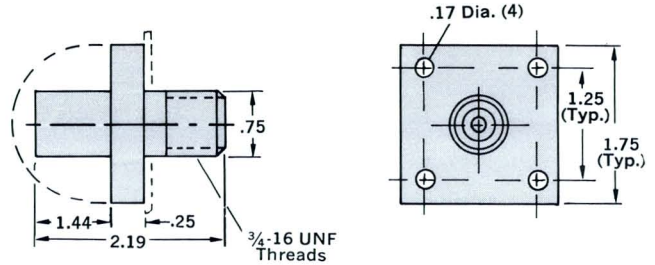
**Flanged,
Glass Epoxy,
Hermetic Seal**

Barrel Depth	Weight (Grams)	Part No.
1.81	32	861257-1



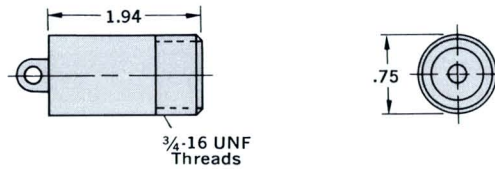
**Flanged,
Glass Epoxy,
Bolt-Mount**

Barrel Depth	Weight (Grams)	Part No.
1.81	53	850911-1



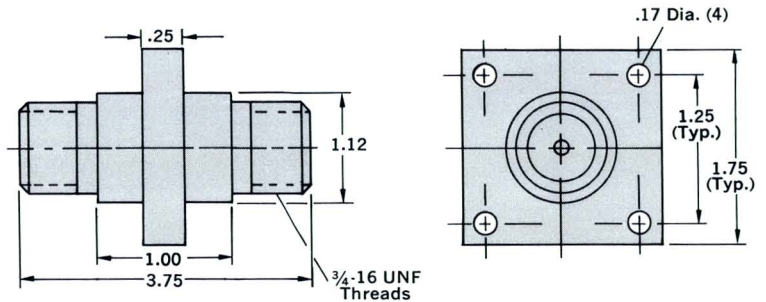
**Glass Epoxy
(For Encapsulated Units)**

Barrel Depth	Weight (Grams)	Part No.
1.81	28	849587-9



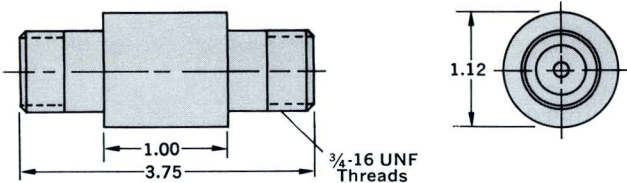
**Glass Epoxy,
Bolt-Mounted Feed-Thru**

Barrel Depth	Weight (Grams)	Part No.
1.81	91	850909-1



**Glass Epoxy,
Splice**

Barrel Depth	Weight (Grams)	Part No.
1.81	65	850908-1



Molded End Type

Fig.	Cap Material (Type)*	Weight 12 In. Typ. (Grams)	Min. Length (Inches)	Part No.
1	C	51	6	846290
2		67	10	846291

*For cap material, refer to page 19-33.

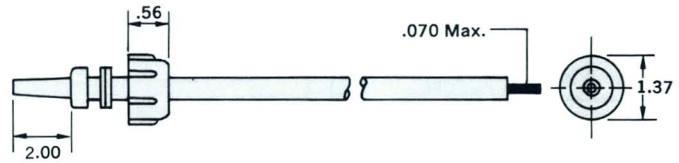


Fig. 1. Single End Lead Assembly

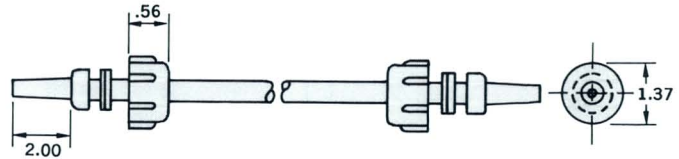


Fig. 2. Double End Lead Assembly

Molded End Type (Shielded)

Fig.	Cap Material (Type)*	Weight 12 In. Typ. (Grams)	Min. Length (Inches)	Protective Outer Jacket	Part No.
1	C	69	14	Silicone	848078
2		85			846950

*For cap material, refer to page 19-33.

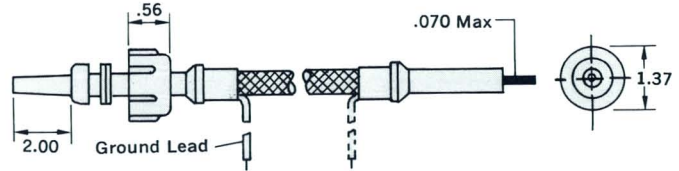


Fig. 1. Single End Lead Assembly

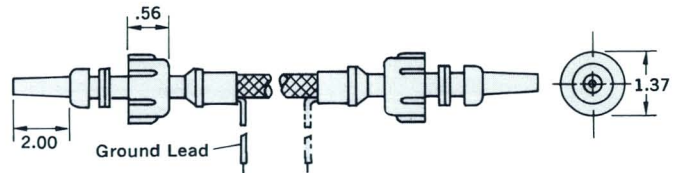


Fig. 2. Double End Lead Assembly

Molded End Type (RFI Shielded)

Fig.	Protective Outer Jacket	Part No.
1	Shielded,	848684
2	Silicone Rubber	848685

Note: RFI shielded lead assemblies mate with receptacle no. 861258-1, page 19-50

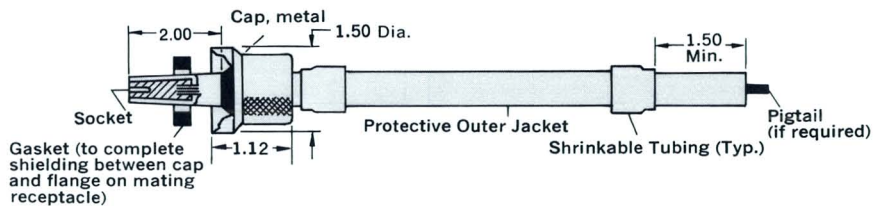


Fig. 1. Single End Lead Assembly

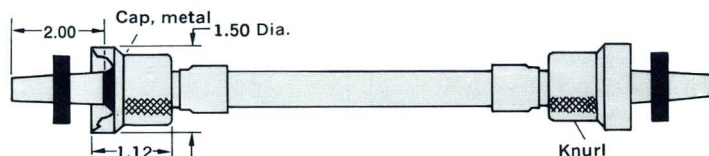


Fig. 2. Double End Lead Assembly

Consult AMP Capatron Division for details on a wide variety of LGH lead assemblies and receptacles that are available, but not shown.

**Flanged,
Glass Epoxy,
Hermetic Seal**

Barrel Depth	Weight (Grams)	Part No.
2.00	48	861258-1

**Flanged,
Glass Epoxy,
Bolt-Mount**

Barrel Depth	Weight (Grams)	Part No.
2.00	100	850912-1

**Glass Epoxy
(For Encapsulated Units)**

Barrel Depth	Weight (Grams)	Part No.
2.00	42	836567-1

**Glass Epoxy,
Bolt-Mounted Feed-Thru**

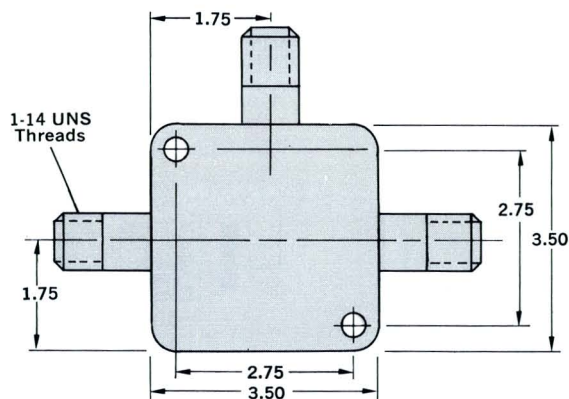
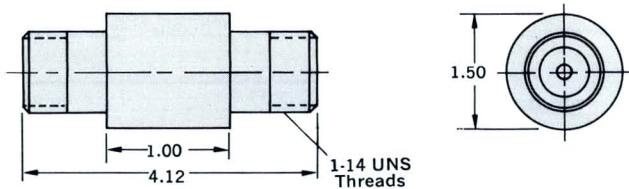
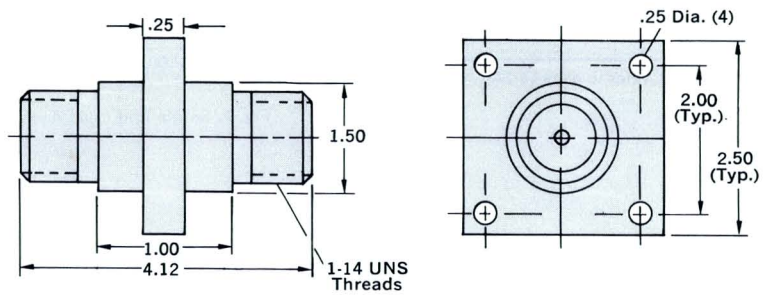
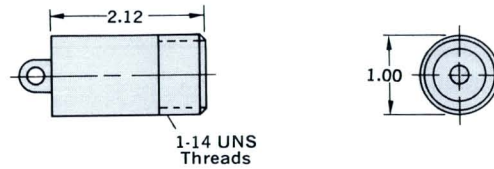
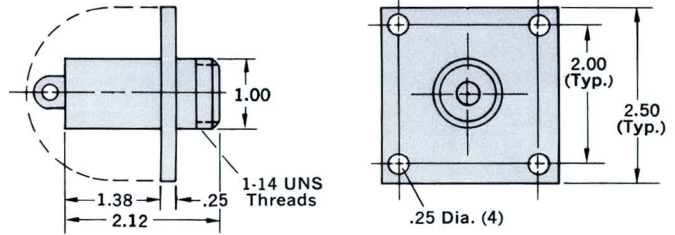
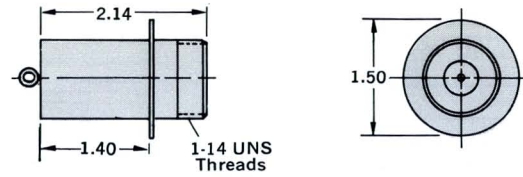
Barrel Depth	Weight (Grams)	Part No.
2.00	137	840468-1

**Glass Epoxy,
Splice**

Barrel Depth	Weight (Grams)	Part No.
2.00	105	840467-1

**Glass Epoxy,
"T" Connector**

Barrel Depth	Weight (Grams)	Part No.
2.00	315	850554-1



Features

The LGH 30 series lead assemblies and receptacles are specifically designed for high current applications. This line of LGH products is capable of carrying a continuous load of 30 amperes and is ideally suited for high current/voltage applications. The maximum operating voltage is 30 KVDC.

*HC, high current.

The lead assemblies are available in molded end and shielded molded end versions and can be supplied as single-ended and double-ended leads. The glass epoxy receptacles are for encapsulated units and bulkhead mounting.

The following product specifications are applicable to the various LGH 30 series lead assemblies and receptacles.

Lead Specifications

Length (including pigtail) — Up to 24", $\pm 1/4$ "; 24" and up, $\pm 2\%$ of length.

Insulation — Silicone rubber (reference MIL-W-16878, Type FF).

Color — White per MIL-STD-104.

Conductor — #10 AWG stranded .125" nominal O.D. Silver plating per ASTM-B298-58T.

Pigtail — Solder plated.

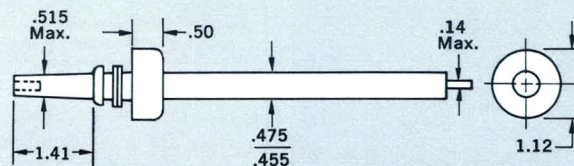
Socket — Type MIL-C-26636 leaded copper, gold-over-nickel plated per MIL-G-45204, Type II, .00003" min. thickness.

Cap Material — Glass epoxy per MIL-M-24325 (Ships), GEI-5.

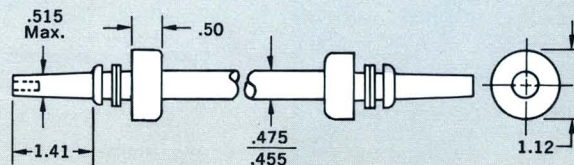
Washer — TFE electrical grade.

Marking — Per MIL-STD-130.

Molded End Type



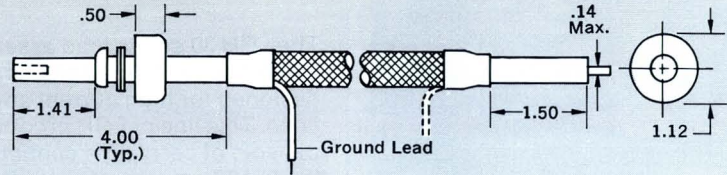
Single End Lead Assembly
Part No. 850634
(Min. Length 6")



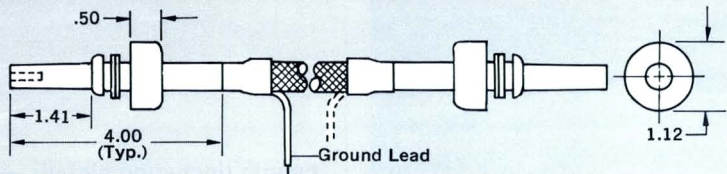
Double End Lead Assembly
Part No. 850635
(Min. Length 10")

Consult AMP Capatron Division for details on a wide variety of LGH lead assemblies and receptacles that are available, but not shown.

**Molded End Type
(Shielded)**



Single End Lead Assembly
Part No. 848355
(Min. Length 8")



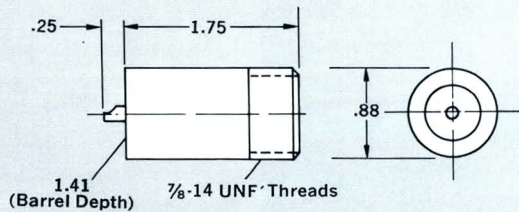
Double End Lead Assembly
Part No. 848356
(Min. Length 12")

Receptacle Specifications

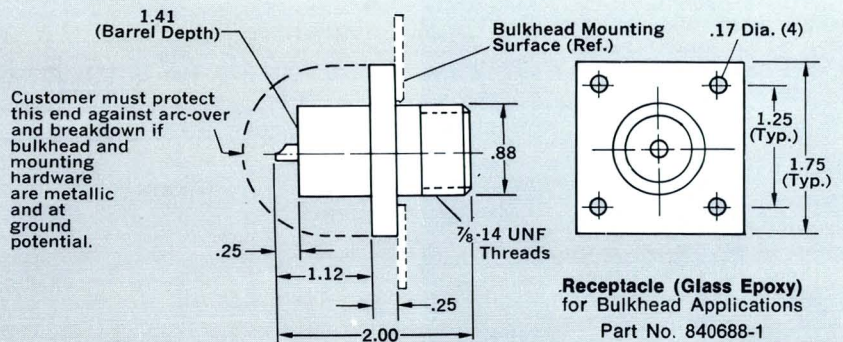
Body — Glass epoxy per MIL-M-24325 (Ships), GEI-5.

Pin Assembly — Type MIL-C-26636 leaded copper, tin plated per MIL-T-10727, Type I or II, .0001" min. thickness.

Receptacles



Receptacle (Glass Epoxy)
for Encapsulated Units
Part No. 846688-1



Receptacle (Glass Epoxy)
for Bulkhead Applications
Part No. 840688-1

VERSATILE RUGGEDIZED

LGH (VRL) RFI Shielded
Lead Assemblies and Receptacles**Features**

- Extremely rugged design
- Fully shielded against RFI
- Operates up to 15 KVDC (for ½ L.I.) and 25 KVDC (for 1 L.I.) from sea level to 70,000 feet
- Operating and storage temperature range: -55°C to +125°C
- Meets wide range of military requirements
- Metal housings can be readily altered to meet a wide variety of mounting and operational requirements

Versatile ruggedized LGH lead assemblies and receptacles are designed specifically for use where severe vibration, shock and handling conditions exist and are ideally suited for both industrial and military applications. This line of lead assemblies and receptacles carries the same voltage, current and altitude ratings as the corresponding standard LGH series when properly mated.

VRL cable assemblies feature the integrally molded end to provide positive mating and a perfect seal. They are completely shielded for RFI when mated with the appropriate receptacle.

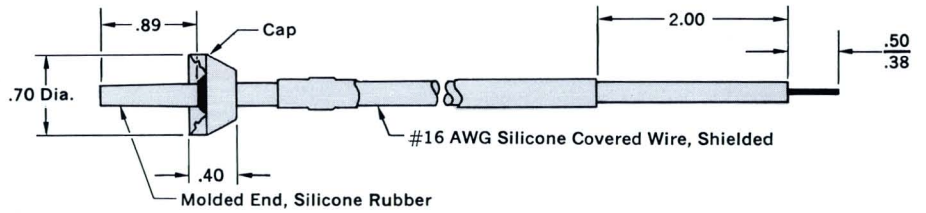
The receptacles are of the molded glass epoxy type with a protective metal shroud that is hermetically sealed between plastic and metal. These receptacles mate with the single-end ruggedized lead assemblies shown in the same series.

Special designs also are available upon request if the standard VRL lead assembly and receptacle designs will not fulfill your immediate needs.

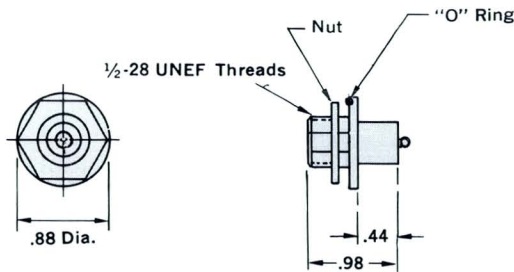
VERSATILE RUGGEDIZED

LGH (VRL) RFI Shielded Lead Assemblies and Receptacles

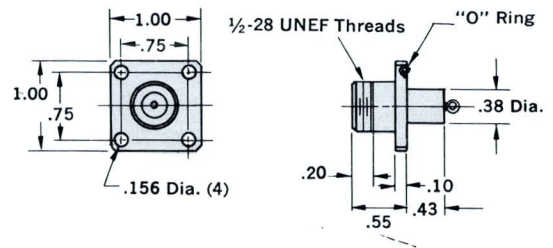
**LGH 1/2 LI
(15 KVDC)
10 Amperes**



VRL Shielded Lead Assembly, Part No. 862485-1

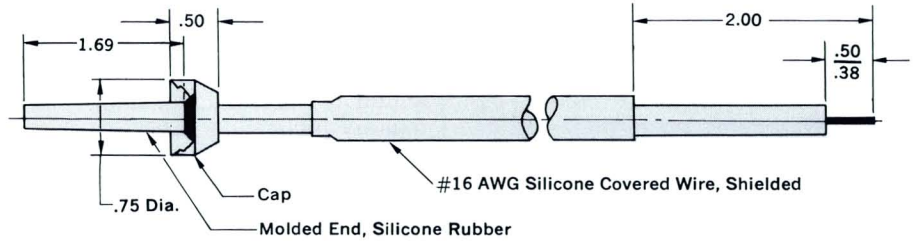


VRL Bulkhead Receptacle, Part No. 862295-1

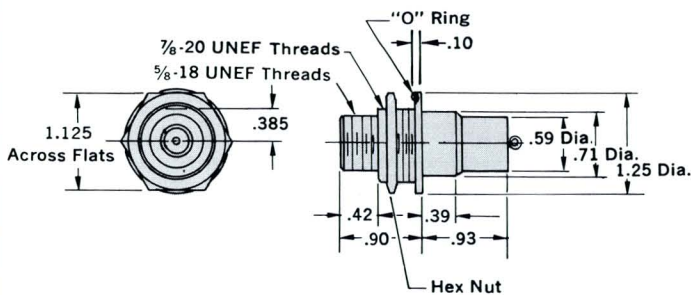


VRL Bulkhead Receptacle, Flanged, Part No. 862363-1

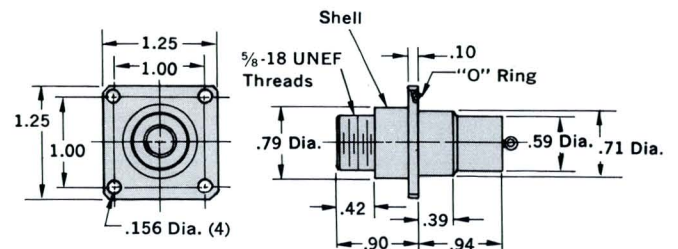
**LGH 1 LI
(25 KVDC)
10 Amperes**



VRL Shielded Lead Assembly, Part No. 862484-1



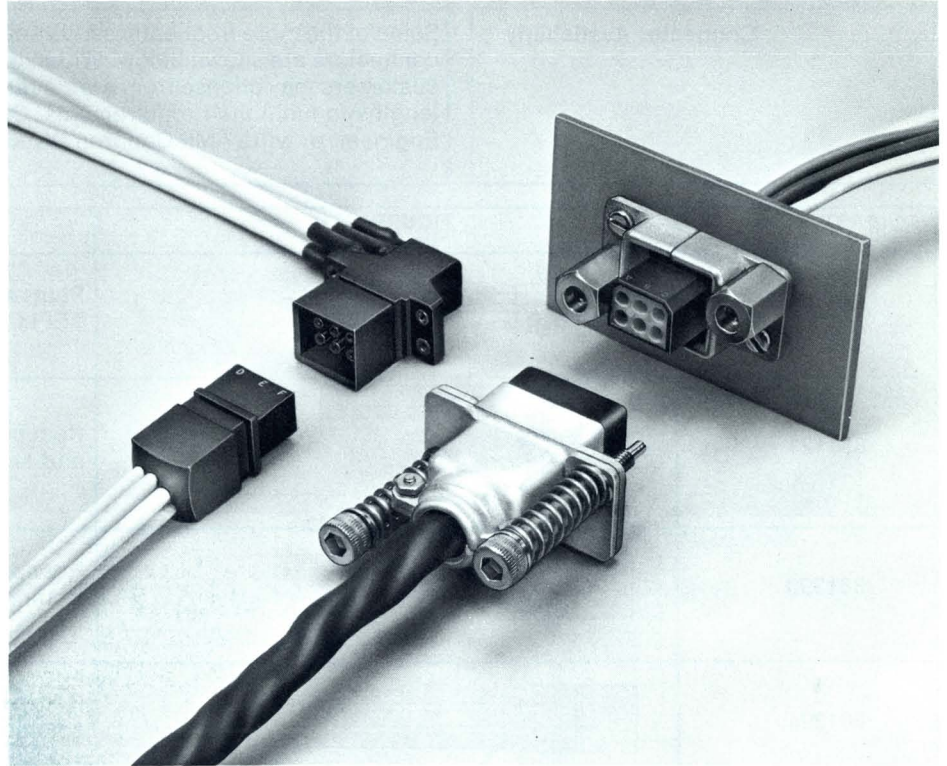
VRL Bulkhead Receptacle, Part No. 862443-1



VRL Bulkhead Receptacle, Flanged, Part No. 862362-1

Features

- Extremely lightweight — total weight of mated pair is less than 14 gr. without metal shell and wire
- Compact design — requires less than .6 sq. inch of mounting surface; occupies less than .750 cu. inch of volume per mated pair
- Quick connect/disconnect design
- Resilient silicone rubber insert in plug half provides positive interfacial seal for mated connector
- Operates up to 5 KVDC (pin-to-pin and pin-to-GRD.) at 70,000 feet
- Operating and storage temperature range: -55°C to +125°C
- Safe handling — no exposed contacts
- Withstands 10 KVDC Hipot test
- Housing styles for potting, chassis slot (channel) mounting, panel mounting and free-hanging applications
- Lettered positions for easy circuit identification
- Size 22 gold plated contacts with 5 ampere rating accommodate #28 to #22 AWG wire size range.
- Connectors pre-assembled with leads, fully potted and tested
- Metal housings for fully RFI shielded applications
- Choice of lead types includes both shielded and non-shielded with either silicone or TEFLON insulation
- Flame retardant, glass reinforced thermoplastic polyester housings; standard color, black. Other colors available.



AMP's Subminiature High Voltage Connector is designed for use in electronic high voltage circuits, especially in extremely critical applications and hazardous environments. It is exceptionally lightweight and compact, and can be operated within a temperature range of -55°C to +125°C and up to 5 KVDC at an altitude of 70,000 feet.

The connector incorporates many features to assure its electrical, mechanical and environmental integrity. The special metal housings assure full RFI shielding when required, with optional jackscrew latching capability.

AMP supplies the Subminiature High Voltage Connector in a 6-position size . . . pre-assembled with shielded or non-shielded leads that have silicone or TEFLON insulation. For optimum versatility, connector housings are available for 180° (straight) or 90° (right angle) rear-entry wiring and in a choice of styles for potting, chassis slot (channel) mounting, panel mounting and free-hanging applications. Panel mounted versions also can be furnished either with separate "slip on" metal mounting brackets or with a molded mounting flange that is an integral part of the connector potting shell. All connectors are fully potted and tested to assure their environmental integrity and reliability of performance.

Material Specifications

Housings and Potting Shells — thermoplastic polyester, glass-filled, flame retardant; standard color, black

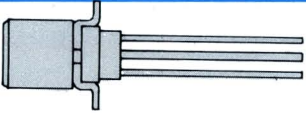
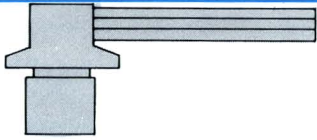
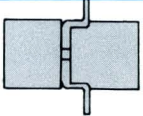
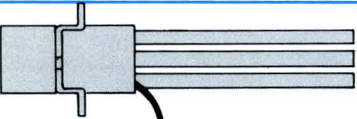
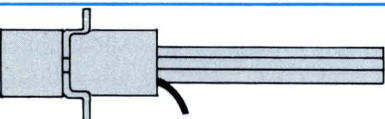
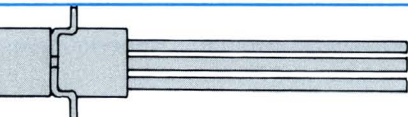

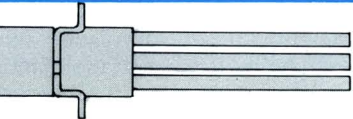
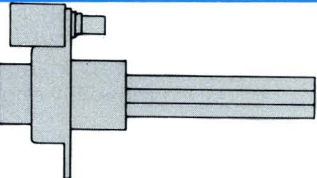
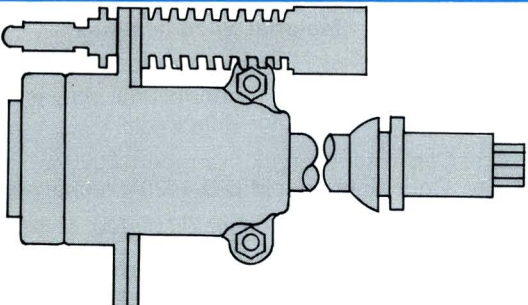
Pin and Socket Contacts—beryllium copper; .000030" (min.) gold over .000030" (min.) nickel. Gold plated per MIL-G-45204; nickel plated per QQ-N-290

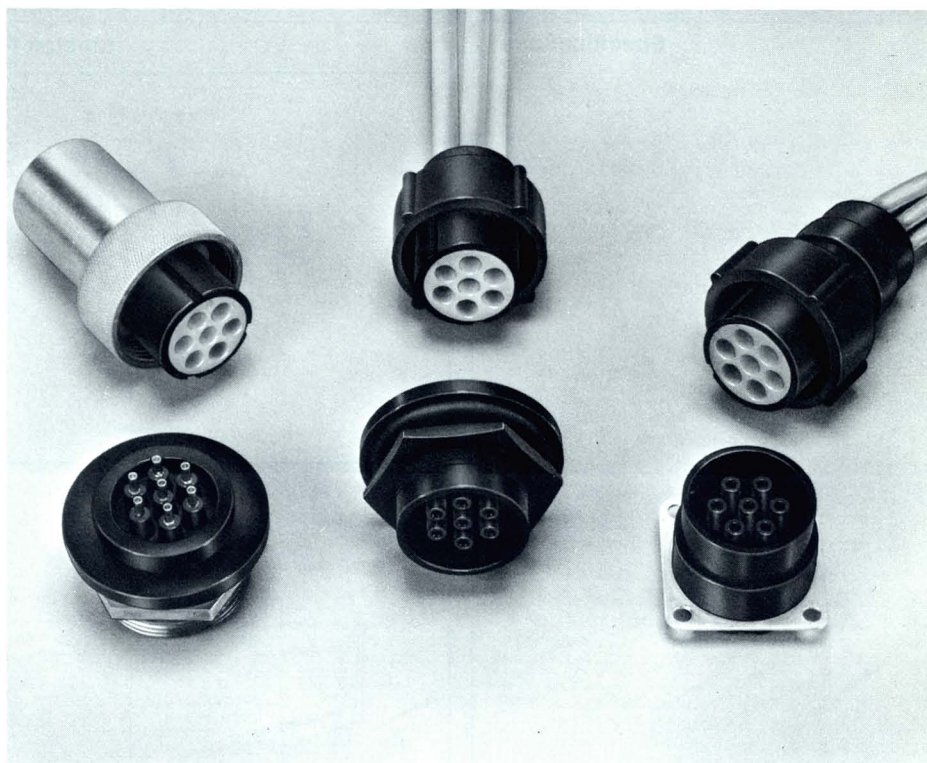
Mounting Brackets—carbon steel, nickel plated

Metal Housings — silicone bronze, tin plated

Connector Availability

Some of the more frequently used variations of 6-position subminiature connectors are shown below. Within this family of multiple contact connectors, customers may choose from a wide range of shell styles, lead types and lead lengths to fulfill their requirements. Contact the nearest AMP Capatron Sales Engineer, or write AMP Capatron Division, Elizabethtown, Pa.

PART NO.	FIGURE	DESCRIPTION
861120		Plug: with mounting brackets and TEFLON leads
861121		Receptacle: with right-angle potting shell and shielded TEFLON leads
861393		Receptacle Kit: includes housing, sockets, potting shell and mounting brackets
861394		Receptacle: with potting shell and shielded TEFLON leads with ground wire
861454		Plug: with potting shell and shielded TEFLON leads with ground wire
861470		Receptacle: with potting shell and silicone leads
861471		Plug: with potting shell and silicone leads
862096		Receptacle: with potting shell and unshielded TEFLON leads
862267		Plug: with potting shell, flying silicone leads, mounting bracket and female jackscrews
862270		Receptacle: with potting shell, shielded TEFLON leads and male jackscrews



Features

- 15 KVDC operating voltage
- Metal shell available for complete shielding and rugged operation
- Molded-in contacts are fully shrouded
- Molded glass epoxy and silicone rubber interface for positive sealing
- Polarized plug and receptacle housings prevent mismating
- Designed to meet applicable specifications
- Hermetically sealed
- Operation from -55°C to $+125^{\circ}\text{C}$
- Moisture resistant
- Corona resistant
- Field installable versions available

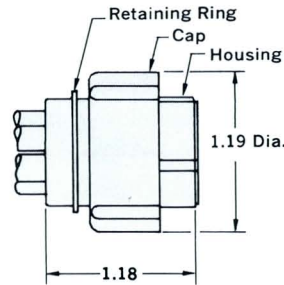
AMP Seven-Pin Miniature Circular Connectors, when properly assembled and mated, safely carry 15 KVDC (pin-to-pin and pin-to-ground) through a full range of military environmental requirements. The connectors can carry a continuous current of 7.5 amperes per line when terminated to #20 AWG wire. The receptacle is hermetic and can be mounted with an "O"-ring flange or solder flange for various industrial and military applications.

This connector family features size 20 gold-plated pins and sockets which are fully shrouded for safe handling, polarized housings to assure proper mating, and a molded glass epoxy and silicone rubber interface for positive sealing.

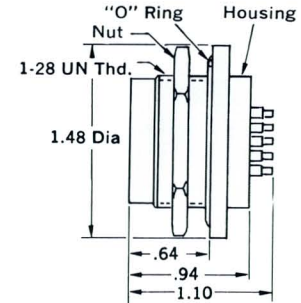
AMP Seven-Pin Miniature Circular Connectors are available in a wide variety of configurations, including a metal shell version for RFI shielding and rugged handling and field installable versions for customer installation.

Specifications

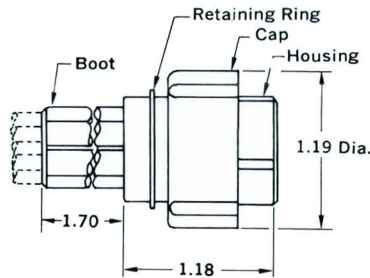
Molded Plastic Shell



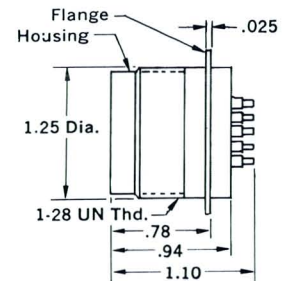
Potted Plug



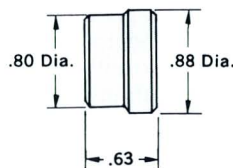
Potted Receptacle (Part No. 861999-1)



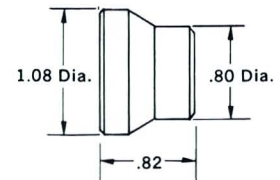
Field Installable Plug (Part No. 862006-1)



**Potted Receptacle,
Solder Flange Mount (Part No. 862005-1)**

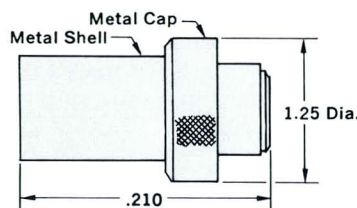


Plug Potting Shell

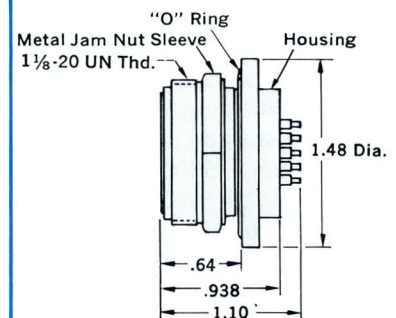


Receptacle Potting Shell

Metal Shell



Plug (Part No. 862003-1)



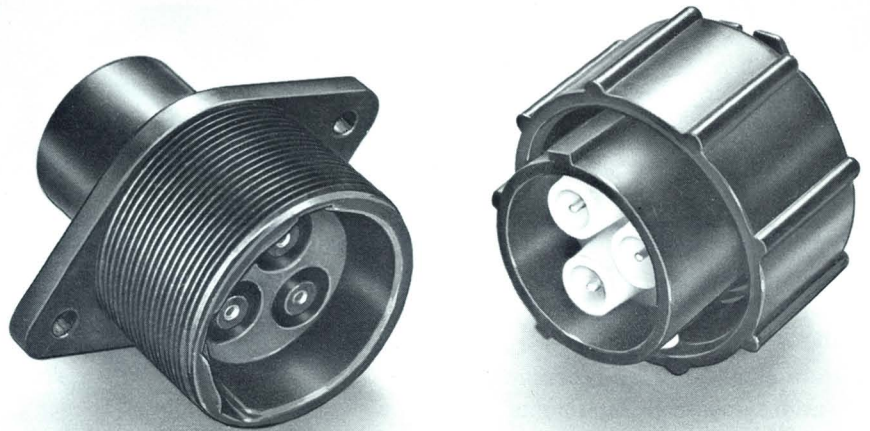
Receptacle (Part No. 862004-1)

Note: The connectors shown represent only a few of the many configurations available. Since each application for connectors of this type is different, each connector is custom designed to meet individual needs. Contact your AMP Capatron Sales Engineer with details concerning your application.

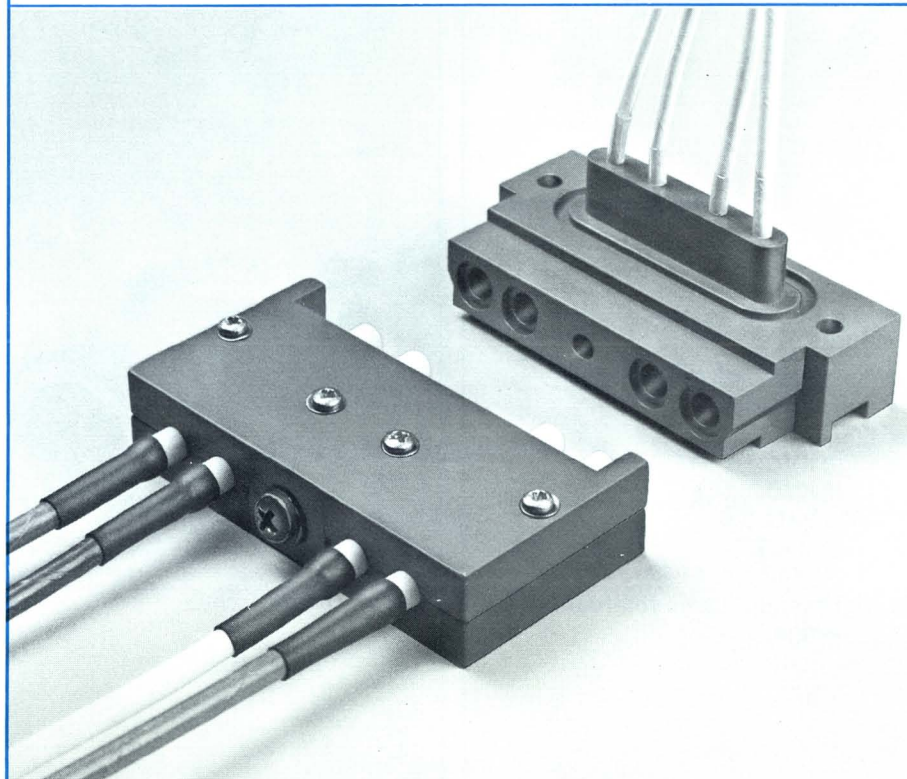
The AMP Capatron Division can furnish a variety of other multi-pin connectors, with or without metal shells and in hermetic or non-hermetic configurations. Many designs are available immediately to meet existing needs, or connectors can be custom designed to your exact requirements.

Features

- Hermetically sealed receptacles
- Various keying arrangements available
- 15 KVDC operating voltage



Three-Pin Connector Assembly with Size 20 Contacts



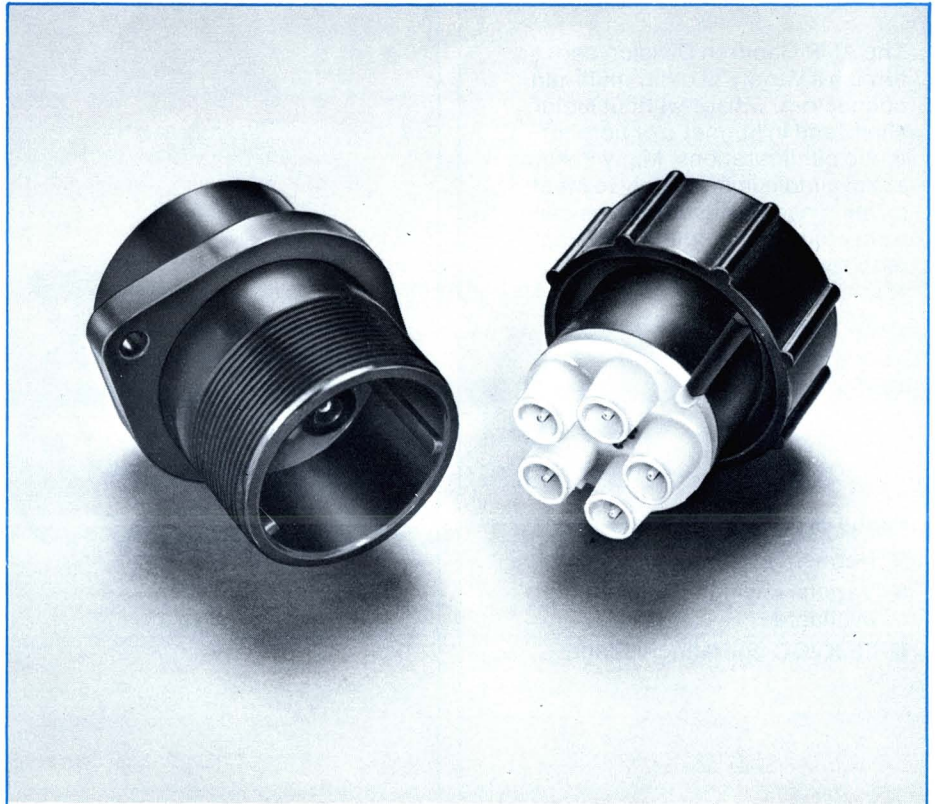
Four-Pin Right Angle Connector

Features

- Hermetically sealed receptacles
- Compact right-angle design
- Individual field installable lines

Features

- Hermetically sealed receptacles
- Various keying arrangements available
- 15 KVDC operating voltage



Five-Pin Connector Assembly

Features

- Quick connect/disconnect, pull to release
- Lines:
 - 10 KVDC, 1 @
 - 5 KVDC, 1 @
 - 300 VAC, 5 @
 - Coaxial, 2 @
 - Low Voltage, 51 @
- Lightweight, flame-retardant housings



60-Pin Circular Connector

COMMERCIAL

LGH Multi-Pin

High Voltage Circular Connectors



Features

- Housings made of U.L. recognized, 94V-0 rated, self-extinguishing polyester materials
- Standard housing color is black — other colors available
- Operating and storage temperature range: -15°C to $+85^{\circ}\text{C}$
- Operates up to 27 KVDC
- Will withstand a 35 KVDC Hipot test
- Safe handling of high-voltage — no exposed contacts
- Lightweight, compact design
- Threaded coupling assures positive, quick connect/disconnect
- Resilient silicone rubber “O” rings provide positive sealing for mated connectors
- Can be panel or bulkhead mounted or used in free-hanging applications
- Size 16 gold-plated contacts with 13 ampere rating accommodate wide range of wire sizes — #24-20 AWG and #18-16 AWG — may be hand tool or machine crimped or soldered
- Two shell sizes available: smaller size offers 2-, 3- and 4-contact configurations; larger diameter shell contains 6 or 7 contacts.

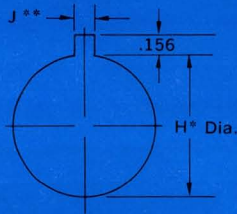
AMP Multi-Contact Circular Connectors provide a reliable, safe, low cost means of connecting high voltages in critical applications and environments. They are lightweight, extremely compact and can be operated within a temperature range of -15°C to $+85^{\circ}\text{C}$ and to 27 KVDC.

High voltage connectors are available in two basic shell sizes offering 2-, 3-, 4-, 6- and 7-contact configurations. All are equipped with threaded coupling for a positive, quick connect/disconnect capability and can be either panel or bulkhead mounted or used as free-hanging connectors. They incorporate many outstanding design features to assure their complete electrical, mechanical and environmental integrity.

To satisfy customer requirements, AMP supplies the connectors either pre-assembled (with attached leads) or in kit form. Each kit includes a plug, receptacle and an appropriate number of pins and sockets that can be either hand tool or machine crimped or soldered to wire. The pre-assembled connectors can be furnished with leads of virtually any length and color. All are fully potted and tested to assure that they are of the highest quality and will meet all performance specifications.

COMMERCIAL LGH Multi-Pin High Voltage Circular Connectors

Specifications



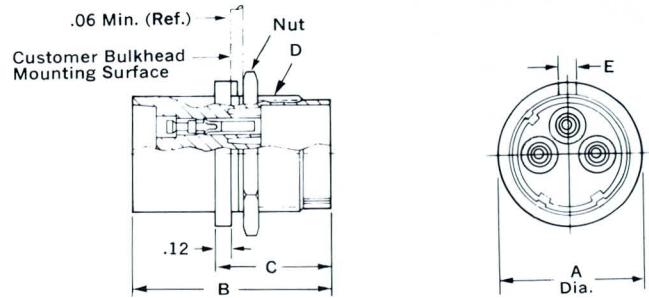
Suggested Cutout for Panel or Bulkhead Mounting

* H dimension = 1.015/1.031 for 2-, 3- and 4-contact shells; 1.260/1.270 for 6- and 7-contact shells

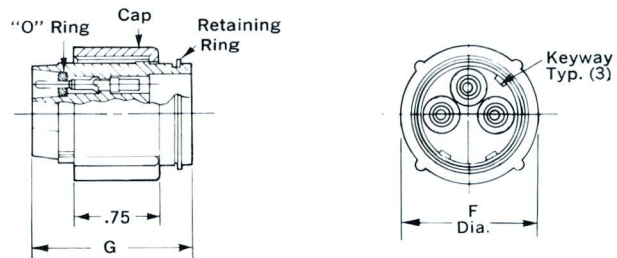
** J dimension = .156 for 2-, 3- and 4-contact shells; .203 for 6- and 7-contact shells

For more information on the Multi-Contact High Voltage Circular Connector to meet your specific requirements, consult the AMP Capatron Sales Engineer nearest you or write AMP Capatron Division, Elizabethtown, Pa.

Receptacle



Plug



Materials:

Housings, Cap and Nut — U.L. recognized, 94V-0 rated, self-extinguishing glass reinforced polyester materials; color, black. (Other colors available upon request.)

"O" Ring — Silicone rubber

Retaining Ring — Stainless steel

Size 16 Pin and Socket Contacts — Brass; .000050 (min.) gold plated per MIL-G-45204

No. of Contacts	Wire Size Range (AWG)	Connector Kit Part No.	Dimensions						
			A	B	C	D	E	F	G
2	24-20	860288-1	1.25	1.75	1.00	28 UN 1"	.125	1.19	1.38
	18-16	860288-2							
3	24-20	860287-1	1.25	1.75	1.00	28 UN 1"	.125	1.19	1.38
	18-16	860287-2							
4	24-20	860286-1	1.25	1.75	1.00	28 UN 1"	.125	1.19	1.38
	18-16	860286-2							
6	24-20	860299-1	1.50	2.00	1.06	20 UN 1 1/4"	.190	1.44	1.48
	18-16	860299-2							
7	24-20	860825-1	1.50	2.00	1.06	20 UN 1 1/4"	.190	1.44	1.48
	18-16	860825-2							

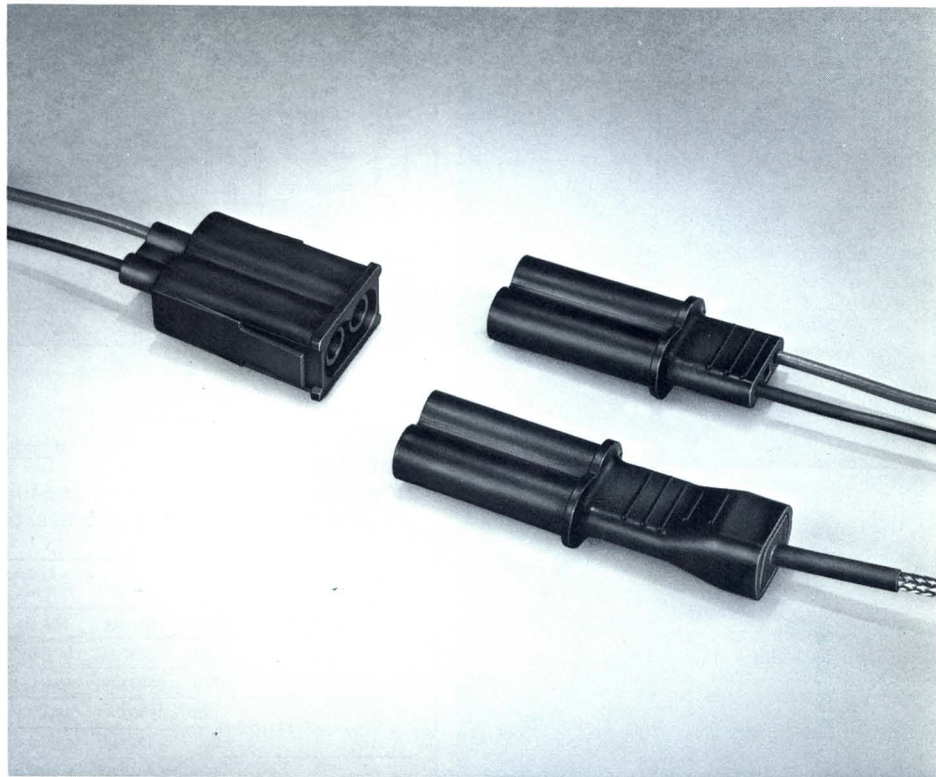
AMP Hand Tool No. 45099 is used for wire size range #24-20 AWG, and No. 45098 is used for wire size range #18-16 AWG.

Extraction Tool No. 861751-1 is used for all contacts.

Notes:

1. A plug, mating receptacle and an appropriate number of pins and sockets are included in each connector kit. For shipment, contacts are not installed but are packaged in a separate container within the connector kit.
2. Connectors are also available with attached leads. Leads can be furnished in any length and color.
3. For complete information on application tooling to terminate the crimp-type pins and sockets, contact AMP Incorporated, Harrisburg, Pa.

LGH Two Position Rectangular Connector



Features

- U.L. recognized, 94V-0 rated glass-filled polyester housings
- Standard housing color is black — other colors available
- Operates up to 10 KVDC
- Will withstand a 15 KVDC Hipot 3 min. test
- Safe handling of high voltage — deeply recessed contacts and staggered pins
- Lightweight, compact design
- Pre-assembled connectors furnished with attached leads of any color/length combination
- Connector kits for shielded and unshielded applications include plug, receptacle and contacts
- Crimp, snap-in contacts; pin diameter .062"
- Snap-in panel mount receptacle housings — no mounting hardware required
- Temperature range: -15°C to $+85^{\circ}\text{C}$

AMP's Rectangular Two Position LGH connector is designed for high voltage applications where quick bulkhead mounting is desired; the receptacle half has molded wings which allow it to be snapped into the mounting hole. Operating voltage is 10 KVDC; however, increased voltage ratings and ac operating capabilities are possible for specific applications.

These AMP connectors incorporate many outstanding design features to assure their complete electrical, mechanical and environmental integrity. Such features include: housings made of U.L. recognized 94V-0 glass-filled polyester; contacts with a 10-ampere rating which will accommodate wire sizes of No. 22-20 AWG and No. 18-16 AWG; polarized plugs and receptacles to assure proper connector mating; flanged receptacles to facilitate panel and bulkhead mounting; fully protected pins in the plug half and

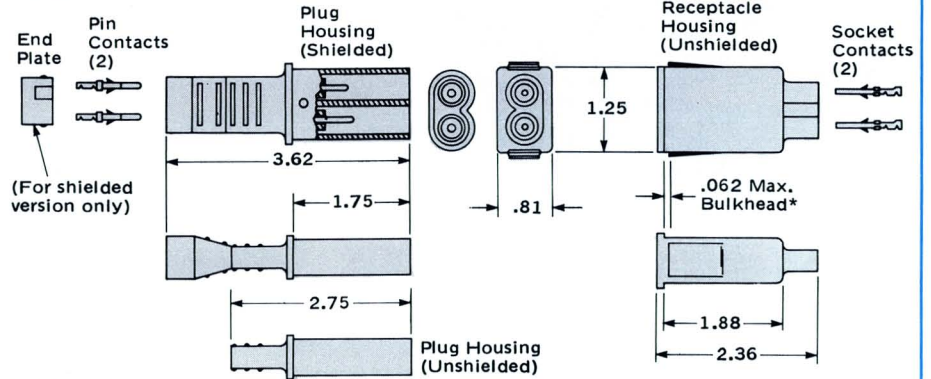
recessed sockets in the receptacle half for safe high-voltage handling; and quick connect/disconnect capability with ramp-type detent mating. Also for maximum handling safety, the pins in the plug housing are stagger-mounted to ensure that the ground or return line makes before and breaks after the hot line mates and unmates.

To satisfy customer requirements, AMP supplies the connectors pre-assembled (with attached leads) and in kit form for shielded or unshielded applications. Each conveniently packaged kit includes a plug, receptacle and pins and sockets that can be either hand tool or machine crimped or soldered to wire. The pre-assembled connectors can be furnished with leads of virtually any length and color. All are fully tested to assure that they are of the highest quality and will meet all performance specifications.

COMMERCIAL
LGH Two Position
 Rectangular Connector

**Connector Kits,
 Shielded and Unshielded**

Specifications



Material:

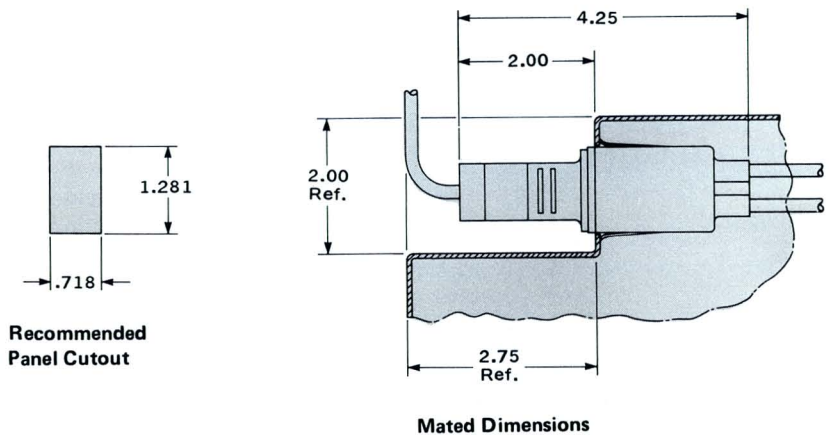
Housings and End Plate — glass-filled polyester
 Pin and Socket Contacts — brass, tin plated

*Receptacles also available for .030" and .090" thick bulkheads.

Connector Type	Wire Size Range (AWG)	Ins. Dia. (Max.)	Plug Assembly Part Nos.			Receptacle Assembly Part Nos.		Kit Part Nos.	Hand Tool Part Nos.
			Housing	Pin (2)	End Plate	Housing	Socket (2)		
Shielded	22-20	.125	862528-2	66400-1	861276-1	862435-2	66399-1	862525-2	90067-2
		.200	862528-2	66400-1	861276-1	862435-4	66399-1	862525-4	90067-2
	18-16	.125	862528-1	66099-2	861276-1	862435-1	66101-2	862525-1	90067-2
		.200	862528-1	66099-2	861276-1	862435-3	66101-2	862525-3	90067-2
Unshielded	22-20	.125	862434-2	66400-1	—	862435-2	66399-1	862322-2	90067-2
		.200	862434-4	66400-1	—	862435-4	66399-1	862322-4	90067-2
	18-16	.125	862434-1	66099-2	—	862435-1	66101-2	862322-1	90067-2
		.200	862434-3	66099-2	—	862435-3*	66101-2	862322-3	90067-2

Notes:

1. Shielded and unshielded connector assemblies can be supplied fully assembled and terminated with various lead lengths. Consult AMP Capatron Division regarding your particular specifications.
2. Contact AMP Industrial Division for hand tools.

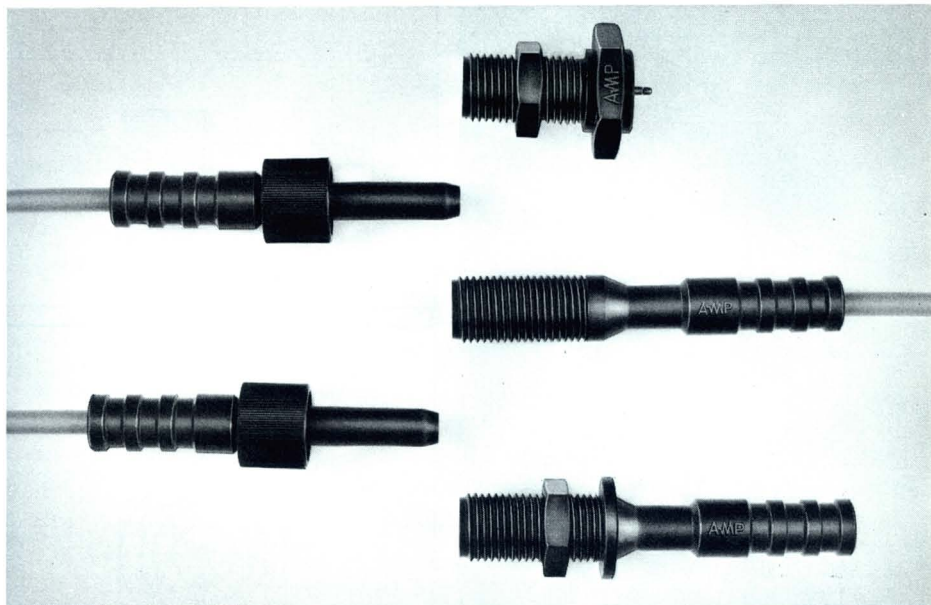


Tooling

CERTI-CRIMP Hand Tool

For small production, prototype, experimental and servicing applications, CERTI-CRIMP hand tools are ideal. The ratchet device located between the tool handles keeps the tool pressure locked until the jaws are brought together under the precise pressure needed to form a perfect crimp.





Features

- All parts made of UL recognized, 94V-0 rated plastic material
- Designed to exceed minimum creepage and clearance for specified voltages per applicable International Specifications
- Available with or without leads
- Crimp, snap-in contacts are rated at 7.5 amperes
- Pins and sockets accept conductor sizes of #22-20 AWG and # 18-16 AWG
- Maximum flexibility of application through elimination of predetermined lead lengths
- Machine applied terminations assure lowest applied cost

The AMP family of Commercial Single-Line connectors provides solutions to high-voltage carrying problems at the lowest applied cost. The connectors are designed specifically for commercial application in industrial environments and to meet large-volume production requirements.

Characteristically, the design of the connectors offers maximum versatility in mass production as well as ease of repair in field locations. The connector contacts are of the crimp, snap-in type and can be machine terminated or hand tool crimped to conductor sizes of #22-20 AWG and #18-16 AWG. The materials used in the construction

of the connectors assure their ability to withstand rugged environments and their conformance to UL requirements of Self-Extinguishing, Group 0 ratings.

Available configurations include plugs and receptacles. The plug is the molded plastic end which includes the cap and associated parts. It is supplied separately for repair and field installation and can be assembled on various wires to form complete leads. There are three receptacle configurations: one for bulkhead mounting in potted or low pressure oil-filled units, one for lead mounting and one for open-air bulkhead mounting.

Performance Characteristics

Temperature: rated for operation within a range of -15°C to $+85^{\circ}\text{C}$

Altitude: rated for operation from sea level to 10,000 feet

Voltage:

AC Applications — rated to 8 KVAC, rms, 60 Hz

DC Applications — rated to 20 KVDC

Current: rated for 7.5 amperes (rms) continuous

Dielectric Withstanding Test:

AC Applications — Properly assembled and mated connectors can withstand 12 KVAC, 60 Hz (rms) for 3 minutes at sea level and at room temperature

DC Applications — Properly assembled and mated connectors can withstand 30 KVDC for 3 minutes at sea level and at room temperature

COMMERCIAL LGH Single-Contact Connectors

High Voltage Plug

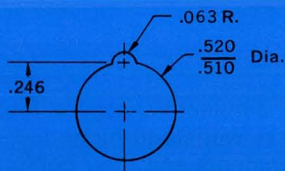
A	Wire Size (AWG)	Crimp-On Socket No.	Plug Part No.
.185	22-20	66331-1	861610-1 *
	18-16	66100-2	861610-3 *
	—	None	861610-5
.302	22-20	66331-1	861610-4 *
	18-16	66100-2	861610-2 *
	—	None	861610-6

*Contacts included with plug.

NOTE: These plugs mate with all receptacles shown below.

Receptacle, Bulkhead Mounted

Crimp-On Socket Type	Receptacle Part No.
No Socket	861611-1
Straight on Socket	861611-2
Right Angle Socket	861611-3



Suggested Mounting Dimensions
(for Receptacles 861611 and 862197)

Receptacle, Bulkhead Mounted

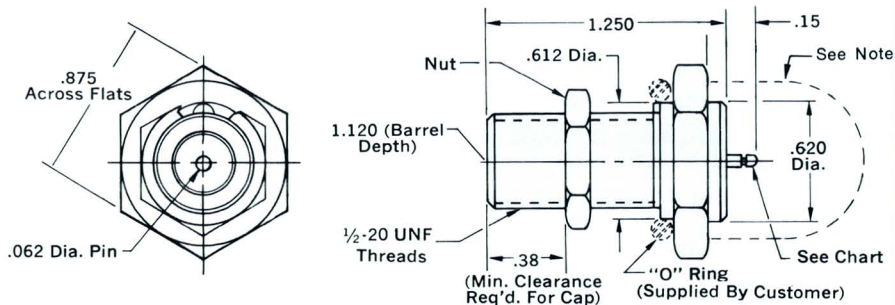
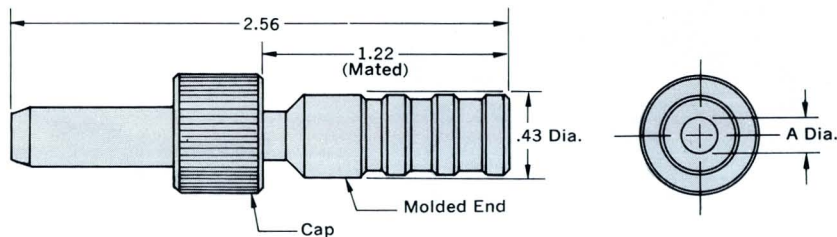
A	Wire Size (AWG)	Crimp-On Pin No.	Receptacle Part No.
.185	22-20	66332-1	862197-1 *
	18-16	66098-2	862197-3 *
	—	None	862197-5
.302	22-20	66332-1	862197-4 *
	18-16	66098-2	862197-2 *
	—	None	862197-6

*Contacts included with receptacle.

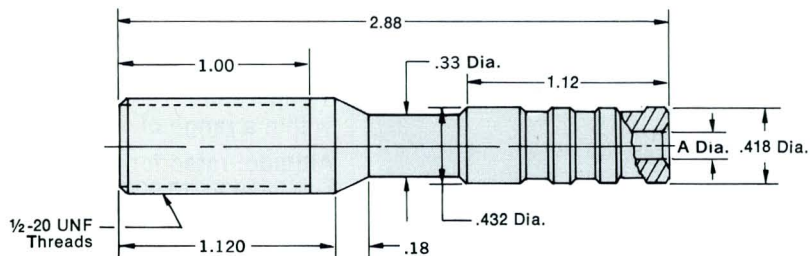
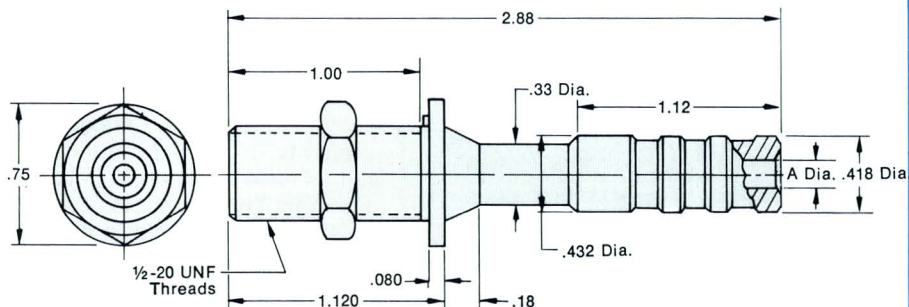
Receptacle, Free-Hanging

A	Wire Size (AWG)	Crimp-On Pin No.	Receptacle Part No.
.185	22-20	66332-1	861753-1 *
	18-16	66098-2	861753-3 *
	—	None	861753-5
.302	22-20	66332-1	861753-4 *
	18-16	66098-2	861753-2 *
	—	None	861753-6

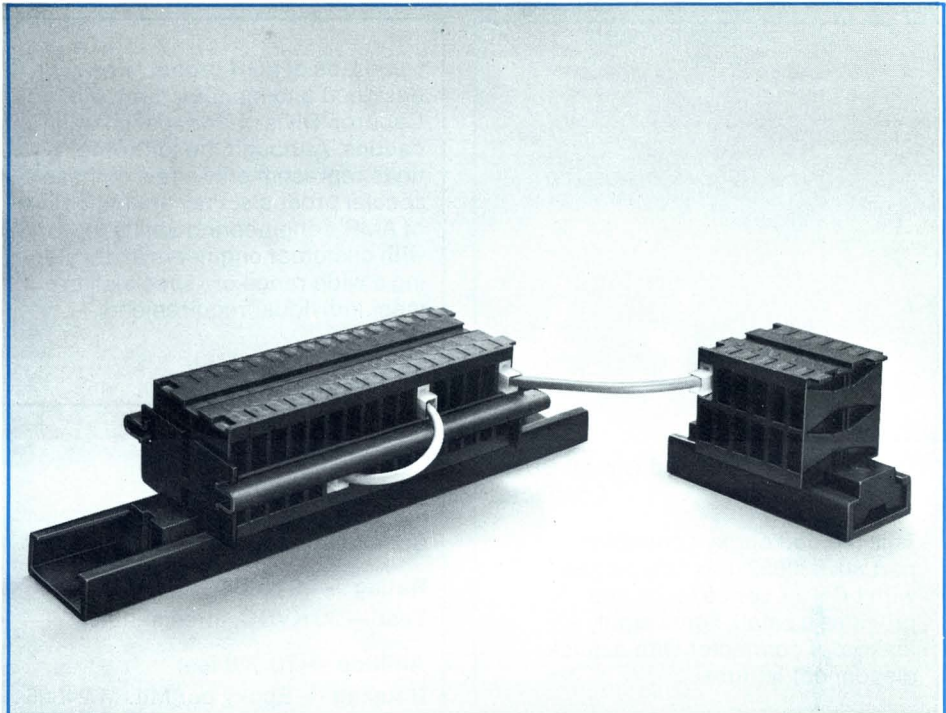
*Contacts included with receptacle.



Note: If bulkhead and mounting hardware are metallic and at ground potential, provisions must be made to protect the back end of the receptacle against arc-over and breakdown.



Note: For complete information on application tooling to terminate all crimp-type pins and sockets, contact AMP Incorporated, Harrisburg, Pa.



High Voltage Modular Connecting Blocks



High Voltage Circular Connectors

Refer to pages 19-61 and 19-62 for a complete description of Multi-Contact Circular Connectors.

Printed Circuit Board Connector

This molded epoxy connector, part no. 830632-1, is compatible with LGH 1I series leads and provides a small, lightweight, leakproof connector with a quick disconnect feature.

Magnetron Well

The Magnetron Well, part no. 846806-1, is a hermetically sealed unit that is equipped with a terminal assembly for accepting customers' magnetrons. Leak-proof mounting is achieved through the terminal assembly's featured integral flange and "O" ring groove. For a choice in connection methods, Magnetron Wells are also available with metal flanges for solder type assembly.

Hundreds of LGH products are designed and manufactured by Capatron Division for special applications. Although the following units represent only a few of these special products, they are indicative of AMP's engineering ability to work with customer engineers in developing a wide range of "specials" to meet individual requirements.

Modifications of these units can be quickly and efficiently handled by Capatron engineers to meet a customer's particular specifications requiring new designs. If what you need in high voltage, high altitude lead assemblies and connectors is not shown in this catalog, consult AMP Incorporated, Capatron Division.

Specifications:

Rating — 20 KVDC, 10 amps

Test — 30 KVDC, three minutes

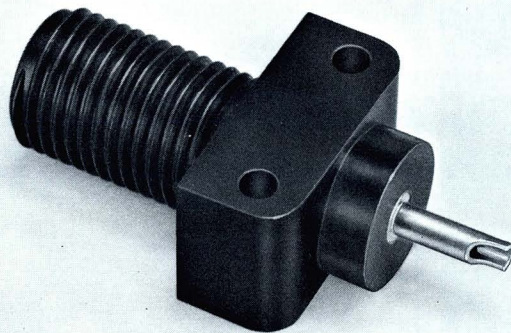
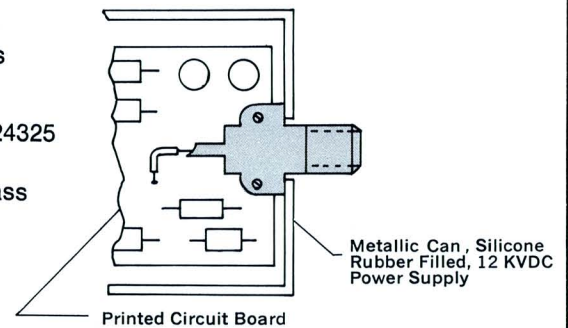
Altitude — 70,000 feet

Housing — Epoxy per MIL-M-24325 (GEI-5)

Pin — #16 AWG, tin plated brass

Mounting — #6 screws (2)

Typical Application



Specifications:

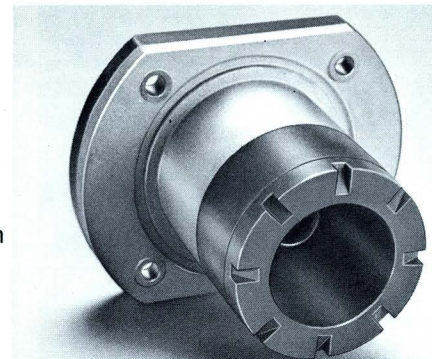
Rating — 30 KV pulse

Altitude — 70,000 feet

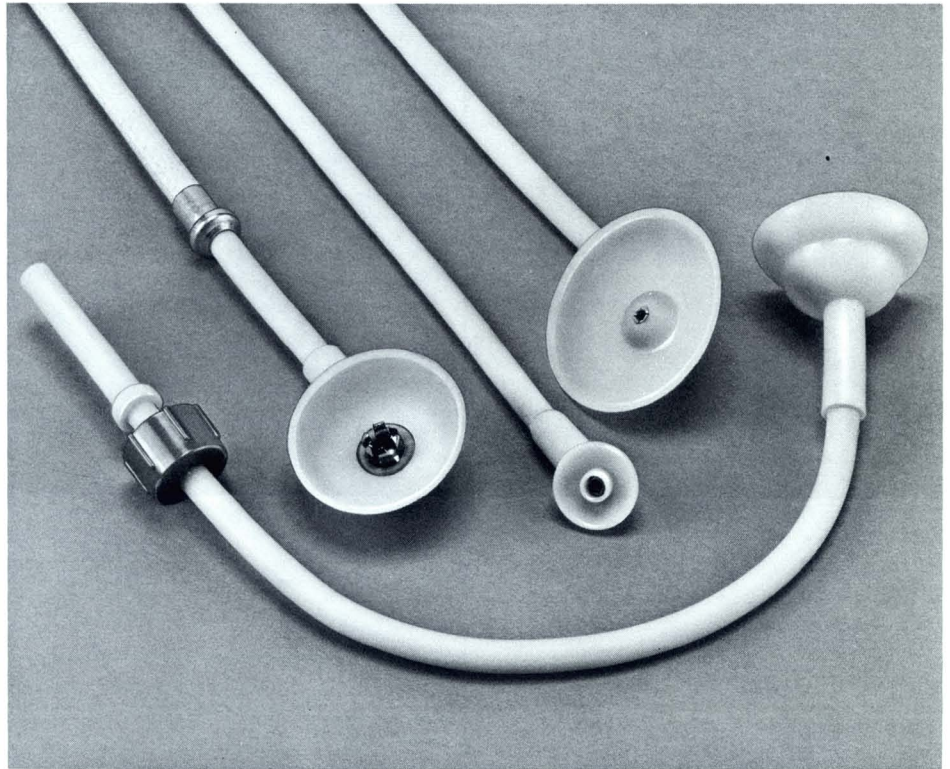
Temperature — -60°C to +235°C

Contacts — Iconnel X

Environment — Shock and vibration resistant



SPECIAL APPLICATION

LGH Molded Silicone Rubber
 CRT Anode Lead Assemblies


LGH molded silicone rubber CRT anode lead assemblies are designed to mate with JEDEC-EIA tube caps J1-21, J1-22 and J1-25 (reference MIL-E-1), either right-angle or straight-on versions.

The sealing ability of the boot makes them ideal for high altitude operation, even under extreme moisture conditions. Lead assemblies can be supplied with a protective covering (such as a glass braid jacket) over the lead insulation. RFI shielding, with or without ground leads, is also available.

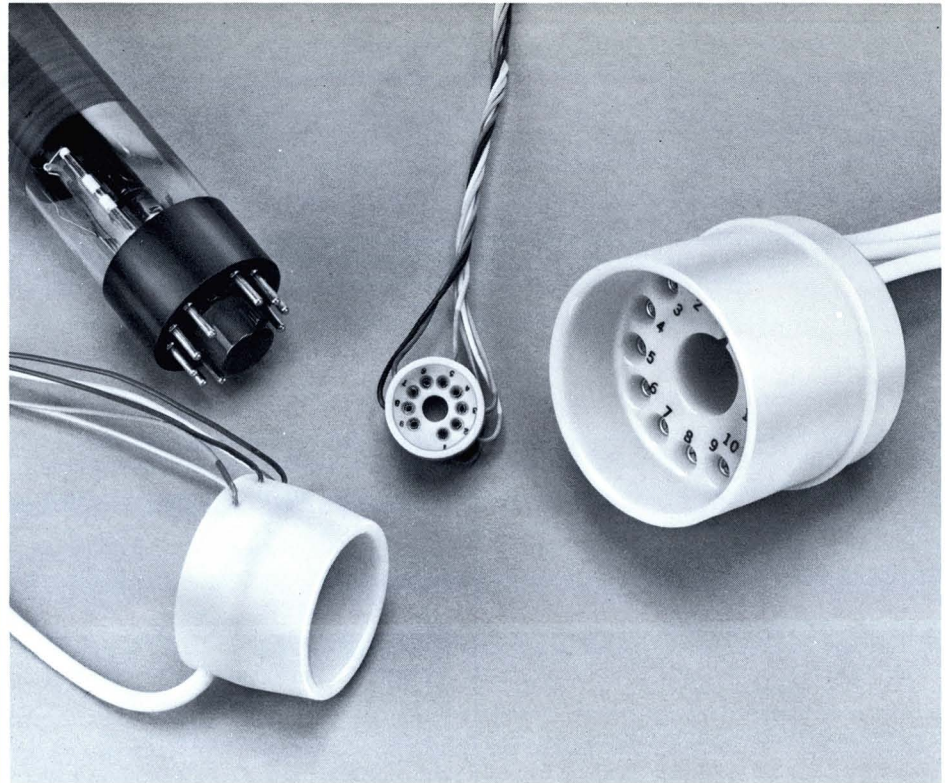
Before mating boot to CRT cap, it is advisable to apply a thin coat of silicone grease around the tube cap area and to the underside of the boot. The silicone grease will help exclude all entrapped air and make a positive set against moisture and dirt.

AMP Capatron Division manufactures a complete line of LGH CRT anode lead assemblies to mate with most caps now used in the industry. Lead assemblies can be supplied with or without standard LGH molded-end connectors.

Features

- Anode connections without potting
- Connections available include: right-angle, straight, 45° and others
- One-piece molded construction
- Environmentally sealed for trouble-free performance

SPECIAL APPLICATION

LGH Molded Silicone Rubber
CRT Base Connectors

LGH molded silicone rubber CRT base connectors feature highly reliable performance with complete versatility. The connectors have integrally molded high and low voltage leads, as dictated by particular applications, and a molded boot design to assure dust and moisture resistance over an infinite operation life span.

The versatility of the connector design allows customers to purchase either fully wired connectors or connectors which can be terminated and potted in their plant.

For details on the wide variety of LGH molded silicone rubber CRT base connectors available, consult AMP Capatron Division, Elizabethtown, Pa.

Features

- Base connections without potting
- Right-angle and straight connections available
- One-piece molded construction
- Environmentally sealed for trouble-free performance

SPECIAL APPLICATION

LGH**High Voltage Rack and Panel Connector****Features**

- 15 KVDC rating up to 70,000 feet (continuous)
- Extremely compact
- All plastic design
- Housings can be molded from a variety of materials
- Provides highly reliable drawer-type connections
- Low insertion and extraction forces
- Hipot — 31 KVDC at sea level, two minutes
- Pins and sockets (10-amp rating) are recessed for maximum safety; will accept conductor sizes to # 16 AWG
- Hermetically sealed version available for soldering to metal bulkhead
- Available with or without leads
- No tools required for field use
- Can be readily adapted for in-line splice applications

This AMP High Voltage Connector is specifically designed for military application. It is extremely compact in design and has a continuous 15 KVDC rating from sea level up to an altitude of 70,000 feet.

Basically, the connector assembly is a rack and panel type and is especially suited for drawer mounting. It incorporates many design features to assure its electrical, mechanical and environmental integrity. Such features include: a flanged receptacle with removable retaining ring for easy bulkhead mounting; use of the tapered plug approach making exact alignment unnecessary; recessed pin and socket contacts to eliminate high voltage exposure; and a resilient silicone rubber "O" ring in the receptacle that acts as an interfacial seal for the mated connector.

Both plug and receptacle housings are molded from durable glass epoxy while the pin and socket contacts are made of fine grade brass and are gold plated in the mating areas for maximum conductivity. The solder eyelets are pre-tinned for optimum solderability and are capable of accommodating leads with conductor sizes up to #.16 AWG.

To meet customer's exact requirements, AMP can supply the High Voltage Rack and Panel Connector with or without leads. Also, because of the basic design of the connector, slight modifications can be readily made for its use as an in-line splice.

Specifications

Materials:

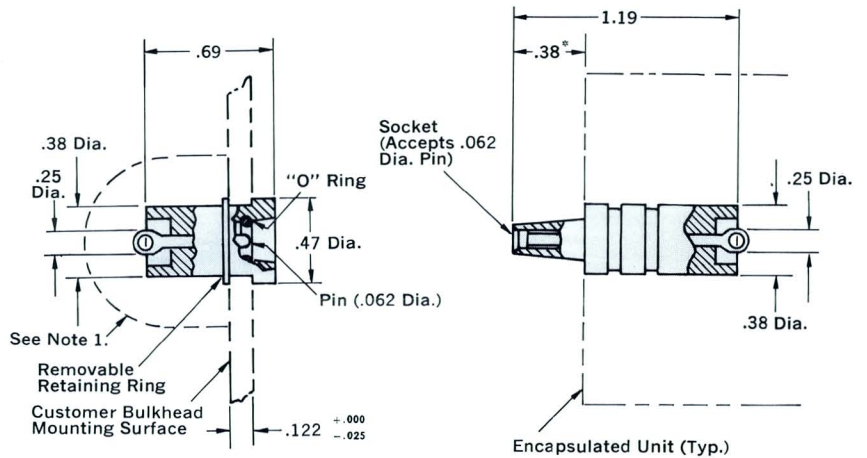
Housings — Molded glass epoxy per MIL-M-24325 (Ships), GEI-5

Pin and Socket Contacts — Brass; gold plated per MIL-G-45204

Solder Eyelets — Pre-tinned per MIL-T-10727

"O" Ring (Receptacle Only) — Silicone rubber

Retaining Ring (Receptacle Only) — Stainless steel per MS 16624



Receptacle

Part Number: 859111-1
(without leads)

Plug

Part Number: 859113-1
(without leads)

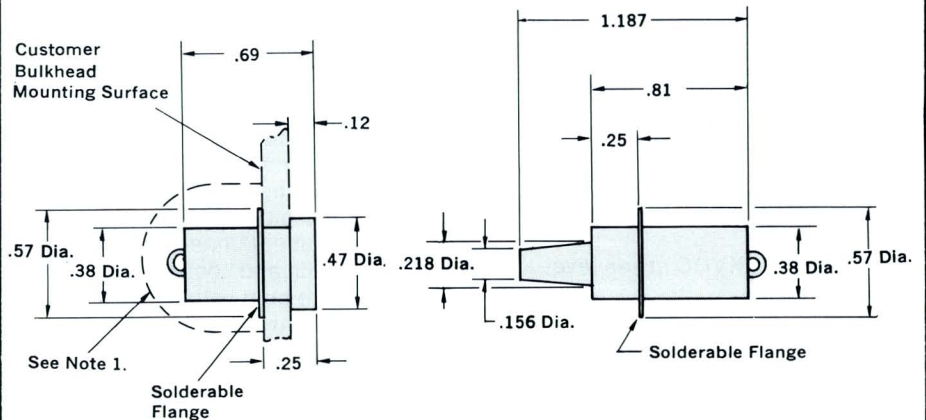
*This dimension is also the recommended minimum mounting dimension for encapsulated units.

Notes:

1. If bulkhead and mounting hardware are metallic and at ground potential, provisions must be made to protect the back end of the receptacle against arc-over and breakdown.

2. Connectors are available with or without leads. Leads can be furnished in virtually any length, with various insulation materials, in either standard white or a variety of optional colors, and with conductor sizes to # 16 AWG.

For the High Voltage Rack and Panel Connector to meet your specific requirements, consult the AMP Capatron Sales Engineer nearest you or write AMP Capatron Division, Elizabethtown, Pa.



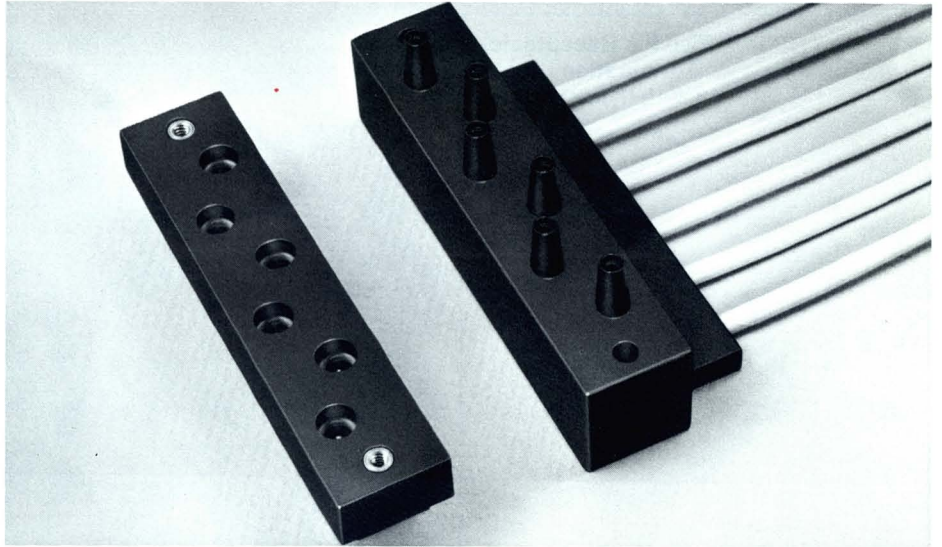
Receptacle, Hermetically Sealed

Part Number: 862123-1
(without leads)

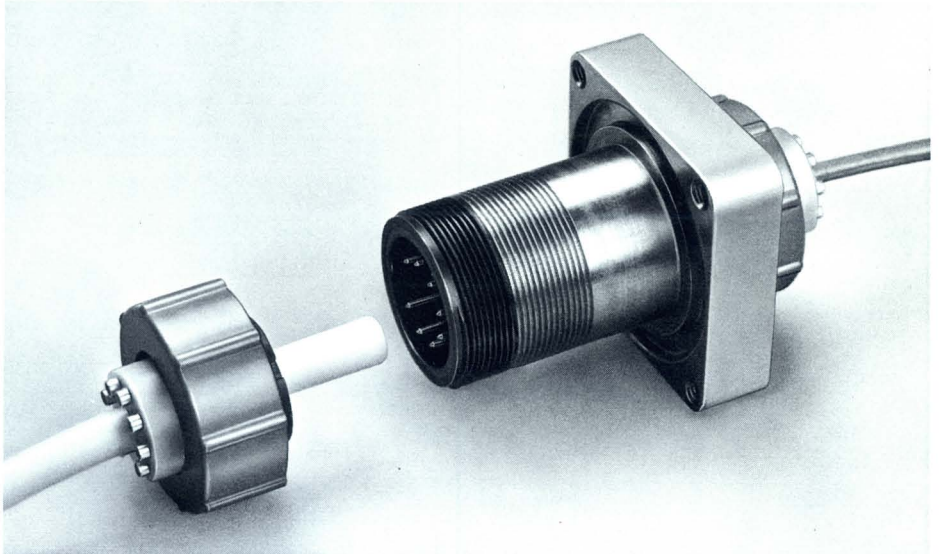
Plug, Hermetically Sealed

Part Number: 862124-1
(without leads)

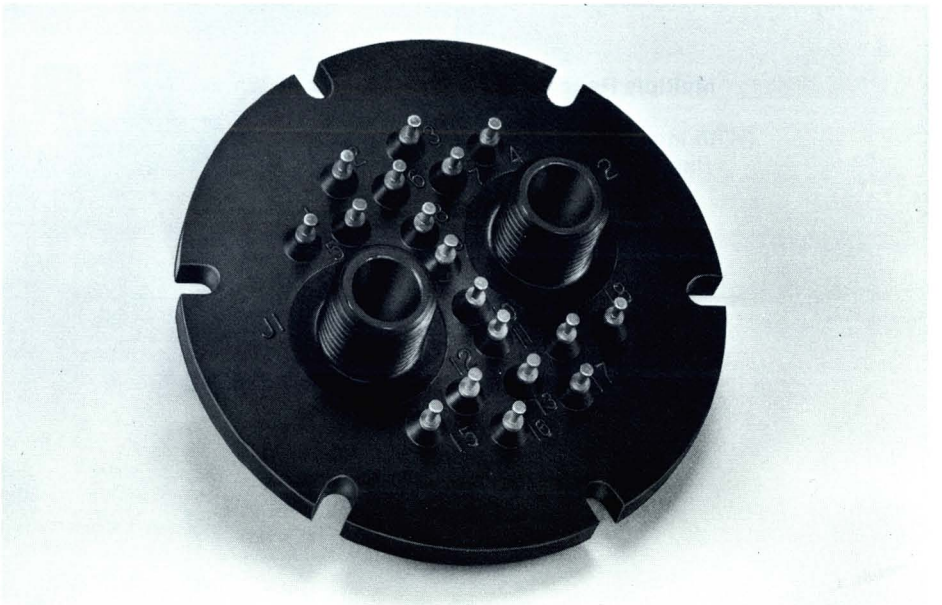
**Six-Pin
Plug and Receptacle,
Rack and Panel**



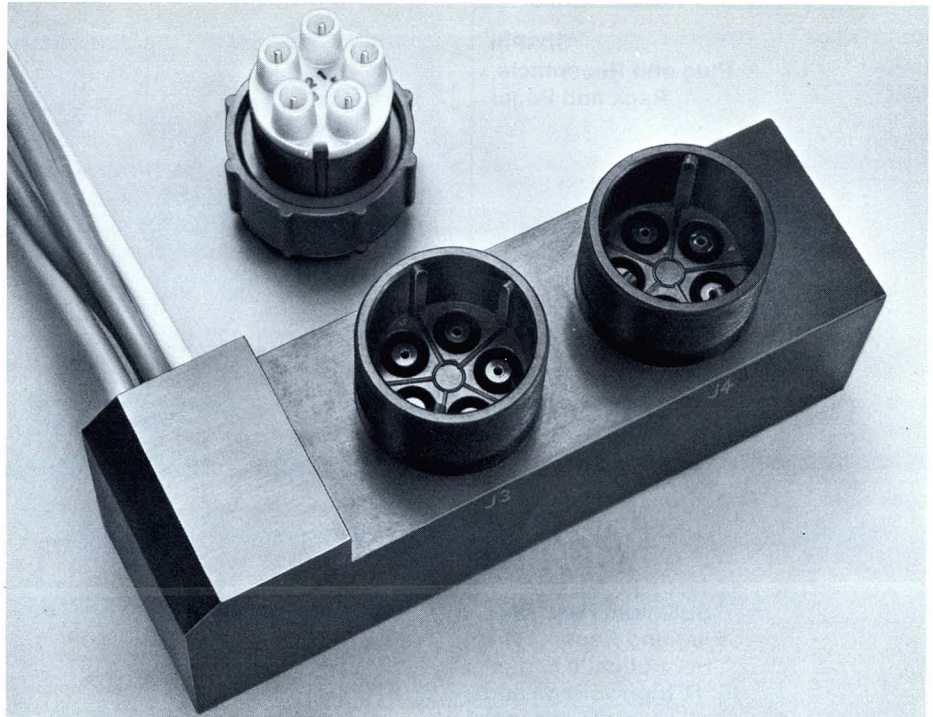
**Bulkhead Feed Thru
Plug and Receptacle,
Hermetically Sealed
(1 high voltage and
8 low voltage connections)**



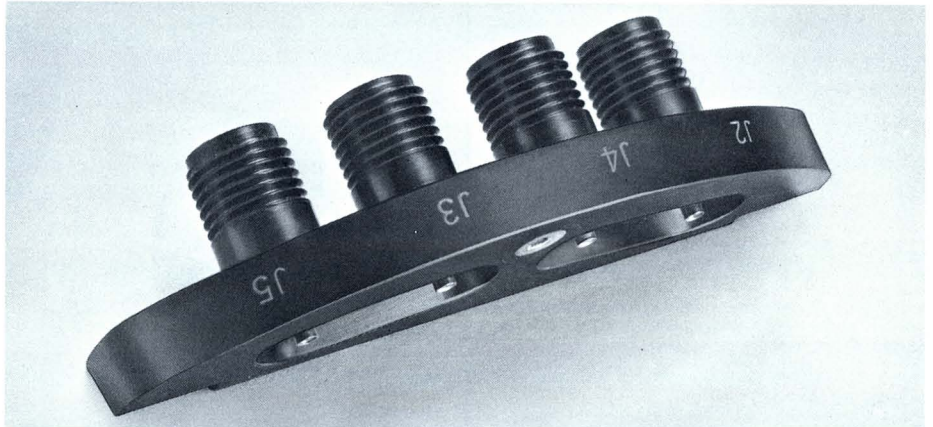
**Interface Connector,
Hermetically Sealed
(2 high voltage and
18 low voltage connections)**



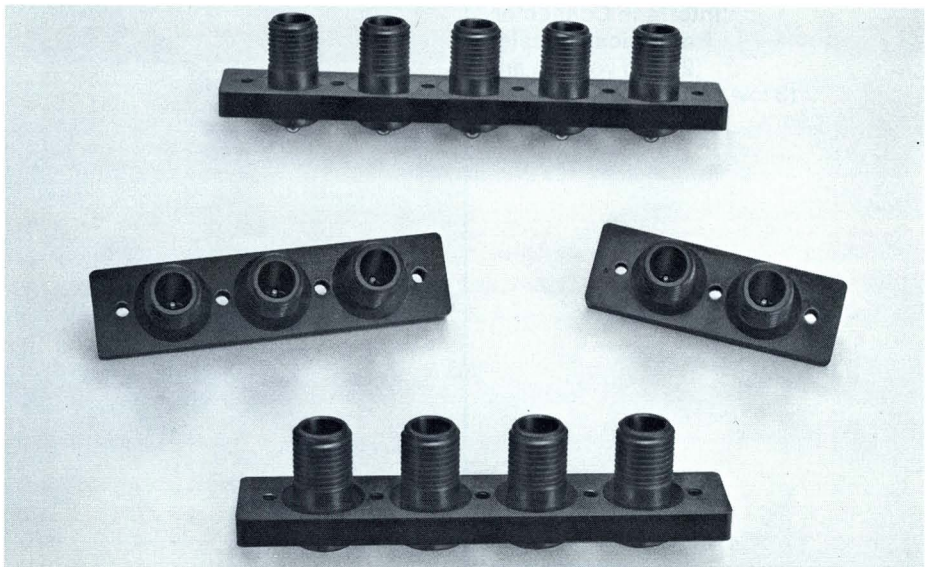
Five Pin Receptacle Termination Block (With flying heads)



Multiple Receptacle Connector (With custom designed flange)



Multiple Receptacle Connector (With integrally molded flange for bulkhead applications)

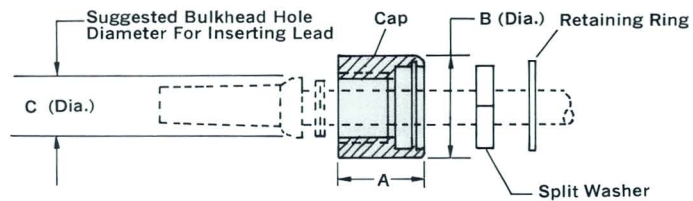


ACCESSORY ITEMS
for **LGH** Connectors

Removable Cap Kits

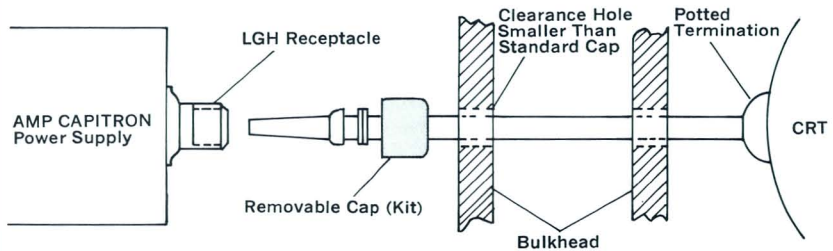
Designed to be used with LGH molded end type lead assemblies, these removable cap kits provide a quick and easy means of replacing damaged standard caps. Removing leads from bulkheads, enlarging

holes in bulkheads or disconnecting leads from potted CRT connections is no longer necessary. You simply remove the lead assembly from the receptacle and replace the cap.



Series	Dimensions			Kit No.
	A	B	C	
LGH 1/2 I, 1/2 LI	.50	.50	.28	849275-1
LGH 1I, 1LI	.62	.75	.44	849267-1

Typical Application



Molded end type lead assemblies in the LGH 1/2 I, 1/2 LI, 1I and 1LI series can be supplied with removable caps. These lead assemblies offer the same performance characteristics as the standard lead assemblies and will mate with all LGH receptacles in the same series. In selecting other mating receptacles, refer to the molded end length dimension of the lead and the barrel depth of the receptacle.

Series	Molded End Length	Suggested Bulkhead Hole Dia.*	Single End Lead Part No.	Double End Lead Part No.
LGH 1/2 I	.53	.28	849316	849318
LGH 1/2 LI	.89	.28	849319	849317
LGH 1I	.88	.44	849309	849314
LGH 1LI	1.69	.44	849310	849315

*Suggested hole diameter that will allow passage of molded end type lead with cap removed.

ACCESSORY ITEMS for LGH Connectors

Protective Caps

Protective caps are designed to cover the threaded portion of LGH receptacles providing protection against the accumulation of foreign matter on the insulator barrel and male contact and against damage to the threaded area. These caps are especially useful when receptacles are being shipped or stored.

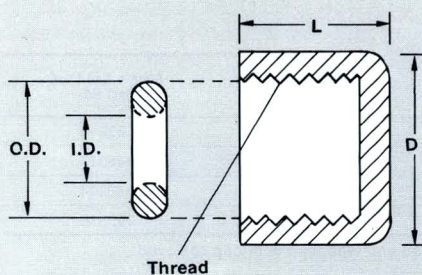
Protective caps are available in either molded glass epoxy per MIL-M-24325 (Ships), GEI-5 or aluminum per QQ-A-325.

The aluminum cap is anodized black per MIL-A-8625, Type I and is a ruggedized version with an attached retaining chain. The inside of the cap is provided with a silicone rubber gasket to achieve a moisture and dust proof seal.

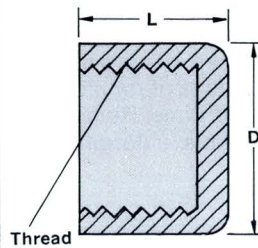
It should be noted that these protective caps are not designed to replace the caps supplied with LGH lead assemblies.

Protective Caps With Seal

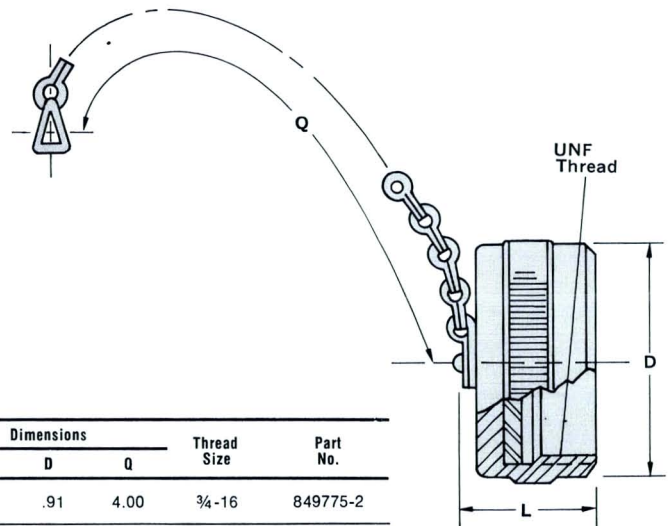
These protective caps allow a customer to operate multiple-output equipment at high altitudes without fear of breakdown. As illustrated, a dual-output power supply that uses only one LGH receptacle in actual operation can be operated safely if the floating receptacle is sealed with a protective cap.



Glass Epoxy Cap

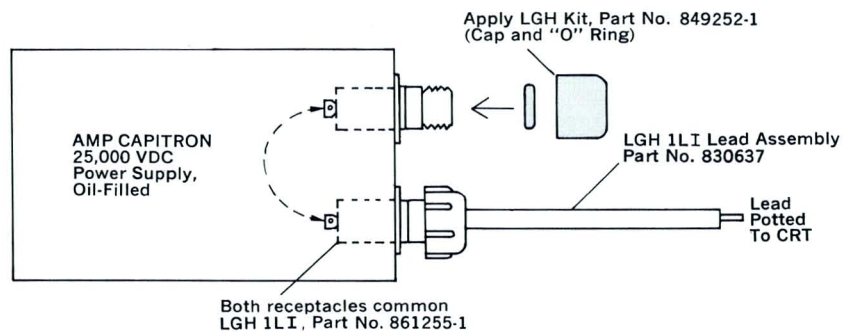


Series	Dimensions		Thread Size	Part No.
	L	D		
LGH 1/2 I, LGH 1/2 LI	.25	.44	3/16-32	850512-1
LGH 1 I, LGH 1 LI	.50	.63	1/2-20	850513-1
LGH 2 I, LGH 3 I	.56	1.12	3/4-16	850514-1
LGH 4 I	.56	1.37	1-14	850515-1



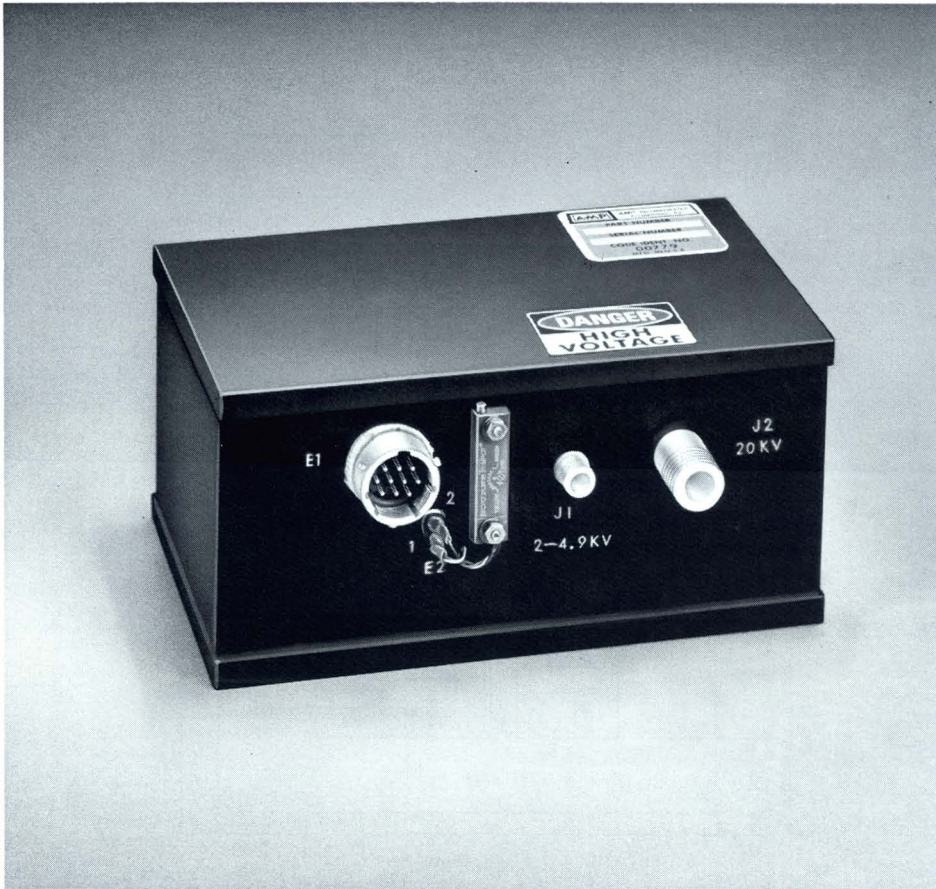
Aluminum Cap

Series	Dimensions			Thread Size	Part No.
	L	D	Q		
LGH 2 I, LGH 3 I	.71	.91	4.00	3/4-16	849775-2
LGH 4 I	.76	1.21	4.00	1-14	849768-2



Series	Dimensions				Thread Size	Part No.
	L	D	O.D.	I.D.		
LGH 1/2 I, LGH 1/2 LI	.25	.44	.28	.14	3/16-32	849055-1
LGH 1 I, LGH 1 LI	.50	.62	.44	.23	1/2-20	849252-1
LGH 2 I, LGH 3 I	.56	1.12	.69	.50	3/4-16	849253-1
LGH 4 I	.56	1.37	.94	.75	1-14	849254-1

Custom Designed High Voltage Power Supplies



AMP Capatron Division specializes in designing and manufacturing power supplies to meet today's most demanding environmental, complexity, performance and miniaturization requirements. Through the use of advanced modular solid-state design and superior packaging techniques, every power supply provides maximum voltage density in the smallest possible package and is specifically tailored to the application . . . without the usual and expected high cost.

The hermetically sealed CRT power supply shown above is designed to supply voltages required for the operation of a cathode ray tube. It provides four output voltages: +20 KVDC, a +2 KVDC to +4.9 KVDC adjustable range, +500 VDC and -100 VDC — all short-circuit protected. The inputs (-25 VDC and +25 VDC) are fully protected against reverse polarity.

This compact power supply employs an oil/gas dielectric filling medium

which has excellent heat transfer and voltage insulating properties to maintain performance and high voltage integrity during low and high temperature operation. As opposed to an encapsulated or potted equivalent, it permits lower internal temperature operation of components and eliminates dangerous "hot spots", without a need for expensive cooling techniques. The resultant thermal gradient is inherently lower, approximately half, assuring improved and predictable reliability with a substantially longer life expectancy.

This multiple-output CRT power supply is just one of the hundreds already created by the AMP Capatron Division. The same experienced and highly qualified engineers who designed this particular supply stand ready to design a power supply for your specific requirements . . . promptly, thoroughly and economically.

20 KV Multiple-Output CRT Power Supply

Features

- Hermetically sealed against atmospheric contaminants: moisture, salt spray, sand and dust and fungus
- Environmental operation — temperature range, -55°C to +71°C; altitude, sea level to 50,000 ft.
- Advanced modular solid-state design provides maximum voltage density in smallest possible package
- Compact, lightweight — 6" long x 3.4" wide x 2.9" high; weighs 4.5 lb.
- Oil/Gas dielectric filling medium with excellent heat transfer and high voltage insulating properties . . . no "hot spots", no voids to breed corona and breakdown
- Full short circuit protection
- Input reverse-polarity protected
- Oscillator synchronized to external signal, 15.75 KHz
- Termination of high voltage outputs with AMP LGH leads assures reliable performance, even under the most hostile environments
- Designed to meet environmental requirements of MIL-E-5400*

*AMP power supplies can be designed to meet the requirements of various other military specifications, as dictated by the application.

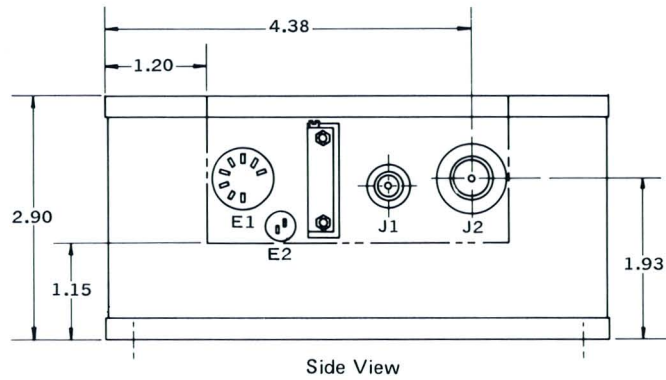
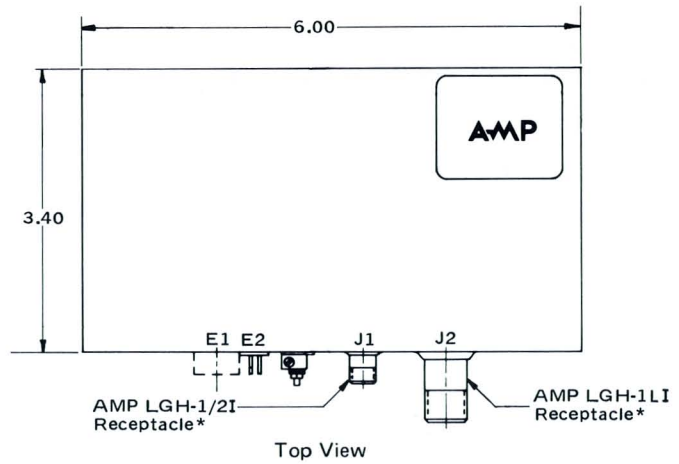
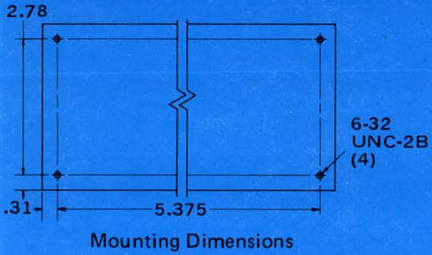
Dimensioning:

All dimensions in inches unless otherwise specified.

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

Power Supply Specifications

Physical Characteristics



Dimensions: 6" L x 3.4" W x 2.9" H

Weight: 4.5 lb.

Filling Medium: Oil/Gas dielectric

*Receptacles mate with the following AMP LGH high voltage lead assemblies, available separately:

(J1) - LGH-1/2I

(J2) - LGH-1LI

Performance Characteristics

Inputs -25 VDC and +25 VDC

Outputs:

Voltage	Current (Max.)	Ripple (Pk-to-Pk)	Regulation		
			Line & Load	Load Change	Temperature Coefficient
(J1) +2 KVDC to +4.9 KVDC (Adj. Range)	750 ua	.1%	.5%	0 to Full	.01%/°C
(J2) +20 KVDC, ± 1%	750 ua	.1%	.5%	0 to Full	.01%/°C
(E1) +500 VDC, ± 2%	10 ua	.1%	2%	0 to Full	.02%/°C
(E1) -100 VDC, ± 5%	1 MA	.1%	2%	0 to Full	.02%/°C

Protection Short circuit and input polarity reversal

Environmental

Conditions Temperature - -55°C to +71°C (operating)

Altitude - Sea level to 50,000 ft.

Vibration - per MIL-E-5400, Class II

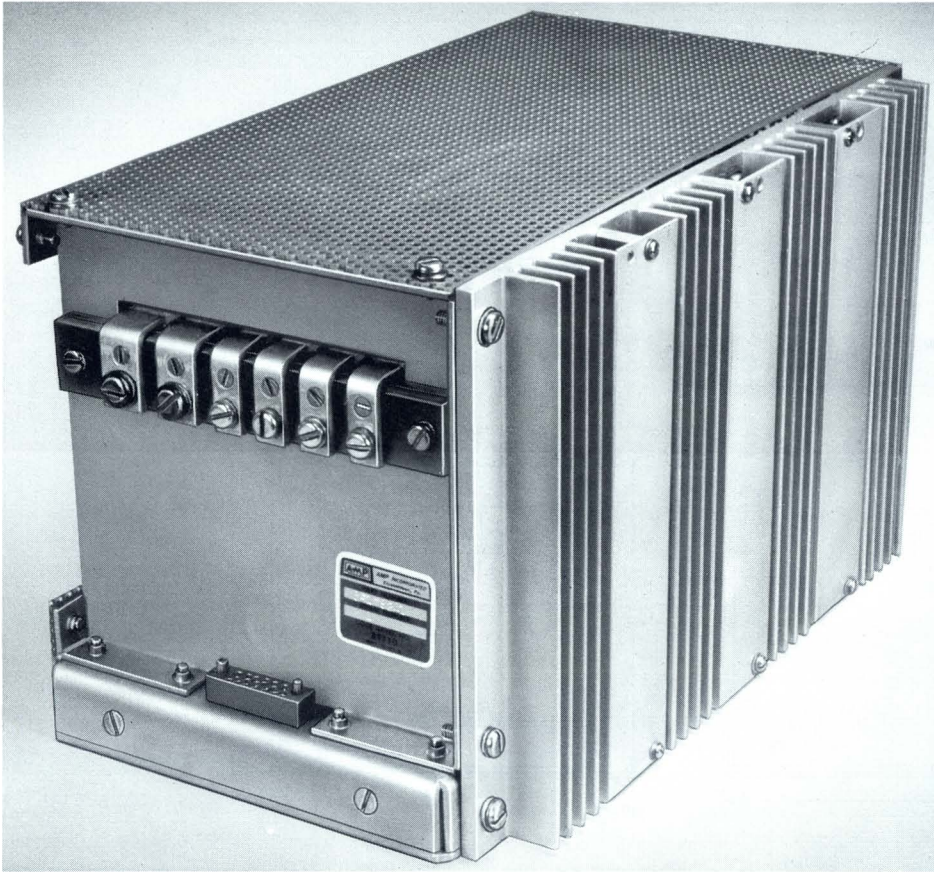
Shock - per MIL-E-5400, Class II

RFI - per MIL-STD-461

Military

Specification MIL-E-5400

Custom Designed Low Voltage Power Supplies



5 VDC, 65 Ampere Multiple-Output Power Supply

AMP Captron Division specializes in designing and manufacturing power supplies to meet today's most demanding environmental, complexity, performance and miniaturization requirements. Through the use of advanced modular solid-state design and superior packaging techniques, every power supply provides maximum voltage density in the smallest possible package and is specifically tailored to the application . . . without the usual and expected high cost.

The low voltage multiple-output power supply shown above is designed to supply voltages required in a base station for mobile communications equipment. It provides three output voltages: +5 VDC (at 65 amperes), +12 VDC (at 7 amperes) and -12 VDC (at 7 amperes) — all short-circuit and overload protected. It operates on an input voltage range of -40 VDC to -54 VDC.

This duty-cycle regulated power sup-

ply offers a unique crossover regulation scheme which allows parallel operation of two or more units. Such a feature provides for adjustable current sharing and redundant operation with "zero crossover time" in the event of a down condition of the primary power supply. The sharing function is achieved without the need for additional external circuitry. A separate undervoltage/overvoltage monitor card is available which, through the use of LEDs and contact closures, indicates the operational status of each power supply and their common bus.

This low voltage multiple-output power supply is just one of the hundreds created by the AMP Captron Division. The same experienced and highly qualified engineers who designed this particular supply stand ready to design a power supply for your specific requirements . . . promptly, thoroughly and economically.

Features

- Input-to-output isolation
- Remote sensing
- Optically coupled, closed-loop control
- High efficiency switching pre-regulator
- Overvoltage, "crowbar", protection
- Short-circuit and overload protection
- Undervoltage/overvoltage monitor with alarm signal outputs
- Zero time crossover in redundant, parallel operation

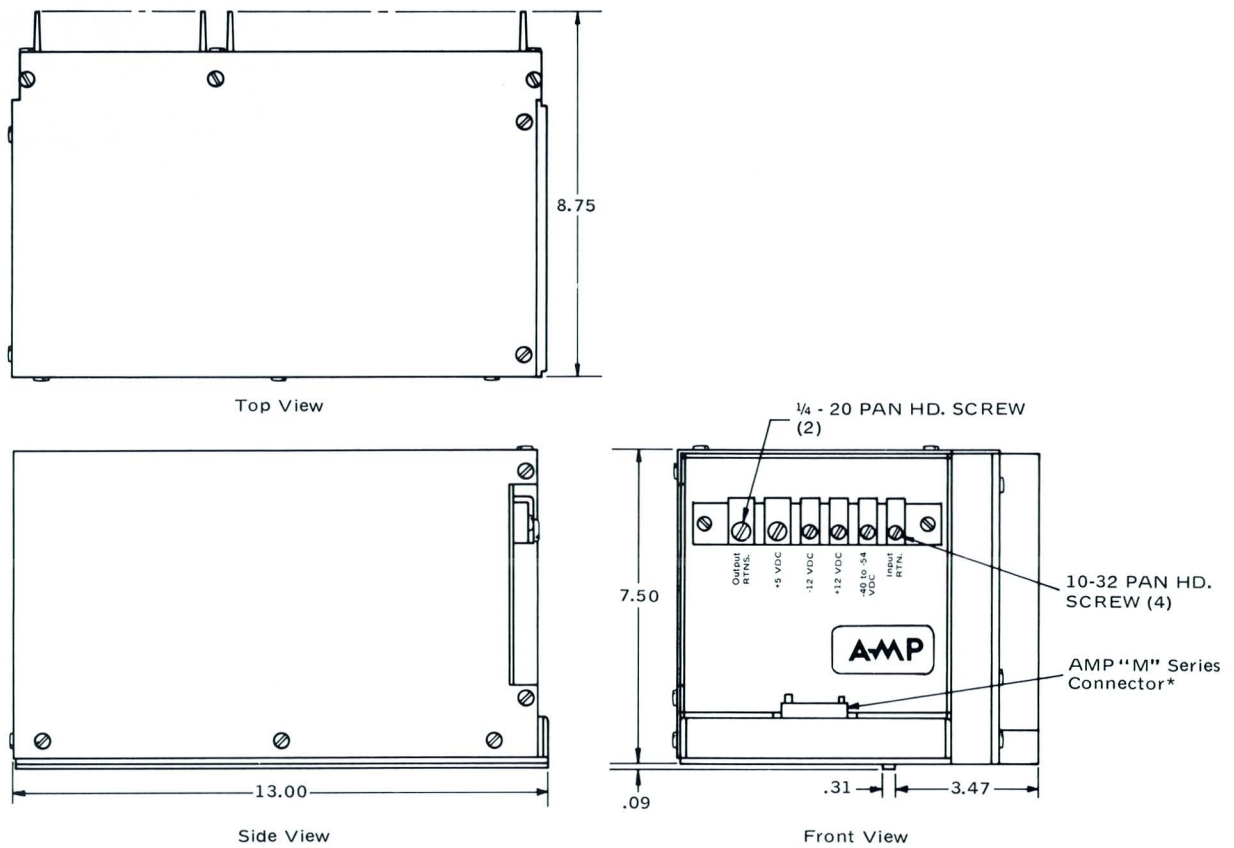
Dimensioning:

All dimensions in inches unless otherwise specified.

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

Power Supply Specifications

Physical Characteristics



Dimensions: 13" L x 8.75" W x 7.5" H
Weight: 22 lb.

*Connector mates with AMP "M" Series pin block no. 200345-2, using AMP Type II size 16 (std.) pin contacts, center guide pin no. 200389-2 and center guide socket no. 200390-2 — available separately.

Performance Characteristics

Input -40 VDC to -54 VDC

Outputs:

Voltage	Current (Max.)	Ripple (Pk-to-Pk)	Regulation	
			Line & Load	Load Change
+5 VDC, ± 1%	65 A	2%	±2%	10% to Full
+12 VDC, ± 1%	7 A	2%	±2%	10% to Full
-12 VDC, ± 1%	7 A	2%	±2%	10% to Full

Notes:

- Output voltage +5 VDC has external sensing.
- Over-temperature shut down is provided.
- Max. overvoltage trip point of each output is as follows:
 - +5 VDC output +6.5 VDC
 - +12 VDC output +16 VDC
 - 12 VDC output -16 VDC

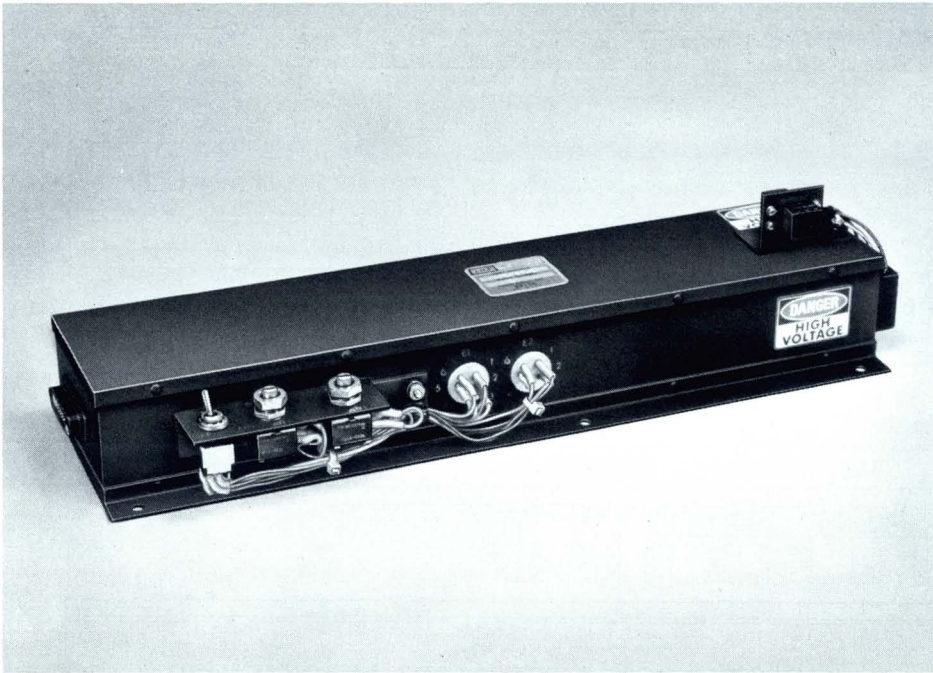
Protection Short circuit, overload, overvoltage and over-temperature

Environmental

Conditions Temperature — 0°C to +60°C (operating)
 -20°C to +60°C (non-operating)

AMP CAPITRON DIVISION

ELIZABETHTOWN, PENNSYLVANIA 17022
 Telephone 717 367-1105 TWX 510-657-4561



Hermetically Sealed Driver TWT Power Supply

AMP Capatron Division specializes in designing and manufacturing power supplies to meet today's most demanding environmental, complexity, performance and miniaturization requirements. Through the use of advanced modular solid-state design and superior packaging techniques, every power supply provides maximum voltage density in the smallest possible package and is specifically tailored to the application . . . without the usual and expected high cost.

The hermetically sealed TWT power supply shown above is designed to supply voltages required for the operation of a grounded cathode driver, traveling wave tube. It provides appropriate voltages for the helix, collector, anode, grid and heater elements. All outputs are short-circuit protected; and the input voltage is 108.5 VAC to 118 VAC, 400 Hz, 3-phase per MIL-STD-704 NSSL.

This compact power supply employs an oil/gas dielectric filling medium

which has excellent heat transfer and voltage insulating properties to maintain performance and high voltage integrity during low and high temperature operation. As opposed to an encapsulated or potted equivalent, it permits lower internal temperature operation of components and eliminates dangerous "hot spots", without a need for expensive cooling techniques. The resultant thermal gradient is inherently lower, approximately half, assuring improved and predictable reliability with a substantially longer life expectancy.

This hermetically sealed TWT power supply is just one of the hundreds already created by the AMP Capatron Division. The same experienced and highly qualified engineers who designed this particular supply stand ready to design a power supply for your specific requirements . . . promptly, thoroughly and economically.

Features

- Hermetically sealed against atmospheric contaminants: moisture, salt spray, sand and dust and fungus
- Environmental operation — temperature range, 0°C to +70°C
- Advanced modular solid-state design provides maximum voltage density in smallest possible package
- Oil/Gas dielectric filling medium with excellent heat transfer and high voltage insulating properties . . . no "hot spots", no voids to breed corona and breakdown
- Full short-circuit protection
- Helix overload protection
- Anode turn-on delay
- Built-in fault alarm
- Termination of all outputs with specially designed AMP LGH connectors assures reliable performance, even under the most hostile environments

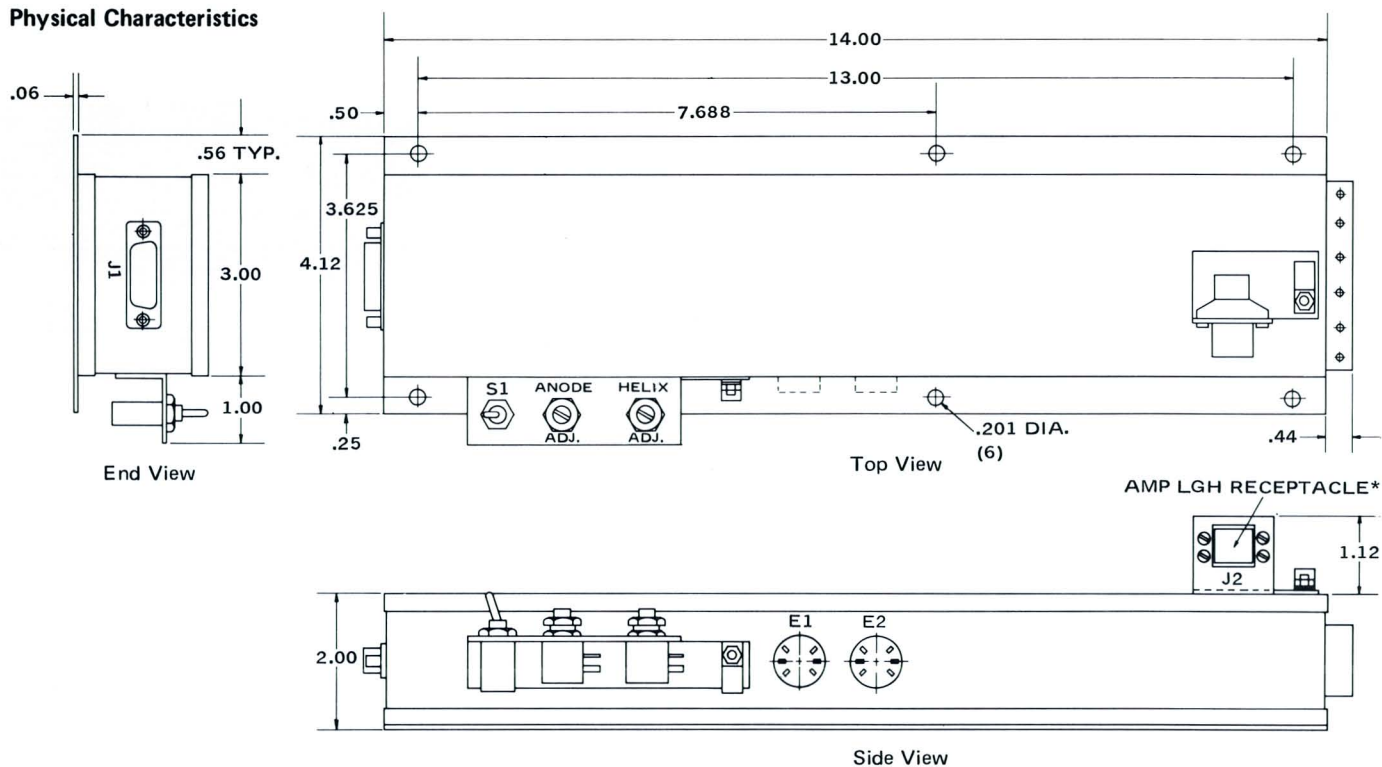
Dimensioning:

All dimensions in inches unless otherwise specified

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

Power Supply Specifications

Physical Characteristics



Dimensions: 14.5" L x 4.12" W x 3.12" H

Weight: 7.5 lb.

Filing Medium: Oil/Gas dielectric

*Receptacle (J2) mates with AMP LGH high voltage connector part no. 861806-1, available separately.

Performance Characteristics

Input . . . 108.5 VAC to 118 VAC, 400 Hz, 3-Phase (per MIL-STD-704 NSSL)

Outputs:

	Voltage	Current (Max.)	Ripple (Pk-to-Pk)	Regulation		
				Line & Load	Load Change	Temperature Coefficient
(Helix)	-1775 VDC (±50 V Adj.)	6 MA	.8 V	±.5%	—	±.01%/°C
(Cathode)	Grd.	—	—	—	—	—
(Collector)	+1375 VDC	35 MA	40 V	±5%	—	±.01%/°C
(Anode)	+1375 VDC (±75 V Adj.)	1 MA	.56 V	±.2%	—	±.01%/°C
(Grid)	0 to -25 VDC (Adj. Range)	.1 MA	50 MV	±.1%	—	±.01%/°C
(Heater)	6.3 VAC	1 A	—	±5%	—	Unregulated

Notes:

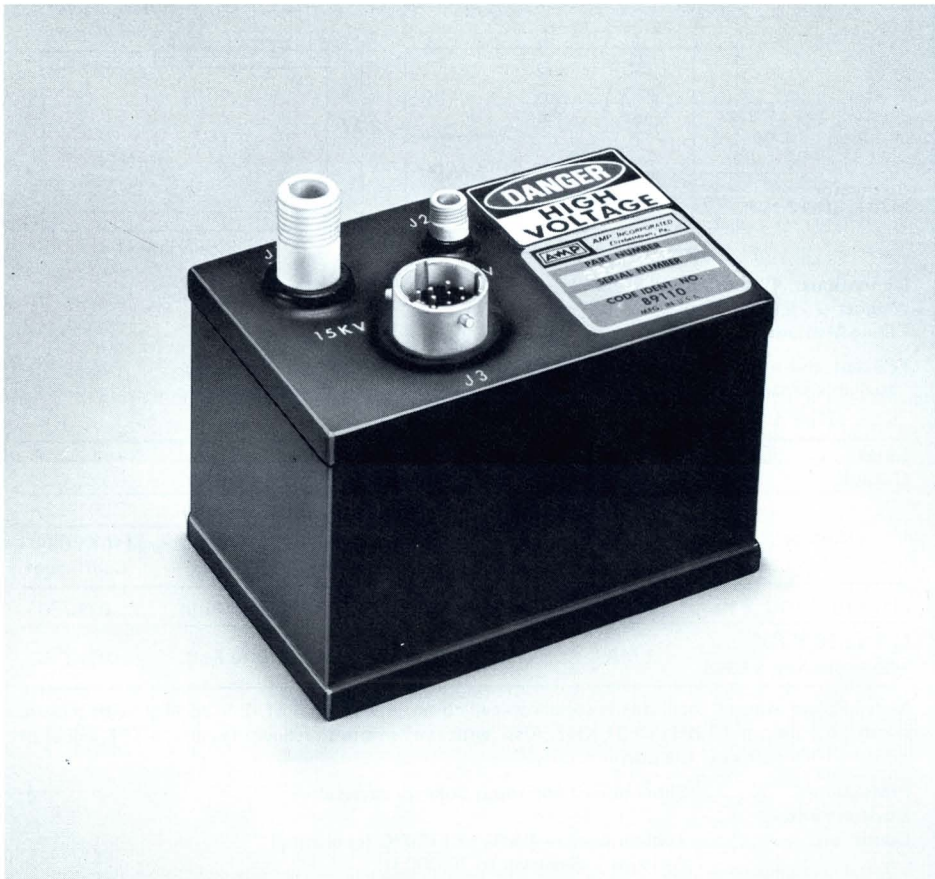
1. All voltages are referenced to the cathode.
2. Helix overload protection (7 MA, ± 1 MA) will turn off the anode voltage.
3. Anode turn-on delay is 2 to 3 minutes.

Protection Short circuit (all outputs) and overload (helix)

Environmental

Conditions Temperature — 0°C to +70°C (operating)
 — 10°C to +90°C (non-operating)
 Altitude — Sea level to 10,000 ft. (operating)
 Sea level to 50,000 ft. (non-operating)
 Vibration — per MIL-E-5400
 Shock — per MIL-E-5400
 Humidity — per MIL-E-5400

Custom Designed High Voltage Power Supplies



AMP Capatron Division specializes in designing and manufacturing power supplies to meet today's most demanding environmental, complexity, performance and miniaturization requirements. Through the use of advanced modular solid-state design and superior packaging techniques, every power supply provides maximum voltage density in the smallest possible package and is specifically tailored to the application . . . without the usual and expected high cost.

The hermetically sealed CRT power supply shown above is designed to supply voltages required for the operation of a cathode ray tube. It provides two output voltages: +15 KVDC and +3.86 KVDC (adjustable with remotely located potentiometer). Both outputs are short-circuit protected. The single input voltage (+18 VDC) is fully protected against reverse polarity.

This compact power supply employs an oil/gas dielectric filling medium

which has excellent heat transfer and voltage insulating properties to maintain performance and high voltage integrity during low and high temperature operation. As opposed to an encapsulated or potted equivalent, it permits lower internal temperature operation of components and eliminates dangerous "hot spots", without a need for expensive cooling techniques. The resultant thermal gradient is inherently lower, approximately half, assuring improved and predictable reliability with a substantially longer life expectancy.

This miniature hermetically sealed CRT power supply is just one of the hundreds already created by the AMP Capatron Division. The same experienced and highly qualified engineers who designed this particular supply stand ready to design a power supply for your specific requirements . . . promptly, thoroughly and economically.

Miniature Hermetically Sealed CRT Power Supply

Features

- Hermetically sealed against atmospheric contaminants: moisture, salt spray, sand and dust and fungus
- Environmental operation — temperature range, -55°C to +100°C; altitude, sea level to 70,000 ft.
- Advanced modular solid-state design provides maximum voltage density in smallest possible package
- Compact, lightweight — 4" long x 2.5" wide x 2.5" high; weighs 2.25 lb.
- Oil/Gas dielectric filling medium with excellent heat transfer and high voltage insulating properties . . . no "hot spots", no voids to breed corona and breakdown
- Full short circuit protection
- Input reverse-polarity protected
- Oscillator synchronized to external signal — 13 KHz to 31 KHz
- Remote TTL On/Off control
- Termination of high voltage outputs with AMP LGH leads assures reliable performance, even under the most hostile environments
- Designed to meet environmental requirements of MIL-E-5400*

*AMP power supplies can be designed to meet the requirements of various other military specifications, as dictated by the application.

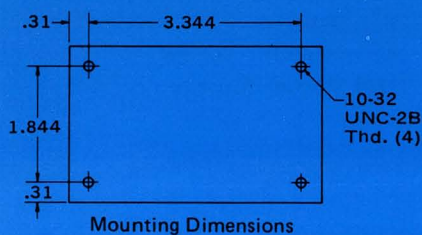
Dimensioning:

All dimensions in inches unless otherwise specified.

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

Power Supply Specifications

Physical Characteristics



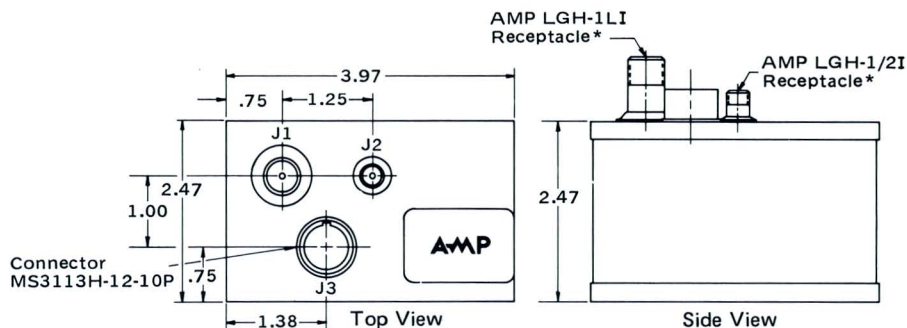
Performance Characteristics

Absolute Standards in Quality and Performance Through . . .

- Extensive Research and Development
- Creative Engineering
- Quality-Controlled Manufacturing

AMP CAPITRON DIVISION

ELIZABETHTOWN, PENNSYLVANIA 17022
Telephone: 717 367-1105 TWX: 510-657-4561



Dimensions: 4" L x 2.5" W x 2.5" H

Weight: 2.25 lb.

Filling Medium: Oil/Gas dielectric

*Receptacles mate with the following AMP LGH high voltage lead assemblies, available separately:

(J1) - LGH-1LI (J2) - LGH-1/2I

Input +18 VDC \pm 5%

Output:

Voltage	Current (Max.)	Ripple (Pk-to-Pk)	Regulation		
			Line & Load	Load Change	Temperature Coefficient
(J1) +15 KVDC, \pm 1%	20 μ a	.1%	\pm .1%	0 to Full	.01%/ $^{\circ}$ C
(J2) +3.86 KVDC (Remote Adj. \pm 15%)	1 MA	.1%	\pm .1%	0 to Full	.01%/ $^{\circ}$ C

Note: Power supply oscillator is synchronized to an input signal of -2 V to -4 V with a pulse width of 3 μ sec at 13 KHz to 31 KHz. Also, with the remote shutdown feature, a TTL signal of +3 V to +5 V turns off the power supply.

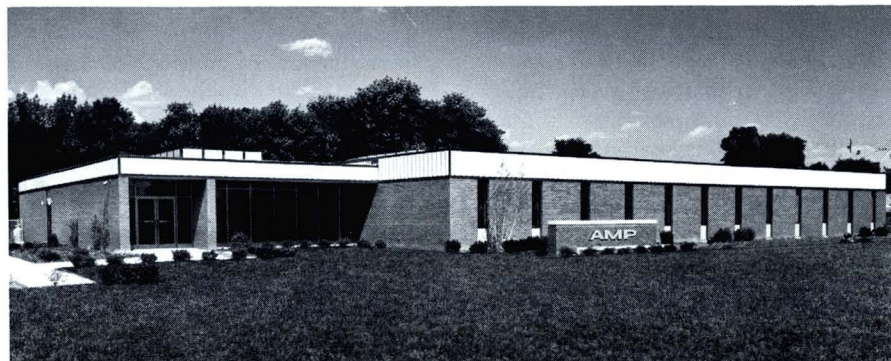
Protection Short circuit and input polarity reversal

Environmental

Conditions Temperature - -55 $^{\circ}$ C to +100 $^{\circ}$ C (operating)
Altitude - Sea level to 70,000 ft.
Vibration - 20 G @ 99 to 500 Hz (non-operating)
Shock - 25 G for 11 MS
Humidity - 100%
RFI - per MIL-STD-461, Class 1 G

Military

Specification MIL-E-5400

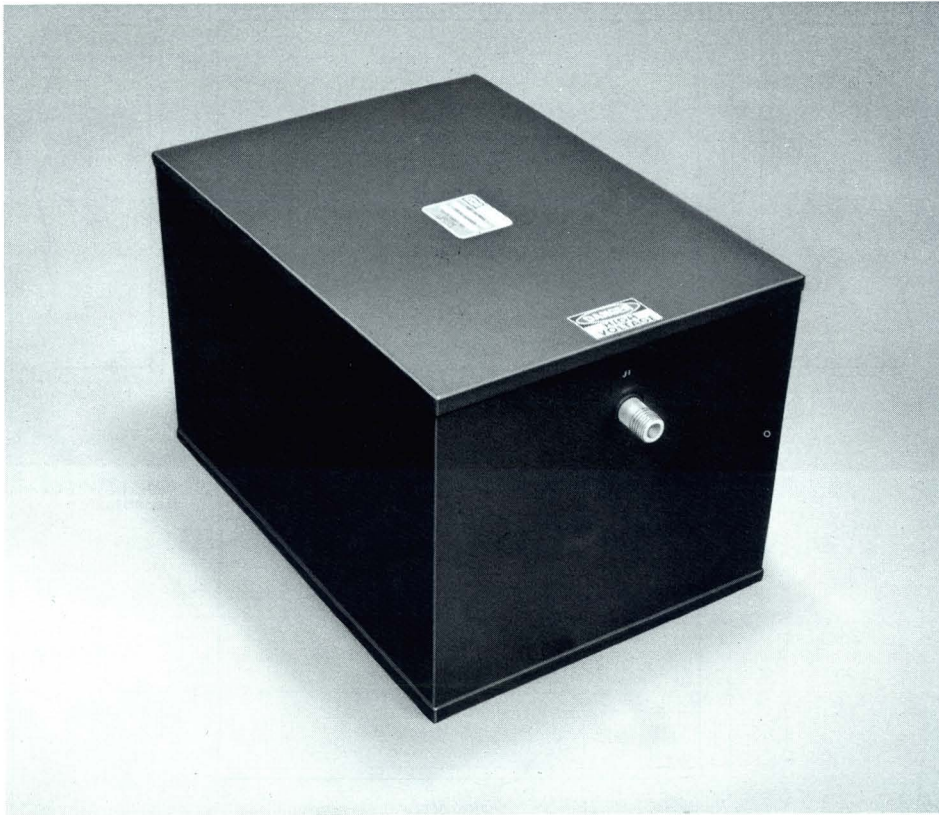


In a continuing effort to advance the state-of-the-art, AMP engineers work closely with the customer's system design engineers. They explore the various possible trade-offs of form factors and operating power levels connected with the initial design phase of any new electronic system. This includes comprehensive and thorough analyses of such factors as design parameters, cost consideration, performance and environmental requirements. Also, it is in this area of customer involvement where AMP experience and "know-how" play a major role toward the establishment of power supply designs that meet, and in most

cases, exceed the customer's exact requirements.

Complete in-house manufacturing facilities employ all the latest automated equipment and production techniques. Each production operation is closely governed by AMP's quality-control stations for continuously maintaining the performance levels dictated by the customer's requirements. The AMP Capatron Division is also the manufacturer of

- custom high and low voltage power supplies
- high voltage leads, receptacles and assemblies
- RFI/EMI filters
- card and badge readers.



AMP Capatron Division specializes in designing and manufacturing power supplies to meet today's most demanding environmental, complexity, performance and miniaturization requirements. Through the use of advanced modular solid-state design and superior packaging techniques, every power supply provides maximum voltage density in the smallest possible package and is specifically tailored to the application . . . without the usual and expected high cost.

The hermetically sealed CRT power supply shown above is designed to supply the fast switching voltages required for operation of a single-gun, multi-color beam penetration cathode ray tube. It provides output levels of 8 KV, 10 KV, 12 KV and 16 KV in response to a properly coded logic input. All outputs are short-circuit

protected, and the operating input voltage (+20 VDC) is fully protected against reverse polarity.

This unique power supply offers a non-dissipative means of electronically changing high voltage outputs in accordance with low level, electrically isolated T²L logic inputs. The design approach provides a fast switching time of 50 usec or less for any adjacent level from input logic signal to 99.8% of final voltage into a capacitive load of 500 pf.

This highly specialized CRT power supply is just one of the hundreds created by the AMP Capatron Division. The same experienced and highly qualified engineers who designed this particular supply stand ready to design a power supply for your specific requirements . . . promptly, thoroughly and economically.

Fast Switching, High Voltage Power Supply . . . 8 KV to 16 KV (for Special CRT Applications)

Features

- Hermetically sealed against atmospheric contaminants: moisture, salt spray, sand and dust and fungus
- 8 KV to 16 KV fast switching
- High voltage switching between any two adjacent levels within 50 usec into capacitive load of 500 pf.
- Oil/Gas dielectric filling medium with excellent heat transfer and high voltage insulating properties . . . no "hot spots", no voids to breed corona and breakdown
- Full short circuit protection
- Input reverse-polarity protected
- Termination of high voltage outputs with AMP LGH leads assures reliable performance, even under the most hostile environments

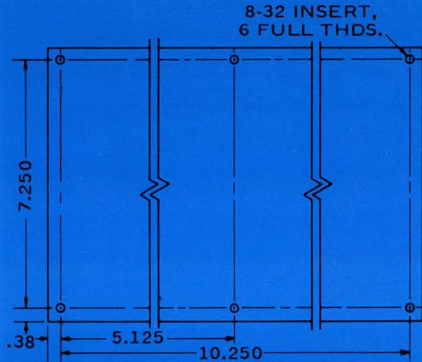
Dimensioning:

All dimensions in inches unless otherwise specified.

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

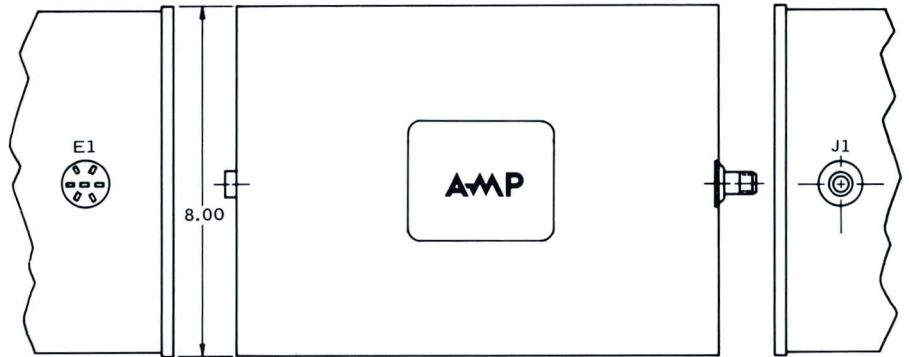
Power Supply Specifications

Physical Characteristics

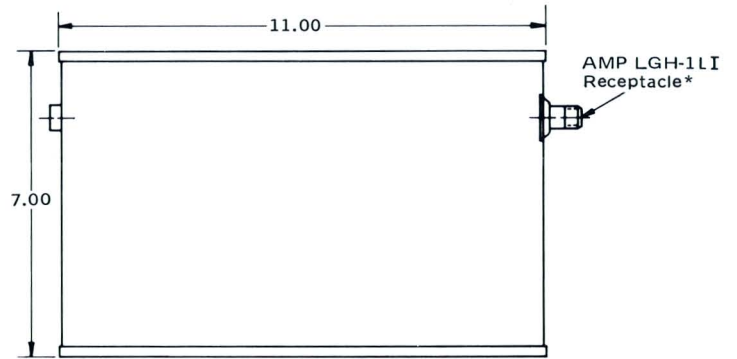


Mounting Dimensions

Performance Characteristics



Top View



Side View

Dimensions: 12" L x 8" W x 7" H

Weight: 30 lb.

Filling Medium: Oil/Gas dielectric

*Receptacle mates with AMP high voltage lead assembly LGH-1LI, available separately.

Inputs:

Operating Voltage +20 VDC, $\pm 3\%$ (2 wire, 4 A max.)

Logic Level 0 -4 VDC to +4 VDC, sink 1.6 MA

Logic Level 1 +2.4 VDC to +5 VDC @ 40 ua

Outputs:

			Regulation		Dynamic Droop
			Line & Load	Load Change	
(J1) +8 KV to +16 KV, $\pm 1\%$ (Switching)**	500 ua	20 V	1%	0 to Full	.2%

**High voltage output switching levels per coded logic inputs are as follows:

A=0	A=1	A=1	A=1
8 KV, B=0	10 KV, B=0	12 KV, B=1	16 KV, B=1
C=0	C=0	C=0	C=1

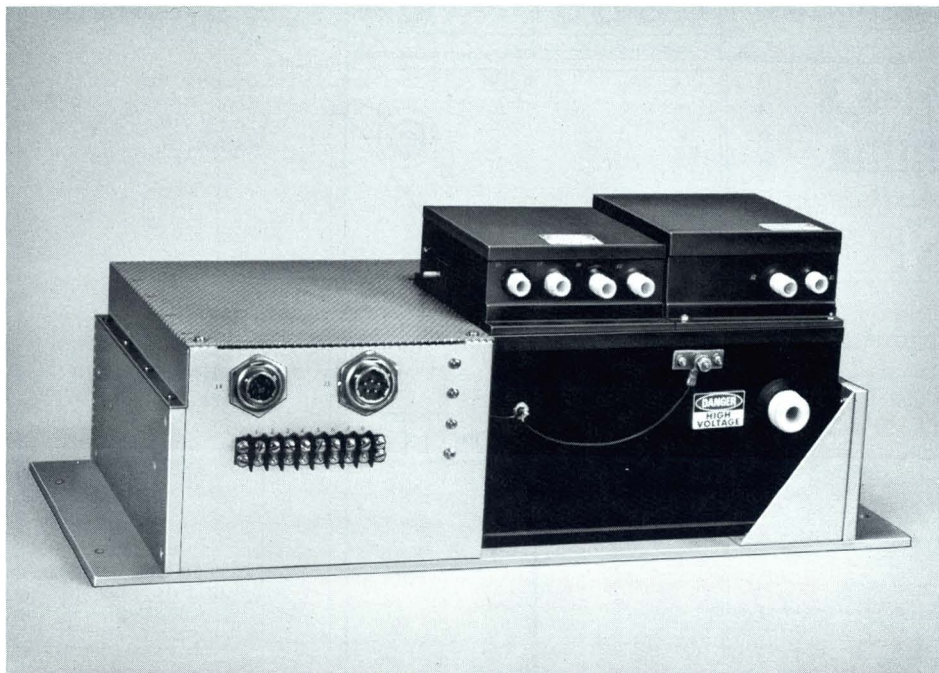
Notes:

- TR, $TF \leq 50$ usec for any adjacent level from input logic signal to 99.8% of final voltage into 500 pf.
- TR, $TF \leq 75$ usec for any level from input logic signal to 99.8% of final value.
- Frequency is 300 Hz.

Protection Short circuit and input polarity reversal

Environmental

Conditions Temperature — +10°C to +40°C (operating)
-20°C to +70°C (non-operating)



AMP Capatron Division specializes in designing and manufacturing power supplies to meet today's most demanding environmental, complexity, performance and miniaturization requirements. Through the use of advanced modular solid-state design and superior packaging techniques, every power supply provides maximum voltage density in the smallest possible package and is specifically tailored to the application . . . without the usual and expected high cost.

The modular CRT power supply shown above is designed to supply voltages required for the operation of a unique 36" cathode ray tube. It provides three output voltages: +35 KVDC (adjustable), a +100 VDC to +900 VDC adjustable range and +7.5 KVDC. All are short-circuit and arc protected. The single input voltage is 120/208 VAC, 60 Hz, 3-phase.

This high voltage power supply employs an oil/gas dielectric filling

medium which has excellent heat transfer and voltage insulating properties to maintain performance and high voltage integrity during low and high temperature operation. As opposed to an encapsulated or potted equivalent, it permits lower internal temperature operation of components and eliminates dangerous "hot spots", without a need for expensive cooling techniques. The resultant thermal gradient is inherently lower, approximately half, assuring improved and predictable reliability with a substantially longer life expectancy.

This modular, multiple output CRT power supply is just one of the hundreds already created by the AMP Capatron Division. The same experienced and highly qualified engineers who designed this particular supply stand ready to design a power supply for your specific requirements . . . promptly, thoroughly and economically.

35 KV Multiple Output CRT Power Supply

Features

- Modules are hermetically sealed against atmospheric contaminants: moisture, salt spray, sand and dust and fungus
- Environmental operation — temperature range, +15°C to +40°C
- Advanced modular solid-state design provides maximum voltage density in smallest possible package
- High voltage output (35 KVDC) has "ramp-up" to prevent arcing in CRT
- Oil/Gas dielectric filling medium with excellent heat transfer and high voltage insulating properties . . . no "hot spots", no voids to breed corona and breakdown
- Full short-circuit and arc protection
- Termination of high voltage outputs with AMP LGH leads assures reliable performance, even under the most hostile environments
- All outputs have low voltage taps

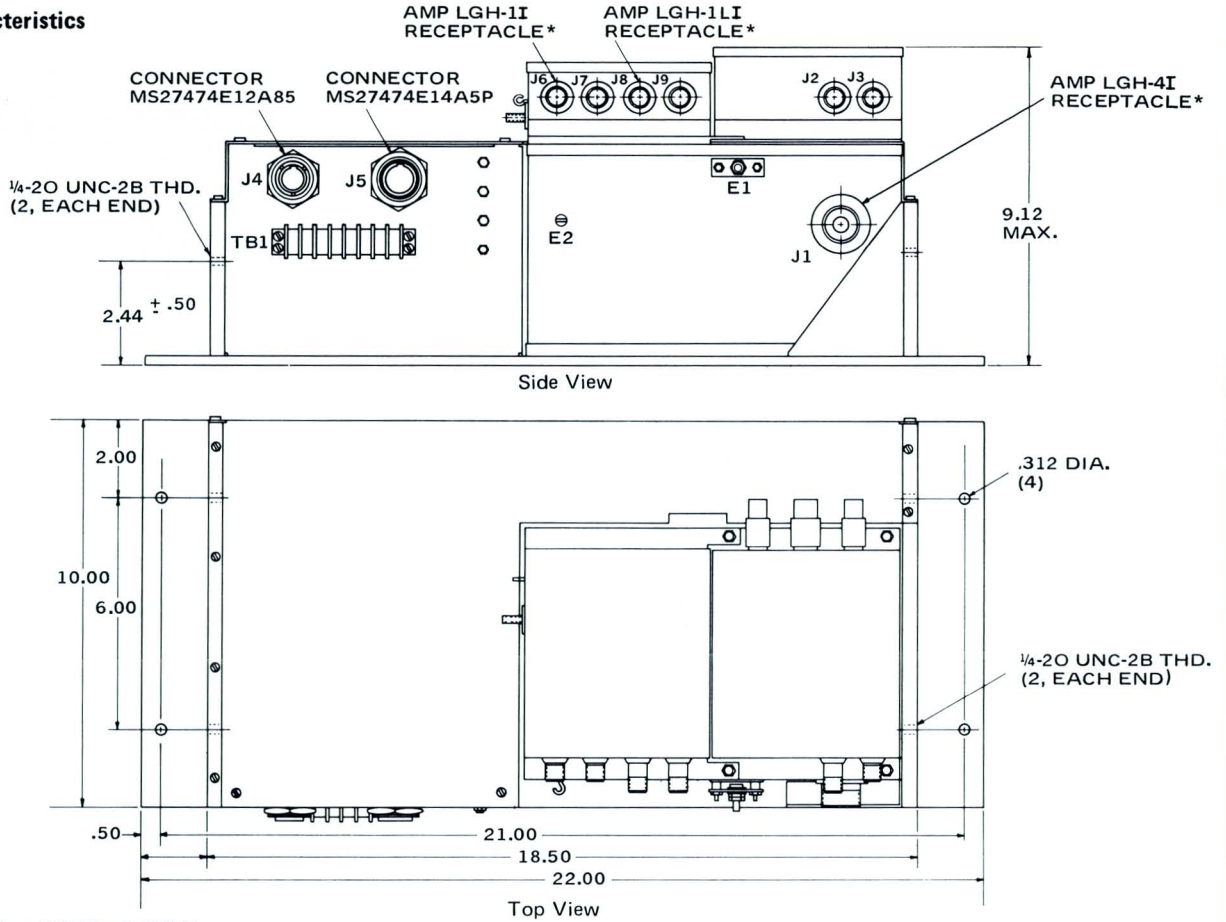
Dimensioning:

All dimensions in inches unless otherwise specified.

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

Power Supply Specifications

Physical Characteristics



Dimensions: 22" L x 10" W x 9.12" H
Weight: 50 lb.
Filling Medium: Oil/Gas dielectric

*Receptacles mate with the following AMP LGH high voltage lead assemblies, available separately:
 (J1) – LGH-4I, (J6) – LGH-1I, (J8) – LGH-1LI

Note: Receptacles J2, J3, J7 and J9 to be connected by AMP.

Performance Characteristics

Input . . . 120/208 VAC \pm 10%, 60 Hz, 3-Phase
Outputs:

Voltage	Current (Max.)	Ripple (Pk-to-Pk)	Regulation		
			Line & Load	Load Change	Temperature Coefficient
(J1)**+35 KVDC (\pm 3.5 KV Adj.)	2.5 MA	2 V	.01%	0 to Full	.005%/°C
(J6) +100 to +900 VDC (Adj. Range)	10 ua	5 V	.1%	0 to Full	.1%/°C
(J8) +7.5 KVDC, \pm 10%	50 ua	40 V	.5%	0 to Full	.2%/°C

**Turn-on increases from 0 to 35 KV in 25 to 35 seconds. Also, inhibit signal +2.4 V to +5 V turns on power supply; -5 V to +5 V turns off power supply.

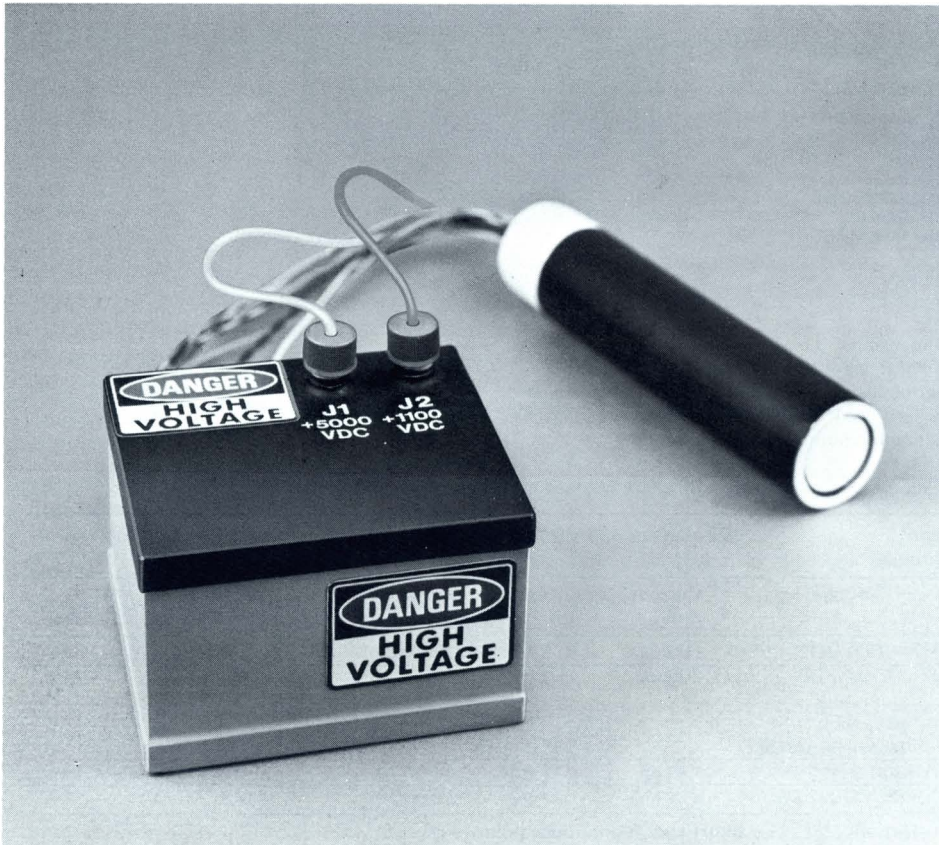
Protection Short circuit and arc

Environmental

Conditions . . . Temperature – +15°C to +40°C (operating)
 Altitude – Sea level to 10,000 ft.
 Vibration – .08" (pk-to-pk) @ 0 to 10 Hz
 Shock – 20 G for 11 MS
 RFI – per MIL-STD-461

AMP CAPITRON DIVISION
 ELIZABETHTOWN, PENNSYLVANIA 17022
 Telephone 717 367-1105 TWX 510-657-4561

Custom Designed High Voltage Power Supplies



Miniature CRT, courtesy of Thomas Electronics, Inc.

AMP Capatron Division specializes in designing and manufacturing power supplies to meet today's most demanding environmental, complexity, performance and miniaturization requirements. Through the use of advanced modular solid-state design and superior packaging techniques, every power supply provides maximum voltage density in the smallest possible package and is specifically tailored to the application . . . without the usual and expected high cost.

The hermetically sealed CRT power supply shown above is designed to supply voltages required for the operation of a unique miniature cathode ray tube. It provides four output voltages — +5000 VDC, +1100 VDC (adjustable with remotely located potentiometer), +300 VDC and +80 VDC — all short-circuit protected; and its single input (+22 to +30 VDC) is fully protected against reverse polarity.

This compact power supply employs

an oil/gas dielectric filling medium which has excellent heat transfer and voltage insulating properties to maintain performance and high voltage integrity during low and high temperature operation. As opposed to an encapsulated or potted equivalent, it permits lower internal temperature operation of components and eliminates dangerous "hot spots", without a need for expensive cooling techniques. Its resultant thermal gradient is inherently lower, approximately half, assuring improved and predictable reliability with a substantially longer life expectancy.

This hermetically sealed CRT power supply is just one of the hundreds already created by the AMP Capatron Division. The same experienced and highly qualified engineers who designed this particular supply stand ready to design a power supply for your specific requirements . . . promptly, thoroughly and economically.

Hermetically Sealed Miniature CRT Power Supplies

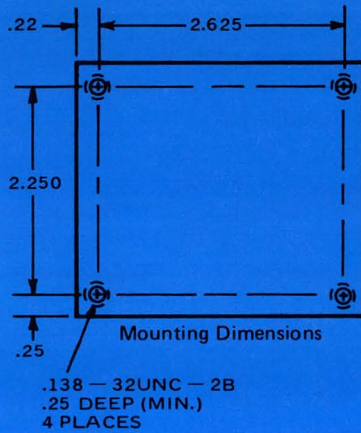
Features

- Hermetically sealed against atmospheric contaminants: moisture, salt spray, sand and dust and fungus
- Environmental operation — temperature range, -54°C to $+74^{\circ}\text{C}$; altitude, sea level to 70,000 ft.
- Advanced modular solid-state design provides maximum voltage density in smallest possible package
- Compact, lightweight — 3.5" long x 2.34" wide x 2" high; weighs approximately 1.5 lbs.
- Oil/Gas dielectric filling medium with excellent heat transfer and high voltage insulating properties . . . no "hot spots", no voids to breed corona and breakdown
- Full short circuit protection
- Input reverse-polarity protected
- Termination of high voltage outputs (+5000 VDC and +1100 VDC) with AMP LGH leads assures reliable performance, even under the most hostile environments
- Designed to meet environmental requirements of MIL-E-5400*

*AMP power supplies can be designed to meet the requirements of various other military specifications, as dictated by the application.

Power Supply Specifications

Physical Characteristics



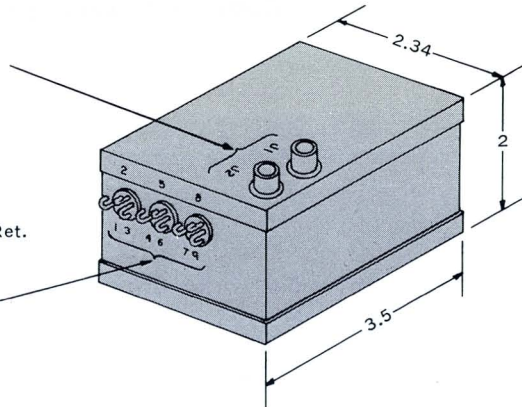
Performance Characteristics

Absolute Standards in Quality and Performance Through . . .

- Extensive Research and Development
- Creative Engineering
- Quality-Controlled Manufacturing

(J1) +5000 VDC
(J2) +1100 VDC

- (1) +26 VDC
- (2) Input/Output Ret.
- (3)
- (4) Ext. Pot, 20K
- (6) Chassis Grd.
- (7) +300 VDC
- (8) Spare
- (9) +80 VDC



Dimensions: 3.5" long x 2.34" wide x 2" high
Weight: 1.5 lbs. (approx.)
Terminals: J1 and J2 - LGH-1/2 receptacles*
1 thru 9 - solder hooks
Filling Medium: Oil/Gas dielectric

*Receptacles mate with AMP LGH-1/2 lead assemblies, available separately.

Input +22 VDC to +30 VDC

Outputs:

Voltage	Current (max.)	Ripple (pk-to-pk)	Regulation		
			(line & load)	(load change)	(temp.)
(J1) +5000 VDC, ±2%	100 ua	5 V	0.5%	0 to full	±1%
(J2) +1100 VDC (remotely adjustable from +650 VDC)	300 ua	1 V	0.5%	0 to full	±1%
(7) +300 VDC, ±5%	75 ua	1.5 V	1%	0 to full	±1%
(9) +80 VDC, ±2%	8 MA	1 V	5%	4 MA - 8 MA	±1%

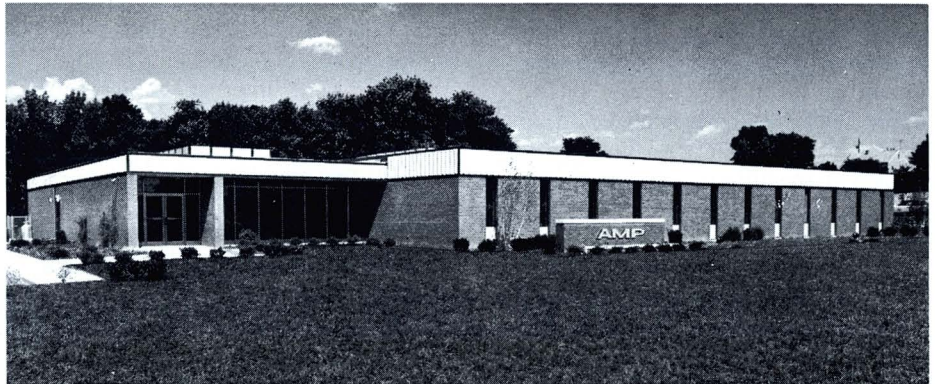
Protection Short circuit and input polarity reversal

Environmental

Conditions Temperature - -54°C to +74°C (operating)
Altitude - Sea level to 70,000 ft.
Vibration - per MIL-STD-810
Shock - per MIL-STD-810

Military

Specification MIL-E-5400



In a continuing effort to advance the state-of-the-art, AMP engineers work closely with the customer's system design engineers. They explore the various possible trade-offs of form factors and operating power levels connected with the initial design phase of any new electronic system. This includes comprehensive and thorough analyses of such factors as design parameters, cost consideration, performance and environmental requirements. Also, it is in this area of customer involvement where AMP experience and "know-how" play a major role toward the establishment of power supply

designs that meet, and in most cases, exceed the customer's exact requirements.

Complete in-house manufacturing facilities employ all the latest automated equipment and production techniques. Each production operation is closely governed by AMP's quality-control stations for continuously maintaining the performance levels dictated by the customer's requirements. The AMP Captron Division is also the manufacturer of ● custom low voltage power supplies ● high voltage leads, receptacles and assemblies ● high voltage instruments ● rfi/emi filters ● card readers.