



**PLEASE CHECK FOR CHANGE INFORMATION  
AT THE REAR OF THIS MANUAL.**

# **TM 502A POWER MODULE**

**INSTRUCTION MANUAL**

**Tektronix, Inc.  
P.O. Box 500  
Beaverton, Oregon 97077**

**070-6502-00  
Product Group 75**

Serial Number \_\_\_\_\_

First Printing JUN 1981  
Revised SEPT 1981

# Scans By *Artek Media*

Artek Media  
1042 Plummer Cir. SW  
Rochester, MN 55902

[www.artekmedia.com](http://www.artekmedia.com)

“High resolution scans of obsolete technical manuals”

If you are looking for a quality scanned technical manual in PDF format please visit our WEB site at [www.artekmedia.com](http://www.artekmedia.com) or drop us an email at [manuals@artekmedia.com](mailto:manuals@artekmedia.com) and we will be happy to email you a current list of the manuals we have available.

If you don't see the manual you need on the list drop us a line anyway we may still be able to point you to other sources. If you have an existing manual you would like scanned please write for details, This can often be done very reasonably in consideration for adding your manual to our library.

Typically the scans in our manuals are done as follows;

- 1) Typed text pages are typically scanned in black and white at 300 dpi.
- 2) Photo pages are typically scanned in gray scale mode at 600 dpi
- 3) Schematic diagram pages are typically scanned in black and white at 600 dpi unless the original manual had colored high lighting (as is the case for some 70's vintage Tektronix manuals).

If you purchased this manual from us (typically through our Ebay name of ArtekMedia) thank you very much. If you received this from a well-meaning “friend” for free we would appreciate your treating this much like you would “share ware”. By that we mean a donation of at least \$5-10 per manual is appreciated in recognition of the time (a manual can take as much as 40 hours to reproduce, book, link etc.), energy and quality of effort that went into preserving this manual. Donations via PayPal go to: [manuals@artekmedia.com](mailto:manuals@artekmedia.com) or can be mailed to us the address above.


Thanks



Dave & Lynn Henderson  
Artek Media

Copyright © 1987 Tektronix, Inc. All rights reserved.  
Contents of this publication may not be reproduced in any  
form without the written permission of Tektronix, Inc.

Products of Tektronix, Inc. and its subsidiaries are covered  
by U.S. and foreign patents and/or pending patents.

TEKTRONIX, TEK, SCOPE-MOBILE, and  are registered  
trademarks of Tektronix, Inc.

Printed in U.S.A. Specification and price change privileges  
are reserved.

### INSTRUMENT SERIAL NUMBERS

Each instrument has a serial number on a panel insert, tag,  
or stamped on the chassis. The first number or letter  
designates the country of manufacture. The last five digits  
of the serial number are assigned sequentially and are  
unique to each instrument. Those manufactured in the  
United States have six unique digits. The country of  
manufacture is identified as follows:

B000000	Tektonix, Inc., Beaverton, Oregon, USA
100000	Tektronix Guernsey, Ltd., Channel Islands
200000	Tektronix United Kingdom, Ltd., London
300000	Sony/Tektonix, Japan
700000	Tektonix Holland, NV, Heerenveen, The Netherlands

# TABLE OF CONTENTS

**OPERATORS SAFETY SUMMARY** ..... ii  
**SERVICE SAFETY SUMMARY** ..... iii

## OPERATORS PART

**Section 1 SPECIFICATION**  
**INTRODUCTION** ..... 1-1  
 Description ..... 1-1  
 Accessories ..... 1-1  
 Standard Accessories ..... 1-1  
 Options ..... 1-1  
 Performance Conditions ..... 1-1  
**ELECTRICAL CHARACTERISTICS** .. 1-2  
 Table 1-1. Supplies Per  
     Compartment ..... 1-2  
 Table 1-2. Total Power Draw from  
     Mainframe ..... 1-3  
 Table 1-3. Series Pass Transistors 1-3  
 Table 1-4. Source Power  
     Requirements ..... 1-3  
 Table 1-5. Miscellaneous ..... 1-3  
**PHYSICAL CHARACTERISTICS** .... 1-4  
 Table 1-6. Environmental ..... 1-4  
 Table 1-7. Mechanical ..... 1-4

**Section 2 OPERATING INSTRUCTIONS**  
**PREPARATION** ..... 2-1  
 Power Source ..... 2-1  
 Power Usage/Loading  
     Considerations ..... 2-1  
 Line Voltage Selection/Fuse  
     Replacement ..... 2-1  
 Handle/Tilt Stand Installation ..... 2-2  
 Operating Temperatures ..... 2-2  
 Power Modules ..... 2-2  
 Family Compatibility ..... 2-2  
**MODULE INSTALLATION** ..... 2-4  
 Plug-in Retainer Clip Installation .. 2-4  
 Turn-On Procedure ..... 2-4

**WARNING**

*THE FOLLOWING SERVICING INSTRUCTIONS ARE FOR USE BY QUALIFIED PERSONNEL ONLY. TO AVOID PERSONAL INJURY, DO NOT PERFORM ANY SERVICING OTHER THAN THAT CONTAINED IN OPERATING INSTRUCTIONS UNLESS YOU ARE QUALIFIED TO DO SO.*

## SERVICE PART

**Section 3 MAINTENANCE**  
 Introduction ..... 3-1  
 Cabinet Removal ..... 3-1  
 Cleaning ..... 3-1  
 Preventive Maintenance/Calibration .. 3-1  
 Circuit Board Removal ..... 3-1  
 Voltage Selector/Fuse Holder  
     Assembly Removal ..... 3-1  
 Series Pass Transistor Replacement 3-2  
 Obtaining Replacement Parts ..... 3-2  
 Packaging Information ..... 3-3

**Section 4 OPTIONS**

**Section 5 REPLACEABLE ELECTRICAL PARTS**

**Section 6 DIAGRAMS AND CIRCUIT BOARD ILLUSTRATIONS**

**Section 7 REPLACEABLE MECHANICAL PARTS**  
**Accessories**

**Change Information**

# OPERATORS SAFETY SUMMARY

The general safety information in this part of the summary is for both operating and servicing personnel. Specific warnings and cautions will be found throughout the manual where they apply, but may not appear in this summary.

## TERMS

### In This Manual

**CAUTION** statements identify conditions or practices that could result in damage to the equipment or other property.

**WARNING** statements identify conditions or practices that could result in personal injury or loss of life.

### As Marked on Equipment

**CAUTION** indicates a personal injury hazard not immediately accessible as one reads the marking, or a hazard to property including the equipment itself.

**DANGER** indicates a personal injury hazard immediately accessible as one reads the marking.

## SYMBOLS

### In This Manual



This symbol indicates where applicable cautionary or other information is to be found.

### As Marked on Equipment



**DANGER**—High voltage.



Protective ground (earth) terminal.



**ATTENTION**—refer to manual.

### Power Source

This product is intended to operate from a power source that will not apply more than 250 volts rms between the supply conductors or between either supply conductor and ground. A protective ground connection by way of the grounding conductor in the power cord is essential for safe operation.

### Grounding the Product

This product is grounded through the grounding conductor of the power cord. To avoid electrical shock, plug the power cord into a properly wired receptacle before connecting to the product input or output terminals. A protective ground connection by way of the grounding conductor in the power cord is essential for safe operation.

### Danger Arising From Loss of Ground

Upon loss of the protective-ground connection, all accessible conductive parts (including knobs and controls that may appear to be insulating) can render an electric shock.

### Use the Proper Power Cord

Use only the power cord and connector specified for your product.

Use only a power cord that is in good condition.

For detailed information on power cords and connectors, see maintenance section.

Refer cord and connector changes to qualified service personnel.

### Use the Proper Fuse

To avoid fire hazard, use only the fuse of correct type, voltage rating and current rating as specified in the parts list for your product.

Refer fuse replacement to qualified service personnel.

### Do Not Operate in Explosive Atmospheres

To avoid explosion, do not operate this product in an explosive atmosphere unless it has been specifically certified for such operation.

### Do Not Remove Covers or Panels

To avoid personal injury, do not remove the product covers or panels. Do not operate the product without the covers and panels properly installed.

# SERVICE SAFETY SUMMARY

## FOR QUALIFIED SERVICE PERSONNEL ONLY

*Refer also to the preceding Operators Safety Summary.*

### **Do Not Service Alone**

Do not perform internal service or adjustment of this product unless another person capable of rendering first aid and resuscitation is present.

Disconnect power before removing protective panels, soldering, or replacing components.

### **Use Care When Servicing With Power On**

Dangerous voltages exist at several points in this product. To avoid personal injury, do not touch exposed connections and components while power is on.

### **Power Source**

This product is intended to operate from a power source that will not apply more than 250 volts rms between the supply conductors or between either supply conductor and ground. A protective ground connection by way of the grounding conductor in the power cord is essential for safe operation.

# SPECIFICATION

## INTRODUCTION

### Description

The TEKTRONIX TM 502A Power Module is a two-compartment-wide mainframe for the TM 500—Series of modular instrumentation. It accepts up to two independently functional plug-in modules to form a compact, versatile and low cost instrumentation system. The TM 502A is a basic power source for plug-in modules of the TM 500 Series family. It provides unregulated dc and ac supplies and non-dedicated power transistors for plug-in usage.

### Accessories

Refer to the accessories list in the Replaceable Mechanical Parts list at the rear of this manual for part numbers.

### Standard Accessories

- 1 Instruction Manual
- 1 Plug-in Retainer Clip
- 1 Handle/Tilt Stand
- 1 Power Cord (U.S.)

### Options

Refer to the Options section of this manual for information on instrument options.

### Performance Conditions

The values listed below are valid only when the instrument is operated at an ambient temperature between 0°C and 50°C.

## ELECTRICAL CHARACTERISTICS

Table 1-1  
SUPPLIES PER COMPARTMENT

Characteristics	Performance Requirements	Supplemental Information
+33.5 Vdc		
Tolerance <sup>a</sup>		+23.7 V to +40.0 V
PARD <sup>b</sup>		<2.5 V p to p.
Maximum Load		350 mA.
Maximum Load di/dt		10 mA/ $\mu$ s
-33.5 Vdc		
Tolerance <sup>a</sup>		-23.7 V to -40.0 V
PARD <sup>b</sup>		<2.5 V p to p.
Maximum Load		350 mA.
Maximum Load di/dt		10 mA/ $\mu$ s
+11.5 Vdc		
Tolerance <sup>a</sup>		+7.6 V to +16.0 V
PARD <sup>b</sup>		<2.5 V p to p.
Maximum Load		1.3 A, shared with 17.5 Vac winding.
Maximum Load di/dt		20 mA/ $\mu$ s
25 Vac (2 each)		
Range		25.0 V rms +10%, -15% floating
Maximum Load		25 VA
Maximum Floating V		350 V peak
17.5 Vac		
Range		20.5 V +10%, -20% grounded center tap
Maximum Load		30 VA, shared with 11.5 Vdc supply.
MAXIMUM PLUG-IN POWER <sup>c</sup> DRAW FROM MAINFRAME		35 W dc or 75 VA ac
COMBINED POWER DRAW <sup>c</sup> SHARING LIMITATION		VA ac + 2.1 (Watts dc) < 75.

<sup>a</sup>Worst case low line full load and high line - no load values including PARD.

<sup>b</sup>Periodic and Random Deviation. See: Nema Standards Publication PY1-1972.

<sup>c</sup>At nominal line voltage.



**Table 1-2  
TOTAL POWER DRAW FROM MAINFRAME**

Characteristics	Performance Requirements	Supplemental Information
TOTAL POWER DRAW <sup>a</sup> (all compartments combined)		VA ac + (watts dc) <75.

<sup>a</sup>At nominal line voltage.

**Table 1-3  
SERIES PASS TRANSISTORS**

Characteristics	Performance Requirements	Supplemental Information
TYPE		One each NPN and PNP per compartment.
MAXIMUM DISSIPATION		7.5 W each, 15 W total

**Table 1-4  
SOURCE POWER REQUIREMENTS**

Characteristics	Performance Requirements	Supplemental Information
VOLTAGE RANGES		Selectable 100 V, 120 V, 220 V, and 240 V nominal line $\pm 10\%$ .
LINE FREQUENCY		48 Hz to 400 Hz.
MAXIMUM POWER CONSUMPTION		Approximately 90 W.
FUSE DATA		
100 V, 120 V Ranges		1.0 A, 3 AG, slow blow, 250 V.
220 V, 240 V Ranges		0.5 A, 3 AG, slow blow, 250 V.

**Table 1-5  
MISCELLANEOUS**

Characteristics	Performance Requirements	Supplemental Information
MAXIMUM RECOMMENDED PLUG-IN POWER DISSIPATION		
One-Wide		10 to 15 W.
Two-Wide		25 to 35 W.

**PHYSICAL CHARACTERISTICS**

**Table 1-6  
ENVIRONMENTAL<sup>a</sup>**

<b>Characteristics</b>	<b>Description</b>	
TEMPERATURE	Meets MIL-T-28800D, class 5.	
Operating:	0°C to +50°C	
Non-Operating:	-55°C to +75°C	
HUMIDITY:	95% RH, 0°C to 50°C, non-condensing.	Exceeds MIL-T-28800D, class 5.
ALTITUDE	Exceeds MIL-T-28800D, class 5.	
Operating:	4.6 km (15,000 ft.)	
Non-operating:	15 km (50,000 ft)	
VIBRATION:	0.25 mm (0.010") peak to peak, 5 Hz to 55 Hz, 75 minutes.	See footnote b.
SHOCK:	20 g's (1/2 sine) 11 ms duration, 3 shocks in each direction along 3 major axes, 18 total shocks.	See footnote b.
BENCH HANDLING:	12 drops from 45 degrees, 4" or equilibrium, whichever occurs first.	Meets MIL-T-28800D, class 5.
TRANSPORTATION:	Qualified under National Safe Transit Association Preshipment Test Procedures 1A-B-1 and 1A-B-2.	
EMC:	Electro-mechanical compatability within limits of F.C.C. Regulations, Part 15, Subpart J, Class A.	
ELECTRICAL DISCHARGE:	20 kV maximum discharge applied to instrument case.	

<sup>a</sup>With plug-ins.

<sup>b</sup>Meets MIL-T-28800D, class 5 without plug-ins (0.015" displacement, 30 g's shock).

**Table 1-7  
MECHANICAL**

<b>Characteristics</b>	<b>Description</b>
NOMINAL WEIGHT (Without Plug-ins)	8.75 lbs (4.0 kg)
OVERALL DIMENSIONS	
Length:	40.7 cm (16.6 in.)
Width:	14.5 cm (5.7 in.)
Height:	14.0 cm (5.5 in.)

# OPERATING INSTRUCTIONS

## PREPARATION

This section of the manual contains instructions on preparing the power module for use, and installing plug-in modules.

### Power Source

The TM 502A is designed to operate from a power source with its neutral at or near earth (ground) potential with a separate safety-earth conductor. It is not intended for operation from two phases of a multi-phase system.

### Power Usage/Loading Considerations

With two plug-in modules installed, the TM 502A can require up to 90 W of power at the upper limits of the high line voltage ranges. Actual power consumption depends on the particular module combination and operating mode selected at any one time.

The power capability of the TM 502A can best be used by carefully planning the plug-in configuration, the external loads, and the resulting power distributions. Optimum conditions may be obtained by:

1. Having equal loads in both compartments.
2. Dissipating as much power as possible in the external loads.
3. Operating the system in an ambient temperature near 25°C.

Each plug-in is provided access to a pair of heat-sinked, series-pass transistors—one NPN and the other PNP. These transistors enable the plug-in to operate in power ranges not possible if the power were to be dissipated within the plug-ins.

## Line Voltage Selection/Fuse Replacement

The line voltage selector is part of the line cord plug assembly, located on the rear of the power module. Verify that the voltage shown in the selector window is correct for the line voltage available.

If the displayed voltage selection is incorrect or the fuse needs replacement, perform the following procedure. Refer to Fig. 2-1.

1. Make certain that the power module power switch (on rear of power module) is turned off and the line cord is not plugged into the line voltage connector.
2. Remove the voltage selector/fuse holder by pushing the latch/release bar toward the selection window. The selector/fuse holder should release and move slightly out of the socket. Remove the voltage selector/fuse holder from the assembly.
3. Pull the fuse block and fuse from the voltage selector/fuse holder. Remove the fuse from the fuse block. Make certain a replacement fuse has the proper ratings for the selected line voltage (refer to Specifications for fuse rating). Insert fuse into fuse block.
4. The line voltage selections are printed on the end of the fuse box. Rotate the fuse box and reinstall it so that the proper line voltage selection is visible through the selection window.
5. Reinstall the voltage selector/fuse holder.
6. Verify that the correct line voltage value is visible through the line voltage selector window.

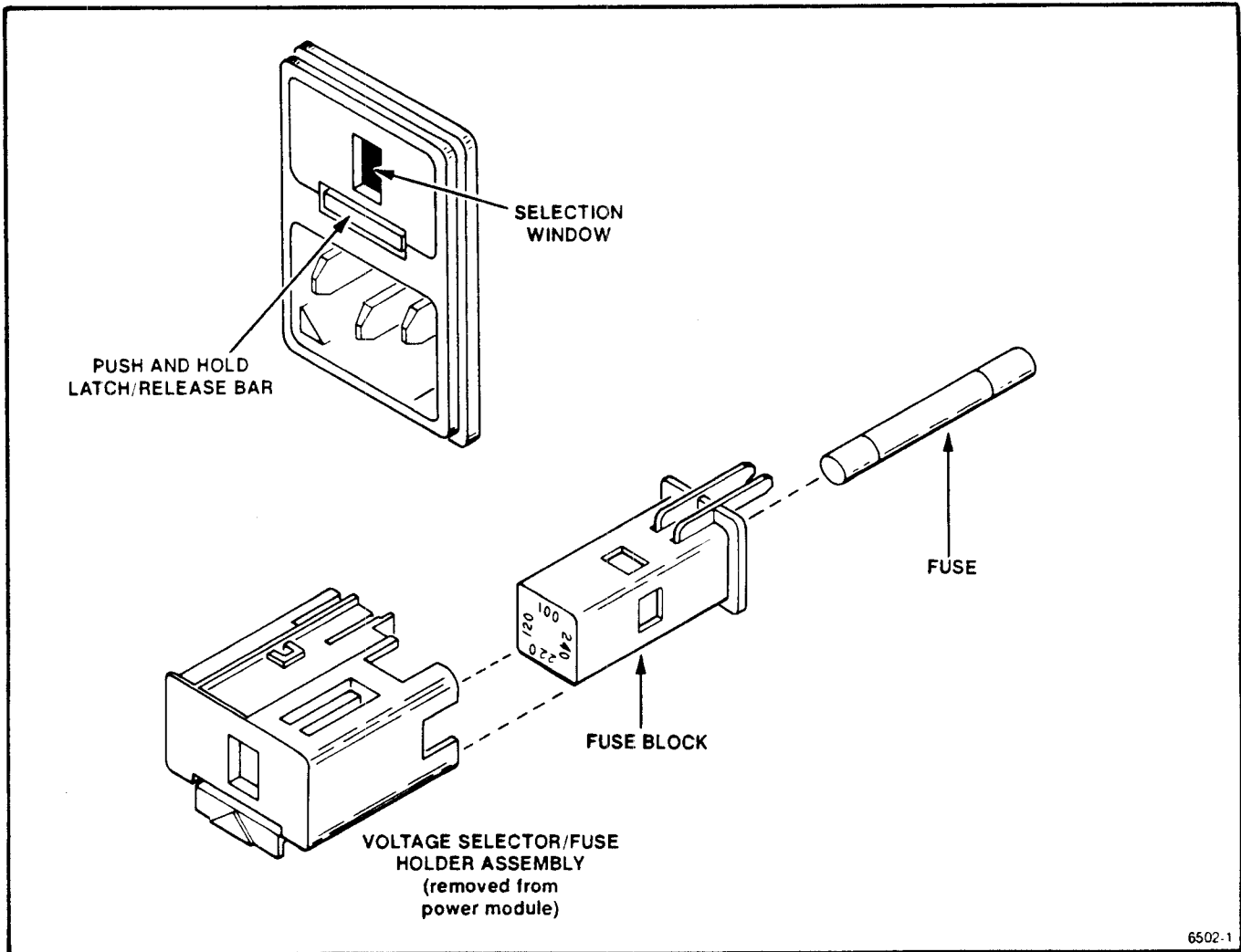


Fig. 2-1. Line voltage selection/fuse replacement.

### Handle/Tilt Stand Installation

Before starting handle installation, check the handle kit contents against the list below:

- 2 Phillips screws
- 2 metal washers
- 2 plastic locking buttons
- 1 metal handle

A Phillips screwdriver is the only tool required. The following steps outline handle installation:

- a. Turn off the power module power switch and disconnect the line cord.
- b. Remove any plug-in modules.
- c. On each side of the power module (about 2 inches from the front edge) is a black plug. Remove each plug by pushing it out from inside of the power module.
- d. From outside the power module, place the plastic locking button in the handle slot and into the square hole in the side panel, as shown in Fig. 2-2. Note that the rounded edges of the button must be facing the top and bottom panels of the power module, as shown in the illustration.

- e. Place the metal washer inside the side panel, over the hole in the button.
- f. Install the Phillips screw.

Repeat this procedure for the other end of the handle.

### Operating Temperatures

The TM 502A can be operated in an ambient air temperature range of 0°C to +50°C. Since the TM 502A can be stored in temperatures between -55°C and +75°C, allow the instrument's chassis to return to within the temperature operating limits before applying power.

### Power Modules

It is not necessary that both plug-in compartments be utilized in order to operate the power module.

### CAUTION

*Turn the power module off before inserting or removing a plug-in; otherwise, damage may occur to the plug-in circuitry.*

### Family Compatibility

Mechanically, the TM 500—Series plug-in modules are very similar to other TEKTRONIX product families. However, they are not **electrically** compatible. Therefore, the TM 502A interface has barriers on the mating connectors between pins 6 and 7 to ensure that incompatible plug-ins cannot be inserted. (Pin 1 is on the connector end near the bottom side of the power module.) A compatible module will have a matching slot between pins 6 and 7 of its main circuit board edge connector. This slot and barrier combination is the primary keying assignment.

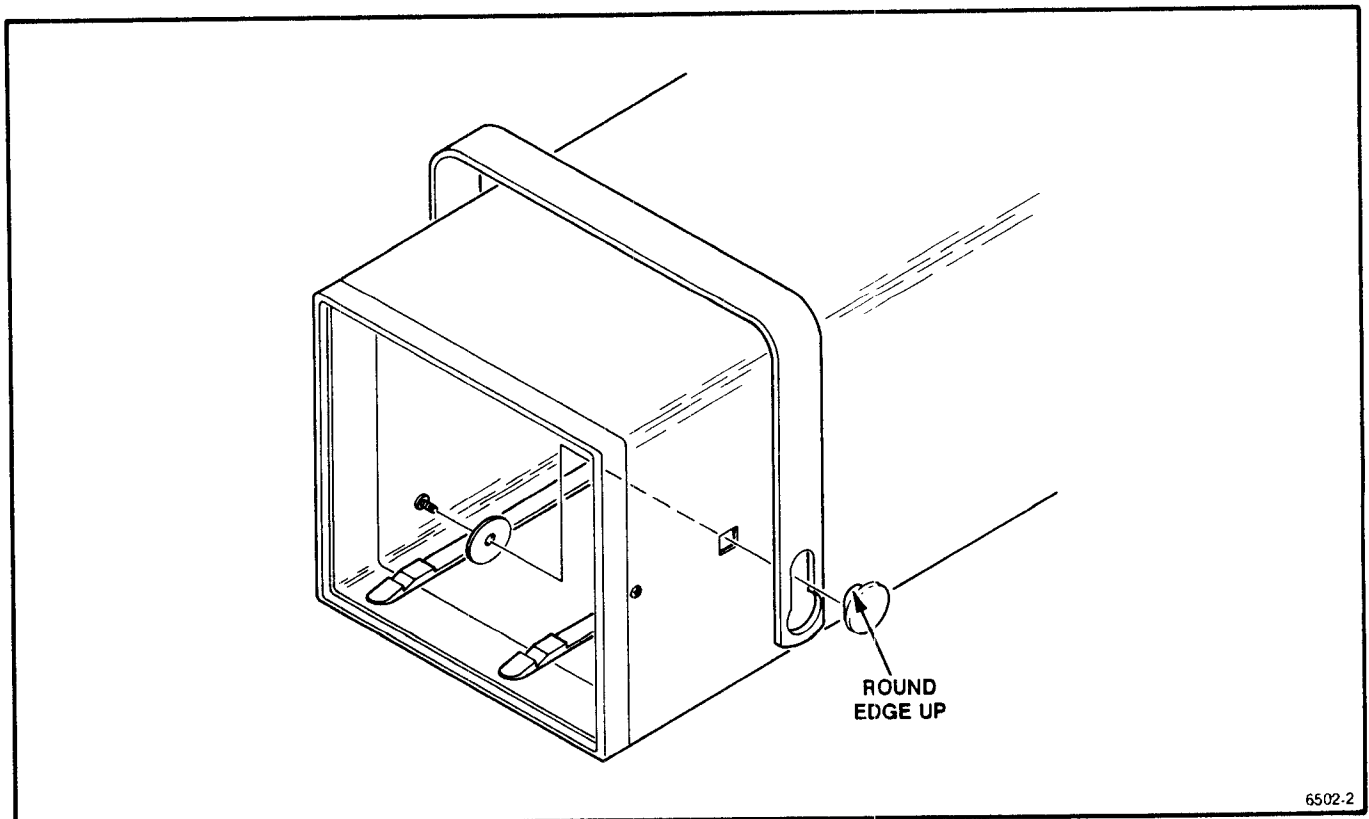


Fig. 2-2. Handle installation.

6502-2

## MODULE INSTALLATION

The modularity of this instrumentation system provides for a host of functions to be performed by the plug-in modules. Specific functions are grouped into families or classes, of which there may be several plug-in module members. For instance, some classes are power supplies, signal sources, measurement and so forth. Each modular member of a functional family will have a second slot peculiar to its family assignment located in its edge connector. The TM 502A user can "program" one or both compartments to accept only members of that family by installing a second barrier in the interface connector to match the module's slot location. Contact the nearest Tektronix Field Office to order additional barriers.

1. Check the location of the plastic barriers on the TM 502A interconnecting jack to ensure that their locations match the slots in the edge of the plug-in module's main circuit board. If they do not match, refer the qualified service personnel to the Maintenance section of this manual for information.
2. Align the plug-in module chassis with the upper and lower guides of the selected compartment. Push the module in and press firmly to seat the circuit board in the interconnecting jack. (Remove the plug-in module by pulling on the release latch in the lower left corner of the plug-in module.)

### Plug-in Retainer Clip Installation

The retainer clip is used to ensure that an installed plug-in module can not come out of the power module while it is being moved or transported. Note that plug-in modules cannot be removed or inserted with the retainer clip installed.

To install the retainer clip, stand the power module on end. Remove the round-head Phillips screw located on the bottom side of the TM 502A just behind the front casting. Align the hole in the retainer clip with the chassis hole, with the clip extending forward and into the module opening, over the bottom edge of the plug-in module(s). Re-install the screw.

### Turn-On Procedure

After completing the power module preparation and plug-in module installation instructions, install power cord and connect to the proper power outlet. Turn on the power switch on the rear of the power module (located on the rear of the power module). Some plug-ins have independent power switches, usually labeled OUTPUT, that control application of mainframe power to the plug-in.

# MAINTENANCE

## Introduction

This section of the manual provides maintenance and service information for the TM 502A power module.

### WARNING

*Dangerous potentials exist at several points throughout the power module. When the power module must be operated with the cabinet removed, do not touch exposed connections or components. Some transistors have voltages present on their cases. Disconnect power before cabinet removal, cleaning, or replacing parts.*

## Cabinet Removal

Before removing the cabinet, turn the power switch off and disconnect the line voltage cord. Remove any plug-in modules and the handle assembly.

Two screws on the side and 1 screw on the bottom secure the cabinet to the TM 502A front casting. Additionally, four screws located on the bottom and one screw on the back hold the power supply to the cabinet. Remove the screws and slide the power supply assembly out through the front of the cabinet. Re-install the cabinet to protect the interior from dust and to remove personnel shock hazards.

## Cleaning

### CAUTION

*Avoid using chemical cleaning agents which might damage plastic parts. Avoid chemicals containing benzene, toluene, zylene, acetone, or similar solvents.*

**Exterior.** Loose dust may be removed with a soft cloth or a dry brush. Water and a mild detergent may be used; however, abrasive cleaners should not be used.

**Interior.** Use low-velocity compressed air to blow off accumulated dust. Hardened dirt can be removed with a soft, dry brush, cotton-tipped swab, or a cloth dampened in a solution of water and mild detergent.

## Preventive Maintenance/Calibration

The TM 502A power module does not require preventive maintenance or calibration.

## Circuit Board Removal

- a. Remove the power supply assembly from the power module. Refer to Cabinet Removal in this section of the manual for instructions.
- b. On the power supply assembly, remove the screws on each side that secure the series-pass transistor clamp. Remove clamp.
- c. Remove the four screws on the interface connector side of the power supply assembly that secure the circuit board to the chassis.
- d. Disconnect from the circuit board the 2 connectors going to the transformer.
- e. Slide the circuit board out of the power supply assembly.

## Voltage Selector/Fuse Holder Assembly Removal

To remove the voltage selector/fuse holder assembly, remove the cabinet; then remove the circuit board. Refer to Cabinet Removal and Circuit Board Removal in this section of the manual.

Disconnect the connectors from the terminals on the back of the voltage selector/fuse holder assembly, labeling each wire.

The assembly has a locking tab on two sides that secure it in the chassis hole.

### CAUTION

*Do not apply excessive force to the locking tabs. Excessive pressure will reduce the strength of the plastic.*

Push one tab in carefully, pulling gently on the assembly from the outside. That side of the assembly will be released. Repeat to release the other side. Pull the assembly through the chassis hole to the outside, taking care not to damage the capacitors.

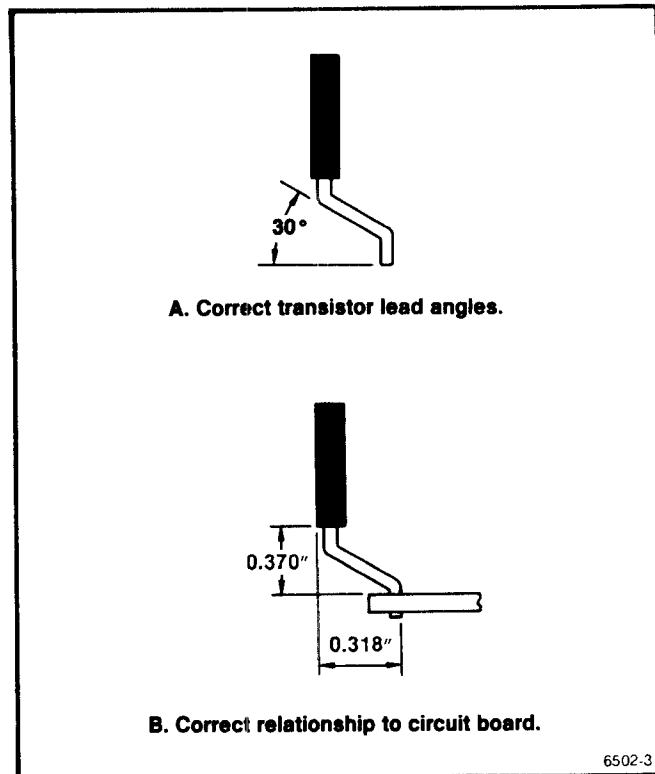
### Series Pass Transistor Replacement

**NOTE**

*A new adhesive insulator plate must be applied to the transistor before installation. To maintain proper insulating characteristics, do not re-use the insulating plate from the transistor being replaced.*

To replace a series pass transistor, remove the cabinet; then remove the circuit board. Refer to Cabinet Removal and Circuit Board Removal in this section of the manual.

- a. Unsolder and remove the transistor being replaced, from the circuit board.
- b. Carefully bend the new transistor leads according to the dimensions in Fig. 3-1. The illustration is actual size so that you can physically compare the lead angles with the drawing.
- c. Apply a new adhesive insulator plate to the transistor side having exposed metal.
- d. Re-install the circuit board into the power supply assembly.
- e. Insert the leads of the replacement transistor into the circuit board holes, with the insulating plate facing the metal chassis.
- f. Re-install the transistor clamp.
- g. Solder the transistor onto the board, applying minimum heat.
- h. Re-install the assembly into the power module cabinet. Re-install the handle assembly.



**Fig. 3-1. Series pass transistor replacement. (Shown actual size.)**

### Obtaining Replacement Parts

Electrical and mechanical parts can be obtained through your local Tektronix Field Office or representative. However, it may be possible to obtain many of the standard electronic components from a local commercial source. Before purchasing or ordering a part from a source other than Tektronix, Inc., check the Replaceable Electrical Parts list for the proper value, rating, tolerance, and description.

**NOTE**

*When selecting replacement parts, remember that the physical size and shape of a component may affect its performance in the instrument.*

Some parts are manufactured or selected by Tektronix, Inc., to satisfy particular requirements or are manufactured for Tektronix, Inc., to our specifications. Most of the mechanical parts used in this instrument have been manufactured by Tektronix, Inc.. To determine the manufacturer, refer to the Replaceable Parts list and the Cross Reference index, Mfr. Code Number to Manufacturer.



When ordering replacement parts from Tektronix, Inc., include the following information:

1. Instrument type and option number.
2. Instrument serial number.
3. A description of the part (if electrical, include complete circuit number).
4. Tektronix part number.

### Packaging Information

A list of standard accessories (and part numbers) is located at the end of the Replaceable Mechanical Parts list.

If the Tektronix instrument is to be shipped to a Tektronix Service Center for service or repair, attach a tag showing owner (with address) and the name of an individual at your firm that can be contacted. Include the complete instrument serial number and a description of the service required.

Save and re-use the package in which your instrument was shipped. If the original packaging is unfit for use or not available, repackage the instrument as follows:

Surround the instrument with polyethylene sheeting to protect the finish of the instrument. Obtain a carton of corrugated cardboard of the correct carton strength and having inside dimensions of no less than 6 inches more than the instrument dimensions. Cushion the instrument by tightly packing 3 inches of dunnage or urethane foam between carton and instrument on all sides. Seal the carton with shipping tape or an industrial stapler.

The carton test strength for this instrument is 275 pounds per square inch.

# OPTIONS

The following options are available for the TM 502A power module.

Option 11—deletes handle/tilt stand.

Option 13—adds storage plug-in.

Option A1—changes the power to Universal European (220 Volt, 16 Amp, 50 Hz).

Option A2—changes the power to United Kingdom (240 Volt, 13 Amp, 50 Hz).

Option A3—changes the power to Australian (240 Volt, 10 Amp, 50 Hz).

Option A4—changes the power to North American (240 Volt, 15 Amp, 60 Hz).

Option A5—changes the power to Switzerland (220 Volt, 10 Amp, 50 Hz).

# REPLACEABLE ELECTRICAL PARTS

## PARTS ORDERING INFORMATION

Replacement parts are available from or through your local Tektronix, Inc. Field Office or representative.

Changes to Tektronix instruments are sometimes made to accommodate improved components as they become available, and to give you the benefit of the latest circuit improvements developed in our engineering department. It is therefore important, when ordering parts, to include the following information in your order: Part number, instrument type or number, serial number, and modification number if applicable.

If a part you have ordered has been replaced with a new or improved part, your local Tektronix, Inc. Field Office or representative will contact you concerning any change in part number.

Change information, if any, is located at the rear of this manual.

Only the circuit number will appear on the diagrams and circuit board illustrations. Each diagram and circuit board illustration is clearly marked with the assembly number. Assembly numbers are also marked on the mechanical exploded views located in the Mechanical Parts List. The component number is obtained by adding the assembly number prefix to the circuit number.

The Electrical Parts List is divided and arranged by assemblies in numerical sequence (e.g., assembly A1 with its subassemblies and parts, precedes assembly A2 with its subassemblies and parts).

Chassis-mounted parts have no assembly number prefix and are located at the end of the Electrical Parts List.

### LIST OF ASSEMBLIES

A list of assemblies can be found at the beginning of the Electrical Parts List. The assemblies are listed in numerical order. When the complete component number of a part is known, this list will identify the assembly in which the part is located.

### CROSS INDEX-MFR. CODE NUMBER TO MANUFACTURER

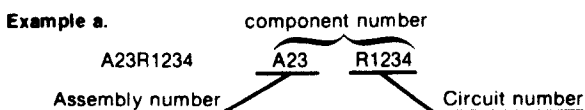
The Mfr. Code Number to Manufacturer index for the Electrical Parts List is located immediately after this page. The Cross Index provides codes, names and addresses of manufacturers of components listed in the Electrical Parts List.

### ABBREVIATIONS

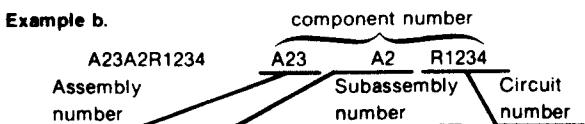
Abbreviations conform to American National Standard Y1.1.

### COMPONENT NUMBER (column one of the Electrical Parts List)

A numbering method has been used to identify assemblies, subassemblies and parts. Examples of this numbering method and typical expansions are illustrated by the following:



Read: Resistor 1234 of Assembly 23



Read: Resistor 1234 of Subassembly 2 of Assembly 23

### TEKTRONIX PART NO. (column two of the Electrical Parts List)

Indicates part number to be used when ordering replacement part from Tektronix.

### SERIAL/MODEL NO. (columns three and four of the Electrical Parts List)

Column three (3) indicates the serial number at which the part was first used. Column four (4) indicates the serial number at which the part was removed. No serial number entered indicates part is good for all serial numbers.

### NAME & DESCRIPTION (column five of the Electrical Parts List)

In the Parts List, an Item Name is separated from the description by a colon (:). Because of space limitations, an Item Name may sometimes appear as incomplete. For further Item Name identification, the U.S. Federal Cataloging Handbook H6-1 can be utilized where possible.

### MFR. CODE (column six of the Electrical Parts List)

Indicates the code number of the actual manufacturer of the part. (Code to name and address cross reference can be found immediately after this page.)

### MFR. PART NUMBER (column seven of the Electrical Parts List)

Indicates actual manufacturers part number.

CROSS INDEX - MFR. CODE TO MANUFACTURER

Mfr Code	Manufacturer	Address	City, State, Zip Code
01121	ALLEN-BRADLEY CO	1201 S 2ND ST	MILWAUKEE WI 53204-2410
03508	GENERAL ELECTRIC CO SEMI-CONDUCTOR PRODUCTS DEPT	W GENESEE ST	AUBURN NY 13021
04222	AVX CERAMICS DIV OF AVX CORP	19TH AVE SOUTH P O BOX 867	MYRTLE BEACH SC 29577
04713	MOTOROLA INC SEMICONDUCTOR PRODUCTS SECTOR	5005 E MCDOWELL RD	PHOENIX AZ 85008-4229
0J7N9	MCX INC	30608 SAN ANTONIO ST	HAYWARD CA 94544
14936	GENERAL INSTRUMENT CORP DISCRETE SEMICONDUCTOR DIV	600 W JOHN ST	HICKSVILLE NY 11802
26742	METHODE ELECTRONICS INC BACPLAIN DIVISION	7444 W WILSON AVE	CHICAGO IL 60656
27264	MOLEX INC	2222 WELLINGTON COURT	LISLE IL 60532-1613
31781	EDAC INC	20 RAILSIDE RD	DON MILLS ONT CAN M3A 1A4
56289	SPRAGUE ELECTRIC CO WORLD HEADQUARTERS	92 HAYDEN AVE	LEXINGTON MA 02173-7929
57668	ROHM CORP	8 WHATNEY PO BOX 19515	IRVINE CA 92713
71400	BUSSMANN DIV OF COOPER INDUSTRIES INC	114 OLD STATE RD PO BOX 14460	ST LOUIS MO 63178
75498	MULTICOMP INC	3005 SW 154TH TERRACE #3	BEAVERTON OR 97006
80009	TEKTRONIX INC	14150 SW KARL BRAUN DR PO BOX 500	BEAVERTON OR 97707-0001
TK0935	MARQUARDT SWITCHES INC	67 ALBANY ST PO BOX 465	CAZENOVIA NY 13035-1219
TK1997	COLUMBIA GORGE CENTER	2940 THOMPSEN RD	HOOD RIVER OR 97031

Component No.	Tektronix Part No.	Serial/Assembly No.		Name & Description	Mfr. Code	Mfr. Part No.
		Effective	Dscont			
A1	671-0211-00			CIRCUIT BD ASSY: POWER SUPPLY	80009	671-0211-00
A1C2010	281-0774-00			CAP,FXD,CER DI:0.022MFD, 20%,100V	04222	HA201E223MAA
A1C2020	281-0774-00			CAP,FXD,CER DI:0.022MFD, 20%,100V	04222	HA201E223MAA
A1C2025	281-0774-00			CAP,FXD,CER DI:0.022MFD, 20%,100V	04222	HA201E223MAA
A1C2030	290-1186-00			CAP,FXD,ELCTLT:4700UF, 20%, 50WVDC	56289	81D472M050KD5
A1C2040	281-0774-00			CAP,FXD,CER DI:0.022MFD, 20%,100V	04222	HA201E223MAA
A1C4010	290-1187-00			CAP,FXD,ELCTLT:18000UF, 20%, 16WVDC	56289	81D183M016KD5
A1C4040	290-1186-00			CAP,FXD,ELCTLT:4700UF, 20%, 50WVDC	56289	81D472M050KD5
A1C5010	281-0774-00			CAP,FXD,CER DI:0.022MFD, 20%,100V	04222	HA201E223MAA
A1C5050	281-0774-00			CAP,FXD,CER DI:0.022MFD, 20%,100V	04222	HA201E223MAA
A1CR3010	152-0198-00			SEMICON DVC,DI:RECT,SI,200V,3A,A249	03508	1N5624
A1CR3015	152-0198-00			SEMICON DVC,DI:RECT,SI,200V,3A,A249	03508	1N5624
A1CR3020	152-0198-00			SEMICON DVC,DI:RECT,SI,200V,3A,A249	03508	1N5624
A1CR3030	152-0666-00			SEMICON DVC,DI:RECT,SI,800V,1.5A	14936	W08M-11
A1CR4030	152-0198-00			SEMICON DVC,DI:RECT,SI,200V,3A,A249	03508	1N5624
A1CR4040	152-0198-00			SEMICON DVC,DI:RECT,SI,200V,3A,A249	03508	1N5624
A1J1010	131-2527-00			TERM SET, PIN:HEAOER,1 X 7,0.156 CTR	26742	3CLF-24602-0725
A1J1040	131-2484-00			TERM SET,PIN:8 PIN,INSULATED	27264	09-61-1081
A1J3020	131-1078-00			CONN,RCPT,ELEC:CKT BD,28/56 CONTACT	31781	303-056-520-301
A1J3050	131-1078-00			CONN,RCPT,ELEC:CKT BD,28/56 CONTACT	31781	303-056-520-301
A1Q2010	151-0373-00	B010100	B013420	TRANSISTOR:P,NP,SI,TO-127	04713	SJE925
A1Q2010	151-0938-00	B013421		TRANSISTOR:P,NP,SI,TO-220 FULL PAK	04713	MJF 2955
A1Q2050	151-0373-00	B010100	B013420	TRANSISTOR:P,NP,SI,TO-127	04713	SJE925
A1Q2050	151-0938-00	B013421		TRANSISTOR:P,NP,SI,TO-220 FULL PAK	04713	MJF 2955
A1Q3010	151-0436-00	B010100	B013420	TRANSISTOR:NPN,SI,SEL,TO-172	04713	SJE966
A1Q3010	151-0937-00	B013421		TRANSISTOR:NPN,SI,TO-220 FULL PAK	04713	MJF 3055
A1Q3050	151-0436-00	B010100	B013420	TRANSISTOR:NPN,SI,SEL,TO-172	04713	SJE966
A1Q3050	151-0937-00	B013421		TRANSISTOR:NPN,SI,TO-220 FULL PAK	04713	MJF 3055
A1R3020	315-0102-00			RES,FXD,FILM:1K OHM,5%,0.25W	57668	NTR25JE01K0
A1R3030	303-0202-00			RES, FXD,CMPSN:2K OHM,5%,1W	01121	GB 2025
A1R3035	303-0202-00			RES, FXD,CMPSN:2K OHM,5%,1W	01121	GB 2025
A1R5030	303-0511-00			RES,FXD,CMPSN:510 OHM,5%,1W	01121	GB 5115
CHASSIS PARTS						
C100	283-0959-00			CAP,FXD,CER DI:0.01UF,20%,250VAC	80009	283-0959-00
C200	283-0959-00			CAP,FXD,CER DI:0.01UF,20%,250VAC	80009	283-0959-00
F100	159-0019-00			FUSE,CARTRIDGE:3AG,1A,250V,SLOW BLOW (STANDARD ONLY)	71400	MDL 1
F100	159-0032-00			FUSE,CARTRIDGE:3AG,0.5A,250V,SLOW BLOW (OPTION A1, A2, A3, A4, A5 ONLY)	71400	MDL 1/2
P100	119-2679-00	B010100	B010807	VOLTAGE SEL:AC PWR CONN & FUSE HOLDER	80009	119-2679-00
P100	119-2679-01	B010808	B011482	VOLTAGE SEL:AC PWR CONN & FUSE HOLDER	80009	119-2679-01
P100	119-3357-01	B011483		PWR,ENTRY MDL:PNL,SNAP-N;MALE,IEC,15A	TK1997	119-3357-01
S100	260-1961-00			SWITCH,ROCKER:DPST,6(4)A,250V	TK0935	1802.1121
T100	120-1759-00			TRANSFORMER,PWR:50-440HZ	75498	128-7003-00
W100	196-3176-00	B010100	B012966	LEAD ELECTRICAL:18 AWG,5.0 L,5-4	80009	196-3176-00
W100	196-3176-01	B012967		LEAD ELECTRICAL:18 AWG,5.25 L,5-4	0J7N9	ORDER BY DESC
W200	196-3175-00			LEAD ELECTRICAL:18 AWG,5.0 L,9-N	80009	196-3175-00

# DIAGRAMS AND CIRCUIT BOARD ILLUSTRATIONS

## Symbols

Graphic symbols and class designation letters are based on ANSI Standard Y32.2-1975.

Logic symbology is based on ANSI Y32.14-1973 in terms of positive logic. Logic symbols depict the logic function performed and may differ from the manufacturer's data.

The overline on a signal name indicates that the signal performs its intended function when it is in the low state.

Abbreviations are based on ANSI Y1.1-1972.

Other ANSI standards that are used in the preparation of diagrams by Tektronix, Inc. are:

- Y14.15, 1966 Drafting Practices.
- Y14.2, 1973 Line Conventions and Lettering.
- Y10.5, 1968 Letter Symbols for Quantities Used in Electrical Science and Electrical Engineering.

American National Standard Institute  
1430 Broadway  
New York, New York 10018

## Component Values

Electrical components shown on the diagrams are in the following units unless noted otherwise:

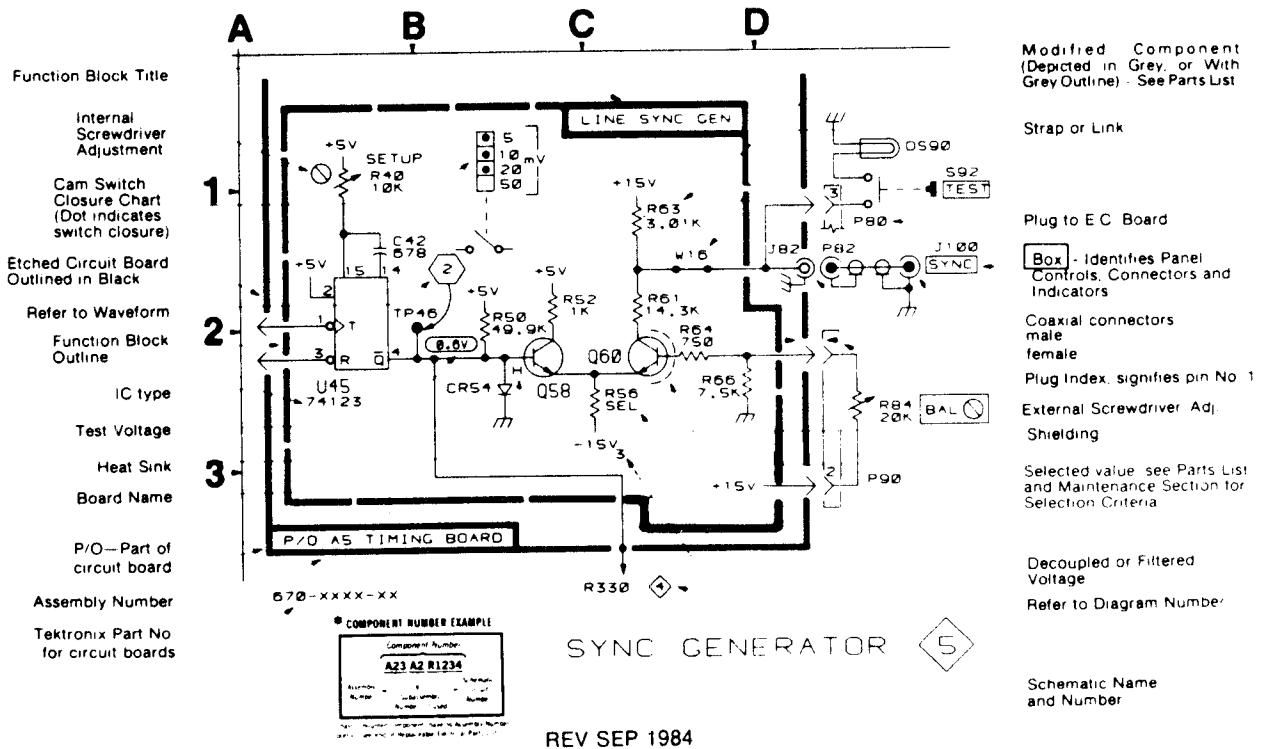
- Capacitors = Values one or greater are in picofarads (pF). Values less than one are in microfarads ( $\mu$ F).
- Resistors = Ohms ( $\Omega$ ).

———— The information and special symbols below may appear in this manual. ————

## Assembly Numbers and Grid Coordinates

Each assembly in the instrument is assigned an assembly number (e.g., A20). The assembly number appears on the circuit board outline on the diagram, in the title for the circuit board component location illustration, and in the lookup table for the schematic diagram and corresponding component locator illustration. The Replaceable Electrical Parts list is arranged by assemblies in numerical sequence; the components are listed by component number \*(see following illustration for constructing a component number).

The schematic diagram and circuit board component location illustration have grids. A lookup table with the grid coordinates is provided for ease of locating the component. Only the components illustrated on the facing diagram are listed in the lookup table. When more than one schematic diagram is used to illustrate the circuitry on a circuit board, the circuit board illustration may only appear opposite the first diagram on which it was illustrated; the lookup table will list the diagram number of other diagrams that the circuitry of the circuit board appears on.



# POWER MODULE INTERFACE PIN ASSIGNMENTS

	A	B	
	28	28	
	27	27	
	26	26	
	25	25	
	24	24	
	23	23	
No permanent I/O assignments. Refer to plug-in module manuals for specific assignments.	22	22	No permanent I/O assignments. Refer to plug-in module manuals for specific assignments.
	21	21	
	20	20	
	19	19	
	18	18	
	17	17	
	16	16	
	15	15	
	14	14	
25 Vac winding.	13	13	25 Vac winding.
+33.5 V filter	12	12	+33.5 V filtered dc.
Base lead of PNP Series-Pass.	11	11	Collector lead of PNP Series-Pass.
Emitter lead of PNP Series-Pass.	10	10	±33.5 V common return.
±33.5 V common return.	9	9	±33.5 V common return.
-33.5 V filtered dc.	8	8	-33.5 V filtered dc.
Emitter lead of NPN Series-Pass.	7	7	Collector lead of NPN Series-Pass.
Base lead of NPN Series-Pass.	6	6	No connection.
17.5 Vac winding.	5	5	17.5 Vac winding.
+11.5 V common return.	4	4	+11.5 V common return.
+11.5 V common return.	3	3	+11.5 V common return.
+11.5 V filtered dc.	2	2	+11.5 V filtered dc.
25 Vac winding.	1	1	25 Vac winding.
	A	B	

VIEWED FROM FRONT OF POWER MODULE

(1786-12) 6502-4

REV JUL 1987

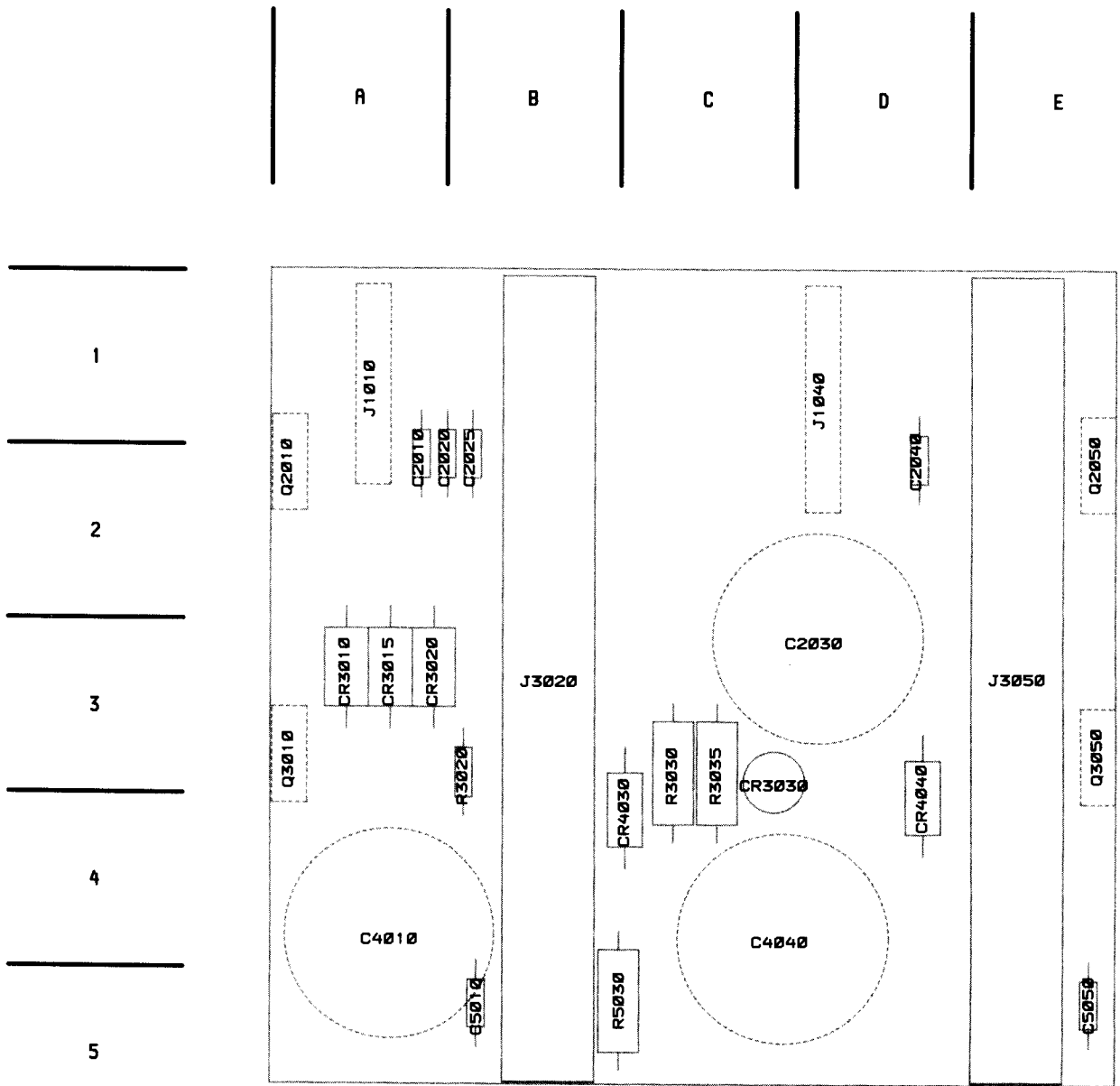


Fig. 6-1. A1-Power Supply circuit board assembly.

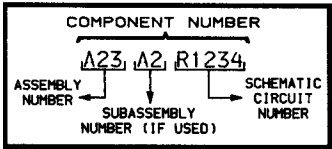


ASSY A1			POWER SUPPLY		
Circuit Number	Schematic Location	Board Location	Circuit Number	Schematic Location	Board Location
C100	A6	CHASSIS	P105	D4	CHASSIS
C200	B6	CHASSIS	P106	D5	CHASSIS
C2010	F6	A1	P107	D6	CHASSIS
C2020	E6	A1	P108	D6	CHASSIS
C2025	G3	B1	P109	D6	CHASSIS
C2030	F4	D3	P110	D7	CHASSIS
C2040	H3	D2	P111	D7	CHASSIS
C4010	E7	A4	P112	D7	CHASSIS
C4040	F5	C4	P113	D7	CHASSIS
C5010	G7	B5	P114	D8	CHASSIS
C5050	H7	E5	P115	C4	CHASSIS
			P116	C5	CHASSIS
CR3010	E6	A3	P117	C5	CHASSIS
CR3015	F7	A3	P118	C5	CHASSIS
CR3020	E6	A3	P119	C6	CHASSIS
CR3030	E4	C3	P700	B5	CHASSIS
CR4030	F4	C4			
CR4040	F5	D4	Q2010	G4	A2
			Q2050	H4	E2
F100	A5	CHASSIS	Q3010	G5	A3
			Q3050	H5	E3
J200	B6	CHASSIS			
J1010	D3	A1	R3020	E7	B3
J1040	D4	D1	R3030	F5	C3
J3020	H1	B3	R3035	F4	C3
J3050	I1	E3	R5030	E7	C5
P100	D3	CHASSIS	S100	C5	CHASSIS
P101	D3	CHASSIS			
P102	D3	CHASSIS	W100	B6	CHASSIS
P103	D4	CHASSIS	W200	C5	CHASSIS
P104	D4	CHASSIS			

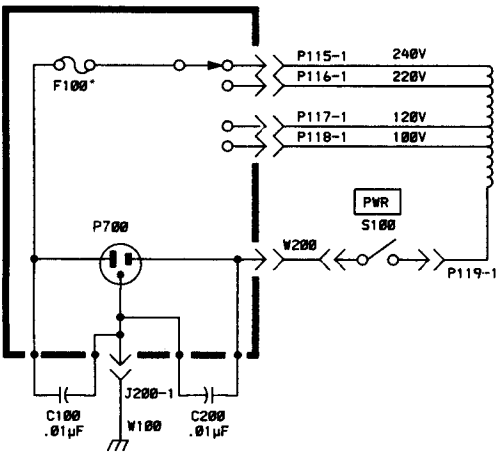
A | B | C | D | E | F | G | H

1  
—  
2  
—  
3  
—  
4  
—  
5  
—  
6  
—  
7  
—  
8  
—

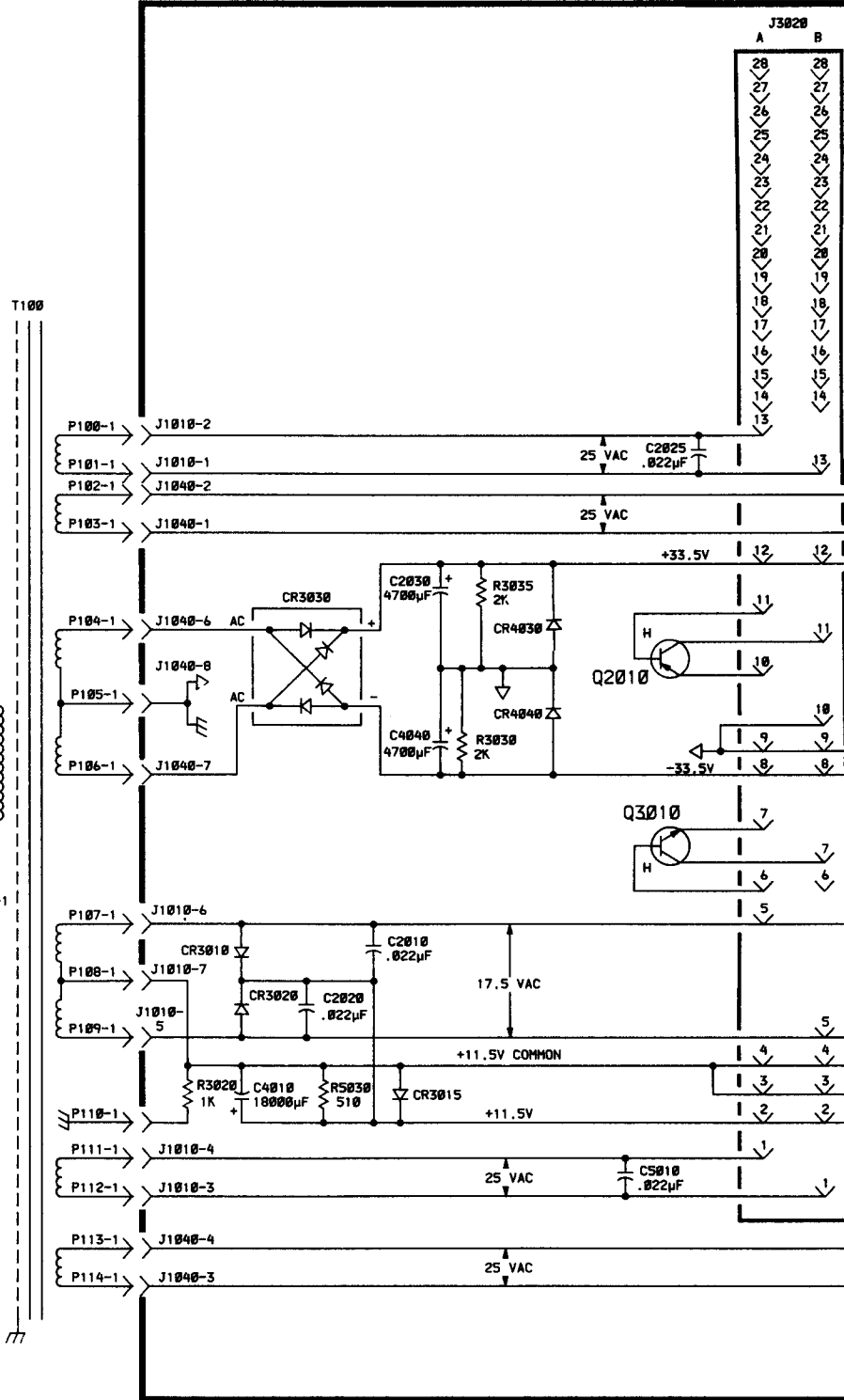
COMPONENT NUMBER EXAMPLE



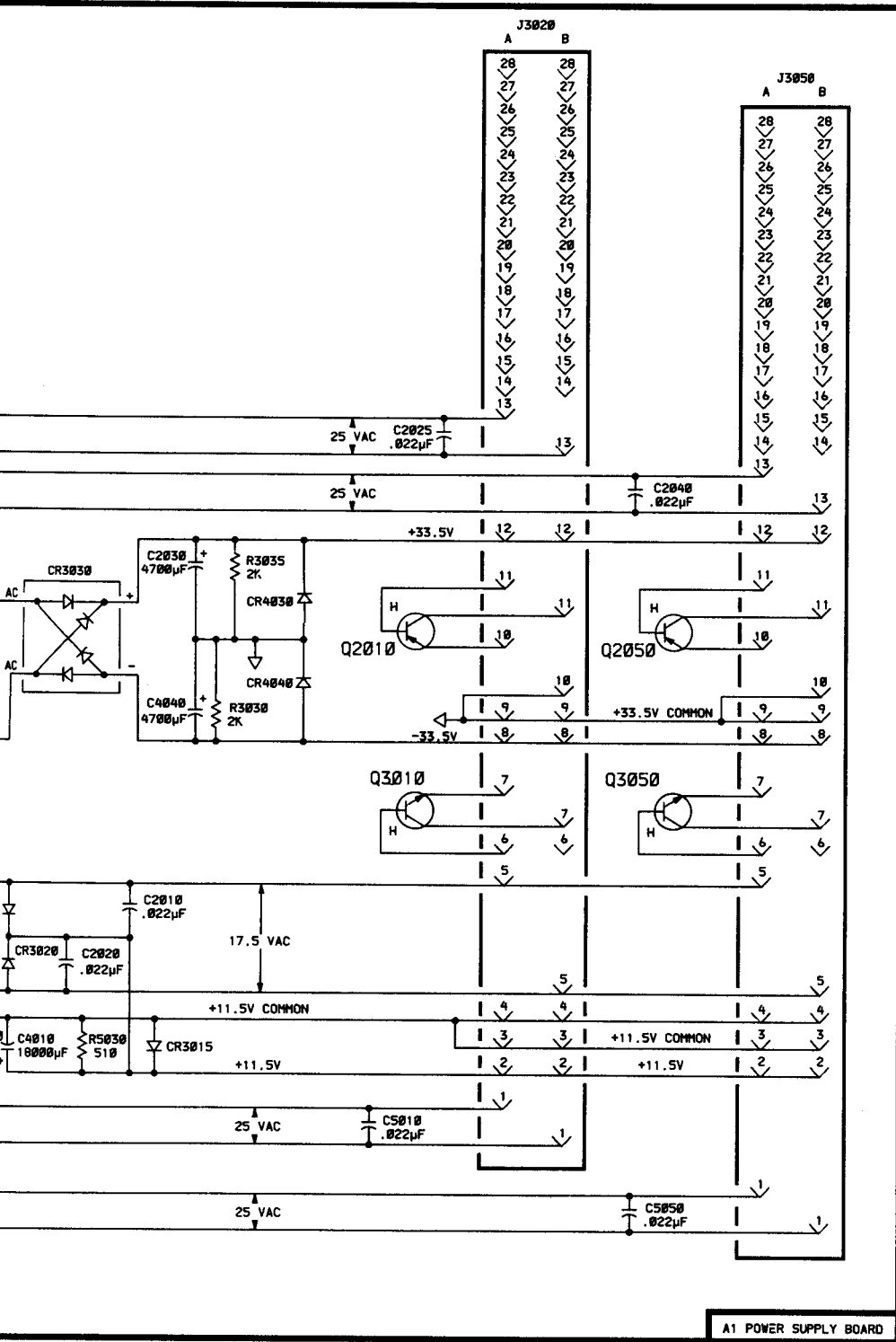
CHASSIS-MOUNTED COMPONENTS HAVE NO ASSEMBLY NUMBER PREFIX—SEE END OF REPLACEABLE ELECTRICAL PARTS LIST



\*See Specifications for value



E | F | G | H | I | J | K



POWER SUPPLY

# REPLACEABLE MECHANICAL PARTS

## PARTS ORDERING INFORMATION

Replacement parts are available from or through your local Tektronix, Inc. Field Office or representative.

Changes to Tektronix instruments are sometimes made to accommodate improved components as they become available, and to give you the benefit of the latest circuit improvements developed in our engineering department. It is therefore important, when ordering parts, to include the following information in your order: Part number, instrument type or number, serial number, and modification number if applicable.

If a part you have ordered has been replaced with a new or improved part, your local Tektronix, Inc. Field Office or representative will contact you concerning any change in part number.

Change information, if any, is located at the rear of this manual.

## ITEM NAME

In the Parts List, an Item Name is separated from the description by a colon (:). Because of space limitations, an Item Name may sometimes appear as incomplete. For further Item Name identification, the U.S. Federal Cataloging Handbook H6-1 can be utilized where possible.

## FIGURE AND INDEX NUMBERS

Items in this section are referenced by figure and index numbers to the illustrations.

## INDENTATION SYSTEM

This mechanical parts list is indented to indicate item relationships. Following is an example of the indentation system used in the description column.

```

1 2 3 4 5           Name & Description
Assembly and/or Component
Attaching parts for Assembly and/or Component
    ....END ATTACHING PARTS....
Detail Part of Assembly and/or Component
Attaching parts for Detail Part
    ....END ATTACHING PARTS....
Parts of Detail Part
Attaching parts for Parts of Detail Part
    ....END ATTACHING PARTS....
  
```

Attaching Parts always appear in the same indentation as the item it mounts, while the detail parts are indented to the right. Indented items are part of, and included with, the next higher indentation.

**Attaching parts must be purchased separately, unless otherwise specified.**

## ABBREVIATIONS

#	INCH	ELECTRN	ELECTRON	IN	INCH	SE	SINGLE END
ACTR	NUMBER SIZE	ELEC	ELECTRICAL	INCAND	INCANDESCENT	SECT	SECTION
ADPTR	ACTUATOR	ELECTLT	ELECTROLYTIC	INSUL	INSULATOR	SEMICON	SEMICONDUCTOR
ALIGN	ADAPTER	ELEM	ELEMENT	INTL	INTERNAL	SHLD	SHIELD
AL	ALIGNMENT	EPL	ELECTRICAL PARTS LIST	LPHLDR	LAMPHOLDER	SHLDR	SHOULDERED
ASSEM	ALUMINUM	EQPT	EQUIPMENT	MACH	MACHINE	SKT	SOCKET
ASSY	ASSEMBLED	EXT	EXTERNAL	MECH	MECHANICAL	SL	SLIDE
ATTEN	ASSEMBLY	FIL	FILLISTER HEAD	MTG	MOUNTING	SLFLKG	SELF-LOCKING
AWG	ATTENUATOR	FLEX	FLEXIBLE	NIP	NIPPLE	SLVG	SLEEVING
BD	AMERICAN WIRE GAGE	FLH	FLAT HEAD	NON WIRE	NOT WIRE WOUND	SPR	SPRING
BRKT	BOARD	FLTR	FILTER	OBD	ORDER BY DESCRIPTION	SO	SQUARE
BRS	BRACKET	FR	FRAME or FRONT	OD	OUTSIDE DIAMETER	SST	STAINLESS STEEL
BRZ	BRASS	FSTNR	FASTENER	OVH	OVAL HEAD	STL	STEEL
BSHG	BRONZE	FT	FOOT	PH BRZ	PHOSPHOR BRONZE	SW	SWITCH
CAB	BUSHING	FXD	FIXED	PL	PLAIN or PLATE	T	TUBE
CAP	CABINET	GSKT	GASKET	PLSTC	PLASTIC	TERM	TERMINAL
CER	CAPACITOR	HDL	HANDLE	PN	PART NUMBER	THD	THREAD
CHAS	CERAMIC	HEX	HEXAGON	PNH	PAN HEAD	THK	THICK
CKT	CHASSIS	HEX HD	HEXAGONAL HEAD	PWR	POWER	TNSN	TENSION
COMP	CIRCUIT	HEX SOC	HEXAGONAL SOCKET	RCPT	RECEPTACLE	TPG	TAPPING
CONN	COMPOSITION	HLCPS	HELICAL COMPRESSION	RES	RESISTOR	TRH	TRUSS HEAD
COV	CONNECTOR	HLEXT	HELICAL EXTENSION	RGD	RIGID	V	VOLTAGE
CPLG	COVER	HV	HIGH VOLTAGE	RLF	RELIEF	VAR	VARIABLE
CRT	COUPLING	IC	INTEGRATED CIRCUIT	RTNR	RETAINER	W	WITH
DEG	CATHODE RAY TUBE	ID	INSIDE DIAMETER	SCH	SOCKET HEAD	WSHR	WASHER
DWR	DEGREE	IDNT	IDENTIFICATION	SCOPE	OSCILLOSCOPE	XFMR	TRANSFORMER
	DRAWER	IMPLR	IMPELLER	SCR	SCREW	XSTR	TRANSISTOR

## CROSS INDEX - MFR. CODE NUMBER TO MANUFACTURER

Mfr. Code	Manufacturer	Address	City, State, Zip Code
12327	FREEWAY CORP	9301 ALLEN DR	CLEVELAND OH 44125-4632
70903	COOPER BELDEN ELECTRONICS WIRE AND C SUB OF COOPER INDUSTRIES INC	2000 S BATAVIA AVE	GENEVA IL 60134-3325
72228	AMCA INTERNATIONAL CORP CONTINENTAL SCREW CO DIV	459 MT PLEASANT	NEW BEDFORD MA 02742
74932	INDUSTRIAL SPECIALTIES, INC.		WARREN, MI 48091
77250	ALLIED PRODUCTS CORP PHEOLL MFG CO DIV	5700 W ROOSEVELT RD	CHICAGO IL 60650-1156
78189	ILLINOIS TOOL WORKS INC SHAKEPROOF DIV	ST CHARLES ROAD	ELGIN IL 60120
80009	TEKTRONIX INC	14150 SW KARL BRAUN DR PO BOX 500	BEAVERTON OR 97707-0001
83309	ELECTRICAL SPECIALITY CO SUB OF BELDEN CORP	345 SWIFT AVE	SOUTH SAN FRANCISCO CA 94080-6206
86928	SEASTROM MFG CO INC	701 SONORA AVE	GLENDALE CA 91201-2431
93907	TEXTRON INC CAMCAR DIV	600 18TH AVE	ROCKFORD IL 61108-5181
S3109	FELLER	ASA ADOLF AG STOTZWEID CH8810	HORGEN SWITZERLAND
TK0435	LEWIS SCREW CO	4300 S RACINE AVE	CHICAGO IL 60609-3320
TK1373	PATELEC-CEM (ITALY)	10156 TORINO	VAICENTALLO 62/45S ITALY
TK1569	GERHART TOOL AND DIE	1116 W ISABEL ST	BURBANK CA 91506
TK1943	NEILSEN METALS	3501 PORTLAND NE	SALEM OR 97303

Fig. & Index No.	Tektronix Part No.	Serial/Assembly No. Effective Discont		Qty	12345 Name & Description	Mfr. Code	Mfr. Part No.
1-1	426-2214-01			1	FRAME,PNL,CAB.:FINISHED ATTACHING PARTS	80009	426-2214-01
-2	211-0503-00			3	SCREW,MACHINE:6-32 X 0.188,PNH,STL END ATTACHING PARTS	93907	ORDER BY DESCR
-3	351-0286-08			2	GUIDE,PL-IN UNI:LOWER,NYLON ATTACHING PARTS	80009	351-0286-08
-4	213-0813-00			2	SCREW,TPG,TF:4-20,0.312L,PLASTITE,FLH,STL END ATTACHING PARTS	72228	ORDER BY DESCR
-5	367-0381-00	B010100	B010464	1	HANDLE,BOW:0.125 X 0.75,ALUMINUM	80009	367-0381-00
	367-0381-01	B010465		1	HANDLE,BOW:ALUMINUM,TM502A (REMOVE FOR OPTION 11) ATTACHING PARTS	80009	367-0381-01
-6	134-0196-01	B010100	B010464	2	KNOB ASSEMBLY:	80009	134-0196-01
	134-0196-02	B010465		2	KNOB ASSEMBLY:	80009	134-0196-02
-7	211-0008-00			2	SCREW,MACHINE:4-40 X 0.25,PNH,STL	93907	ORDER BY DESCR
-7.1	210-1307-00			2	WASHER,LOCK:0.115 ID,SPLIT,0.025 THK	86928	A384-25N
-8	210-0993-00			2	WASHER,FLAT:0.143 ID X 0.75 OD X 0.051,BRS END ATTACHING PARTS	86928	ORDER BY DESCR
-9	441-1813-00			1	CHAS,PWR SPLY:ALUMINUM ATTACHING PARTS	80009	441-1813-00
-10	212-0023-00			4	SCREW,MACHINE:8-32 X 0.375,PNH,STL	93907	ORDER BY DESCR
-11	211-0504-00			1	SCREW,MACHINE:6-32 X 0.250,PNH,STL END ATTACHING PARTS	TK0435	ORDER BY DESCR
-12	348-0640-00			4	GROMMET,PLASTIC:BLACK,ROUND,0.188 ID	80009	348-0640-00
-13	214-3026-00			4	SPRING,GROUND:CU BE	TK1569	ORDER BY DESCR
-14	348-0430-00			5	BUMPER,PLASTIC:BLACK POLYURETHANE	74932	SJ5027
-15	407-3641-00			2	BRKT,CLAMP:ALUMINUM ATTACHING PARTS	80009	407-3641-00
-16	211-0102-00			4	SCREW,MACHINE:4-40 X 0.5,FLH,100 DEG,STL END ATTACHING PARTS	93907	ORDER BY DESCR
-17	-----			1	CKT BD ASSY:POWER SUPPLY(SEE A1 REPL) ATTACHING PARTS		
-18	211-0008-00			4	SCREW,MACHINE:4-40 X 0.25,PNH,STL END ATTACHING PARTS	93907	ORDER BY DESCR
-19	-----				CKT BD ASSY INCLUDES:		
-20	214-1593-02			2	.CONN:(SEE A1J3020,J3050 REPL)		
-21	-----			2	.KEY,CONN PLZN:CKT BOARD CONN	80009	214-1593-02
-22	-----			1	.CONN:(SEE A1J1010 REPL)		
-22	-----			1	.CONN:(SEE A1J1040 REPL)		
-23	-----			4	.TRANS:(SEE A1Q2010,2050,3010,3050 REPL)		
-24	342-0831-00			4	INSULATOR,PLATE:TRANSISTOR TO-220	80009	342-0831-00
-25	-----			1	CABLE,ELEC:(SEE W100 REPL) ATTACHING PARTS		
-26	210-0586-00			1	NUT,PL,ASSEM WA:4-40 X 0.25,STL CD PL END ATTACHING PARTS	78189	211-041800-00
-27	-----			1	TRANSFORMER:(SEE T100 REPL) ATTACHING PARTS		
-28	212-0516-00			4	SCREW,MACHINE:10-32 X 2.0,HEX HD,STL	77250	ORDER BY DESCR
-29	210-0805-00			4	WASHER,FLAT:0.204 ID X 0.438 OD X 0.032,STL	12327	ORDER BY DESCR
-30	210-0812-00			4	WASHER,FLAT:0.188 ID X 0.375 OD X 0.31	83309	ORDER BY DESCR
-31	166-0227-00			4	INSUL SLVG,ELEC:0.187 ID X 1.5 L,MYLAR END ATTACHING PARTS	80009	166-0227-00
-32	-----			1	VOLTAGE SELECTOR:(SEE P100 REPL)		
-33	-----			2	CAPACITOR:(SEE C100,C200 REPL)		
-34	-----			1	CABLE:ELEC:(SEE W200 REPL)		
-35	-----			1	SWITCH,POWER:(SEE S100 REPL)		
-36	200-3467-00			1	COVER,PLUG-IN:ALUMINUM	80009	200-3467-00
-37	348-0430-00			4	BUMPER,PLASTIC:BLACK POLYURETHANE	74932	SJ5027
-38	134-0197-00			2	PLUG,HOLE:VINYL,BLACK (OPTION 11 ONLY)	80009	134-0197-00
-39	407-3658-00			1	BRACKET,PLUG-IN,LOCK:STAINLESS STEEL	TK1943	407-3658-00
-40	211-0503-00			1	SCREW,MACHINE:6-32 X 0.188,PNH,STL	93907	ORDER BY DESCR

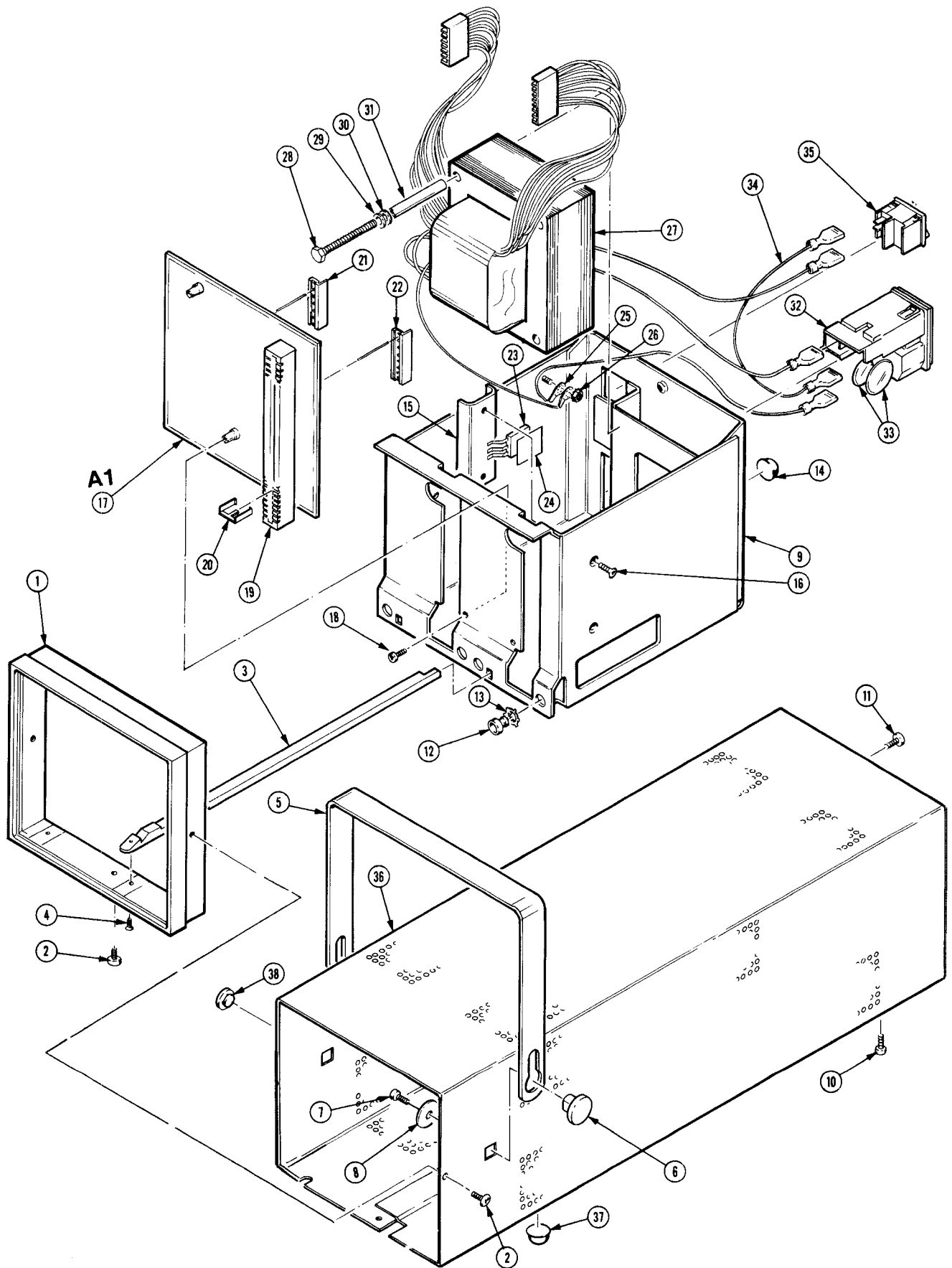
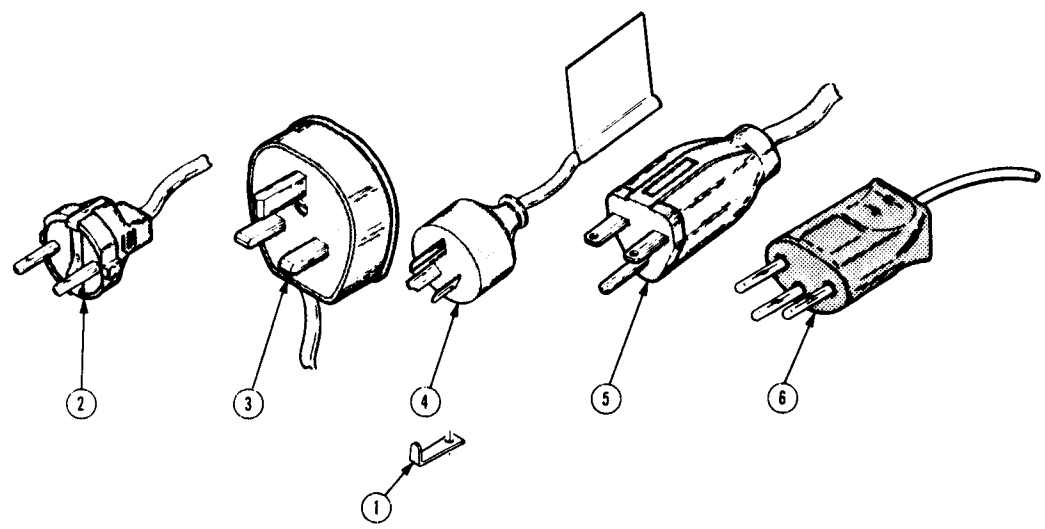


Fig. & Index No.	Tektronix Part No.	Serial/Assembly No. Effective Dscnt	Qty	12345 Name & Description	Mfr. Code	Mfr. Part No.
2-				STANDARD ACCESSORIES		
-1	407-3658-00		1	BRKT, PL-IN LOCK:STAINLESS STL	80009	407-3658-00
-2	161-0066-09		1	CABLE ASSY, PWR, :3,0.75MM SQ,220V,99.0 L (OPTION A1 ONLY)	S3109	86511000
-3	161-0066-10		1	CABLE ASSY, PWR, :3,0.75MM SQ,240V,96.0 L (OPTION A2 ONLY)	TK1373	24230
-4	161-0066-11		1	CABLE ASSY, PWR, :3,0.75MM,240V,96.0 L (OPTION A3 ONLY)	S3109	ORDER BY DESCR
-5	161-0066-12		1	CABLE ASSY, PWR, :3,18 AWG,250V,99.0 L (OPTION A4 ONLY)	70903	CH-77893
-6	161-0154-00		1	CABLE ASSY, PWR, :3,0.75MM SQ,240V,6A,2.5M L (OPTION A5 ONLY)	S3109	86515000
	016-0362-02		1	TOOL BOX: (OPTION 13 ONLY)	80009	016-0362-02
	070-6502-00		1	MANUAL, TECH: INSTR, TMS02A	80009	070-6502-00





## **MANUAL CHANGE INFORMATION**

At Tektronix, we continually strive to keep up with latest electronic developments by adding circuit and component improvements to our instruments as soon as they are developed and tested.

Sometimes, due to printing and shipping requirements, we can't get these changes immediately into printed manuals. Hence, your manual may contain new change information on following pages.

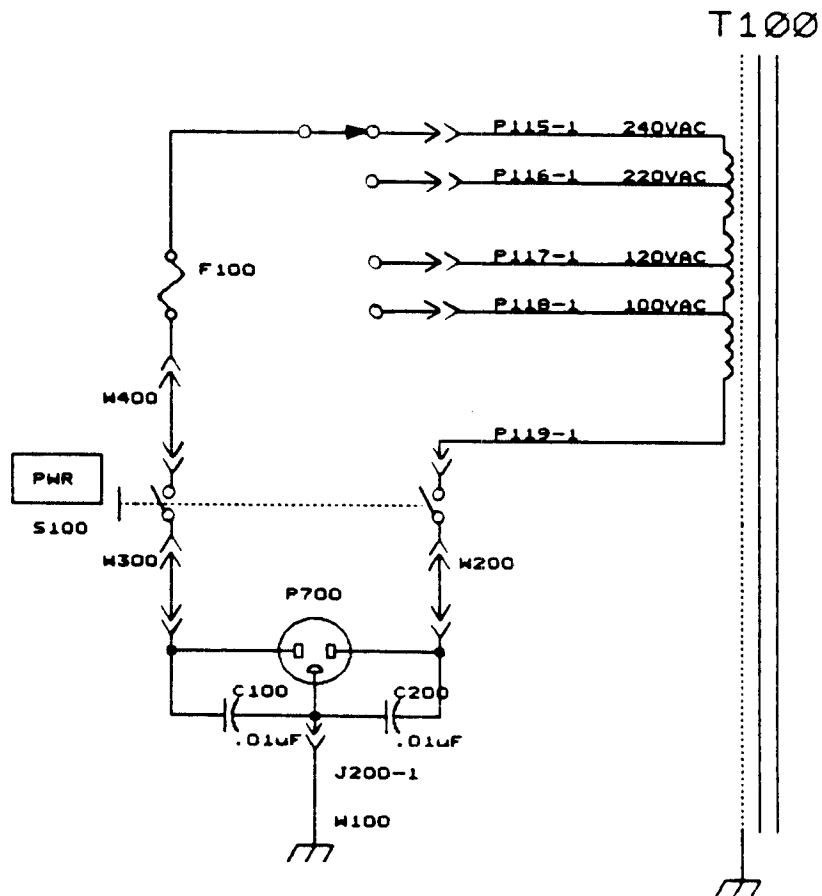
A single change may affect several sections. Since the change information sheets are carried in the manual until all changes are permanently entered, some duplication may occur. If no such change pages appear following this page, your manual is correct as printed.

DESCRIPTION

For all Serial Numbers, please make the following changes:

Diagrams and Circuit Board Illustrations

Please correct the schematic as shown below:



# Scans By *Artek Media*

Dave & Lynn Henderson  
187 Depot Road  
Hollis, NH 03049

Manuals@artekmedia.com

## ***High resolution scans of out-of-print technical manuals***

If you purchased this manual from us (typically through our Ebay name of ArtekMedia) thank you very much. If you received this from a well-meaning "friend" for free we would appreciate your treating this much like you would "share ware". By that we mean a donation of at least \$5-10 per manual is appreciated in recognition of the time, energy and quality of effort that went into preserving this manual. Donations via PayPal go to: Manuals@artekmedia.com or can be mailed to us the address above.

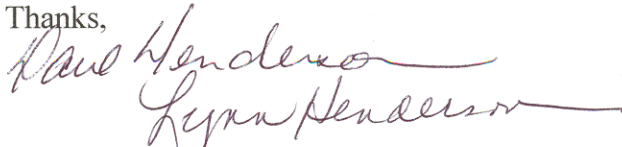
Typically the scans in our manuals are done as follows;

- 1) Typed text pages are typically scanned in black and white at 300 dpi.
- 2) Photo pages are typically scanned in gray scale mode at 600 dpi
- 3) Schematic diagram pages are typically scanned in black and white at 600 dpi unless the original manual had colored high lighting (as is the case for some 70's vintage Tektronix manuals).

Original pages, which exceed the 8.5 x 11 format, are scanned with enough overlap so that they can be printed and pieced. This is done for primarily for two reasons, the time involved in post processing these to their original size is not trivial and most users do not have the ability to print 11 X 17 pages anyway.

If you are looking for a quality scanned technical manual in PDF format please drop us a line at Manuals@artekmedia.com and we will be happy to email you a current list of the manuals we have available. If you don't see the manual you need on the list drop us a line anyway we may still be able to point you to other sources. If you have an existing manual you would like scanned please write for details. Scans of this nature can often be done very reasonably in consideration for adding your manual to our library.

Thanks,



Dave & Lynn Henderson  
Artek Media