Tektronix®

TM 503B

Power Module

INSTRUCTION MANUAL

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TM 503B

Power

Module

Tektronix, Inc.
P.O. Box 500
Beaverton, OR 97077

070-7808-00
Product Group 75

Serial Number _____

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INSTRUMENT SERIAL NUMBERS

Each instrument manufactured by Tektronix has a serial number on a panel insert, tag, or stamped on the chassis. The letter at the beginning of the serial number 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:

B010000 — Tektronix, Inc. Beaverton, Oregon, USA
G100000 — Tektronix Guernsey, Ltd., Channel Islands
E200000 — Tektronix United Kingdom, Ltd., London
J300000 — Sony/Tektronix, Japan
H700000 — Tektronix Holland, NV, Heerenveen, The Netherlands

Instruments manufactured for Tektronix by external vendors outside the United States are assigned a two digit alpha code to identify the country of manufacture (e.g., JP for Japan, HK for Hong Kong, IL for Israel, etc.).

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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

LIST OF TABLES

LIST OF ILLUSTRATIONS

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 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. See Operating Instructions section of the Instruction Manual for power cord configuration. 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 of this manual. 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 Operate Without Covers

To avoid personal injury, do not operate this product without covers or panels installed.

SERVICE SAFETY SUMMARY

FOR QUALIFIED SERVICE PERSONNEL ONLY
Refer also to the preceding Operator 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.

Use Care When Servicing With Power On

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

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

Power Source

This product is intended to operate from a power source that will not apply more than 250 volts rms between the 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

The TM 503B Power Module is a three-compartment-wide mainframe compatible with all TM 500 Series of modular instrumentation. It accepts up to three independently functional plug-in modules to form a compact, versatile and low cost instrumentation system. The TM 503B is a basic power source for plug-in modules of the TM 500 Series family. It provides unregulated dc and ac supplies and nondedicated power transistors for plug-in usage.

Standard Accessories

The TM 503B instrument includes the following standard accessories:

- 1 Instruction manual
- 2 Plug-in retainer clips 407-3658-00
- 1 Power Cord (U.S.) 161-0066-00

Optional Accessories

To order optional accessories, refer to the Tektronix Product catalog or see your local Tektronix field representative.

- Protective Front Cover
- Rain Cover
- Carrying Case
- Plug-in Tool Box, one compartment wide
- Custom Plug-in Kits
- Plug-in Extender Cable

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

Characteristics	Performance Requirements	Supplemental Information
+33.5 V dc		
Tolerance[a]		+23.7 V to +40.0 V
PARD[b] (Periodic and Random Deviation)		≤2.5 V p-p
Maximum Load		350 ma
Maximum Load di/dt		10 mA/μs
–33.5 V dc		
Tolerance[a]		–23.7 V to –40.0 V
PARD[b]		≤2.5 V p-p
Maximum Load		350 ma
Maximum Load di/dt		10 mA/μs
+11.5 V dc		
Tolerance[a]		+7.6 V to 16.0 V
PARD[b]		≤2.5 V p-p
Maximum Load		1.3 A, shared with 17.5 V ac winding
Maximum Load di/dt		20 mA/μs
25 V ac (3 each)		
Range		25.0 V rms +10%, –15% floating
Maximum Load		25 VA
Maximum Floating Voltage		350 V peak from chassis ground
17.5 V ac		
Range		With a grounded center tap 20.5 V rms +10%, –20%
Maximum Load		30 VA shared with 11.5 V dc supply
MAXIMUM PLUG-IN POWER DRAWN FROM MAINFRAME[c]		35 W dc or 75 VA ac
COMBINED POWER DRAWN[c] SHARING LIMITATION		VA ac +2.1 (W dc) ≤75
TOTAL POWER DRAW[c] (ALL COMPARTMENTS COMBINED)		VA ac + (watts dc) ≤112.5

[a]Worst case; low line with full load and high line with no load. These limits include PARD.
[b]Periodic and Random Deviation. See National Electrical Manufacturers Association Standards Publication No. PY1-1972.
[c]At nominal line voltage.

Table 1-2
SERIES PASS TRANSISTORS

Characteristics	Performance Requirements	Supplemental Information
TYPE		One each NPN or PNP per channel
MAXIMUM DISSIPATION		7.5 W each, 15 W total

Table 1-3
SOURCE POWER REQUIREMENTS

Characteristics	Performance Requirements	Supplemental Information
VOLTAGE RANGES		Selectable 100 V, 120 V, 220 V, and 240 V nominal line ±10%
LINE FREQUENCY		48 Hz to 400 Hz
MAXIMUM POWER CONSUMPTION		Approximately 120 W
FUSE DATA		
100 V, 120 V Ranges		1.6 A, 3 AG, slow blow, 250 V
220 V, 240 V Ranges		0.8 A, 3 AG, slow blow, 250 V

Table 1-4
MISCELLANEOUS

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

PHYSICAL CHARACTERISTICS

Table 1-5
ENVIRONMENTAL[b]

Characteristics	Supplemental Information
TEMPERATURE	Meets MIL-T-28800B, class 5.
Operating[a]	0° C to +50° C
Nonoperating	–55° C to +75° C
HUMIDITY[a]	45-95% RH for 5 days cycled to +50° C. Exceeds MIL-T-28800B, class 5.
ALTITUDE	Exceeds MIL-T-28800B, class 5.
Operating[a]	4.6 km (15,000 ft)
Nonoperating	15 km (50,000 ft)
VIBRATION[c]	0.38 mm (0.015") peak-to-peak, 5 Hz to 55 Hz, 75 minutes. Exceeds MIL-T-28800B, class 5.
SHOCK[c]	20 g's (1/2 sine), 11 ms, 18 shocks. Meets MIL-T-28800B, class 5.
BENCH HANDLING[c]	12 drops from 45°, 4", or equilibrium, whichever occurs first. Meets MIL-T-28800B, class 5.
TRANSPORTATION[c]	Qualified under National Safe Transit Association Preshipment Test Procedures 1A-B-1 and 1A-B-2.
EMC	Electro-mechanical compatibility within limits of F.C.C. Regulations, Part 15, Subpart J, Class A.
ELECTRICAL DISCHARGE	20 kV maximum charge applied to instrument case.

[a]Electrical load in accordance with that indicated in Table 1-1.
[b]System environmental specifications subject to individual plug-in specifications.
[c]Without mechanical load (plug-ins).

Table 1-6
MECHANICAL

Characteristics	Supplemental Information
NOMINAL WEIGHT (without plug-ins)	11.0 lbs (4.98 kg)
OVERALL DIMENSIONS	5.5 in (13.9 cm) H, 10.2 in (26.0 cm) W, 16.8 in (42.5 cm) L.

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 503B 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.

A power cord with appropriate plug configuration is supplied with each power module. If you require a power cord other than the one supplied, refer to Table 2-1, Power-Cord and Plug Identification.

Power Usage/Loading Considerations

The TM 503B may require up to 75 watts at the upper limits of high line voltage ranges. Actual power consumption depends on the particular plug-in and operation mode selected.

The power capability of the TM 503B 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. Dissipating as much power as possible in the external loads.

2. Operating the system in an ambient temperature near +25° C.

The 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 in the plug-in.

⚠ Line Voltage Selection/Fuse Replacement

The line voltage selector, fuse and power switch are all 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 Figure 2-1.

1. Make certain that the power module power switch (on line cord plug assemby) is turned off and the line cord is not plugged into the line voltage connector.

2. Remove the line 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 line voltage selector/fuse holder from the assembly.

3. Pull the fuse block and fuse from the line 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 Table 1-3 in Section 1—Specifications for fuse rating). Insert fuse into fuse block.

4. The line voltage selections are printed on the end of the fuse block. Rotate the fuse block and reinstall it so that the proper line voltage selection is visible through the selection window.

5. Reinstall the line voltage selector/fuse holder.

6. Verify that the correct line voltage value is visible through the line voltage selector window.

Operating Temperatures

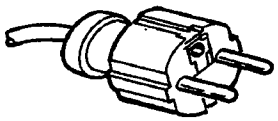
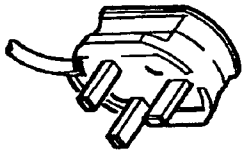
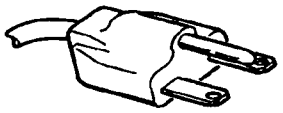
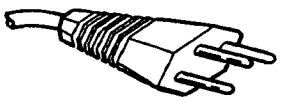
The TM 503B can be operated in an ambient air temperature of 0° C to +50° C.

Since the TM 503B can be stored in temperatures between –55° C and +75° C, allow the instrument's chassis to return to within the operating limits before appling power.

Family Compatibility

Mechanically, the plug-in modules are very similar to other Tektronix product families. However, they are not electrically compatible. Therefore, the TM 503B interface has barriers on the mating connectors between pins 6 and 7 to ensure that incompatible modules cannot be inserted. 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.

Table 2-1
Power-cord and Plug Identification

Plug Configuration	Usage (Nominal Voltage/Max Current)	Reference Standards & Certification	Option and Tektronix Part Numbers
	North American 120 V/6A	ANSI[1] C73.11 NEMA[2] 5-15-P IEC[3] 83 UL[10] CSA[11]	Standard 161-0066-00
	European 220 V/6A	CEE[4] (7), II, IV, VII IEC[3] 83 VDE[8] SEMKO[9]	A1 161-0066-09
	United Kingdom 240 V/6A	BSI[5] 1363 IEC[3] 83	A2 161-0066-10
	Australian 240 V/6A	AS[6] C112 ETSA[12]	A3 161-0066-11
	North American 250 V/10A	ANSI[1] C73.20 NEMA[2] 6-15-P IEC[3] 83 UL[10] CSA[11]	A4 161-0066-12
	Switzerland 220 V/6A,	SEV[7]	A5 161-0154-00

[1] *ANSI–American National Standards Institute*
[2] *NEMA–National Electrical Manufacturer's Association*
[3] *IEC–International Electrotechnical Commission*
[4] *CEE–International Commission on Rules for the Approval of Electrical Equipment*
[5] *BSI–British Standards Institute*
[6] *AS–Standards Association of Australia*
[7] *SEV–Schweizevischer Elektrotechischer Verein*
[8] *VDE–Verband Deutscher Elektrotechniker*
[9] *SEMKO–Swedish Institute for Testing and Approval of Electrical Equipment*
[10] *UL–Underwriters Laboratories*
[11] *CSA–Canadian Standards Association*
[12] *ETSA–Electricity Trust of South Australia*

Customizing the Interface

The modularity of this instrumentation system provides for many different 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 modules. 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 peculier to its family assignment located in its edge connector. The TM 503B user can 'program' one or more compartments to accept only members of that family by installing a second barrier in the interface connector to match the modules slot location. The TM 503B can be 'programmed' in this manner to set up systems for specific work functions. For extra barriers, contact the nearest Tektronix Field Office.

Jumper wires can be used to further specialize the interface. Compartments can be made to 'talk' to each other by connecting jumpers on the back side of the interface board, using pins 14 through 28 (both A-side and B-side) of the interconnecting jacks. See the following description of Option 2. Refer to each plug-in modules Manual for the I/O assignments of each pin at the rear interface. Once interconnections of a specialized nature are made, we recommend that barriers be installed on the interconnecting jacks to ensure module compatibility with the customized wiring.

Option 2

This option adds three BNC connectors and a 50-pin connector to the rear panel to allow external access to the interface for external I/O control. These connectors are not prewired. Instead, prepared jumpers, strip pins, coaxial cables, and interconnection jack barriers are included in a kit. This gives the system designer as much flexibility as possible. Refer to qualified service personnel for Option 2 installation.

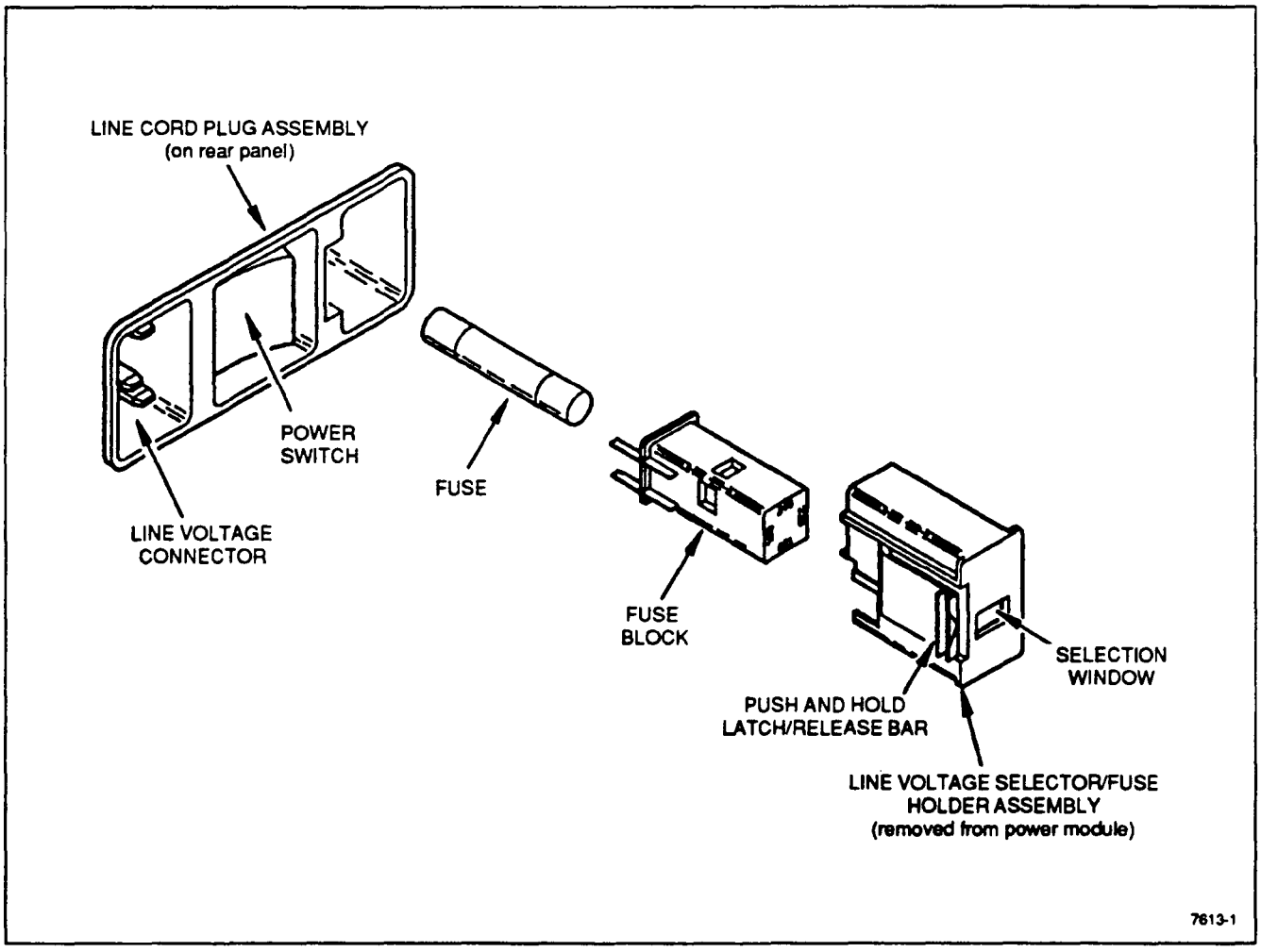


Figure 2-1. Line voltage selection/fuse replacement.

MODULE INSTALLATION

CAUTION

Turn the Power Module off before inserting plug-ins; otherwise damage may occur to the plug-in circuitry.

1. Check the location of the black plastic barrier key on the TM 503B interconnecting jack to ensure that its location matches the slot in the edge of the plug-in module's circuit board. If it does not match, refer to qualified service personnel.

2. Align the plug-in module chassis with the upper and lower guides of the 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 cannot 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 503B 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). Reinstall the screw.

Turn-On Procedure

After completing the power module preparation and plug-in module installation instructions, install the power cord and connect to the proper power outlet. Turn on the power switch 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.

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. REFER TO OPERATORS SAFETY SUMMARY AND SERVICE SAFETY SUMMARY PRIOR TO PERFORMING ANY SERVICE.

MAINTENANCE

Introduction

This section of the manual provides maintenance and service information for the TM 503B Power Module.

WARNING

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

Cabinet Removal

Before removing the cabinet, turn the rear-panel power switch off and disconnect the line voltage cord. Remove any plug-in module.

a. Six screws secure the front casting to the cabinet. Remove them and pull the front casting straight out of the cabinet (the three plastic guide rails remain secured to the front casting).

b. The TM 503B frame is secured to the cabinet by four screws on the bottom and two screws on the rear panel. Remove them and slide the frame out through the front of the cabinet. Do not operate the system with the cabinet removed any longer than necessary for troubleshooting. Reinstall the cabinet to protect the interior from dust and to remove personnel shock hazards.

Cleaning

CAUTION

Avoid using chemical cleaning agents that might damage plastic parts. Avoid chemicals containing benzene, toluene, xylene, 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. Cleaning the interior of a unit should procede calibration since the cleaning processes could alter the settings of calibration adjustments. Use low-velocity compressed air to blow off accumulated dust. Hardened dirt can be removed with a soft brush, cotton-tipped swab, or a cloth dampened in a solution of water and mild detergent.

Preventive Maintenance/Calibration

The TM 503B Power Module does not require preventive maintenance or calibration.

Circuit Board Removal

First remove the frame from the cabinet as directed earlier under Cabinet Removal.

a. Disconnect the three multi-pin connectors from the circuit board.

b. Remove the six screws that secure the six Series Pass Transistors, and their heat sinks, to the frame.

c. Remove the six screws that secure the circuit board, and carefully lift the circuit board out of the frame.

d. To replace the circuit board, first secure the board to the frame using the six screws. Then secure the Series Pass Transistors to the frame with the six screws and three heat sinks. Finish the remaining assembly by reversing the order of removal.

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 to match the others that are mounted on the circuit board.

c. Apply a new adhesive insulator plate to the transistor side having exposed metal.

d. Applying minimum heat, solder the leads of the replacement transistor onto the circuit board, with the insulating plate facing the metal chassis.

e. Reinstall the circuit board in the frame, and secure the transistor heat sinks.

g. Reinstall the frame in the power module cabinet.

Voltage Selector/Fuse Holder Removal

a. Remove the two screws and locknuts that secure the Voltage Selector/ Fuse Holder assembly.

b. Disconnect the yellow/green (earth ground) wire from the assembly.

c. Pull the assembly from the frame with the remaining wires attached, Note the wire color associated with each terminal (see Fig. 3-1), then disconnect the wires from the terminals on the assembly.

d. Reassemble in the reverse order of removal.

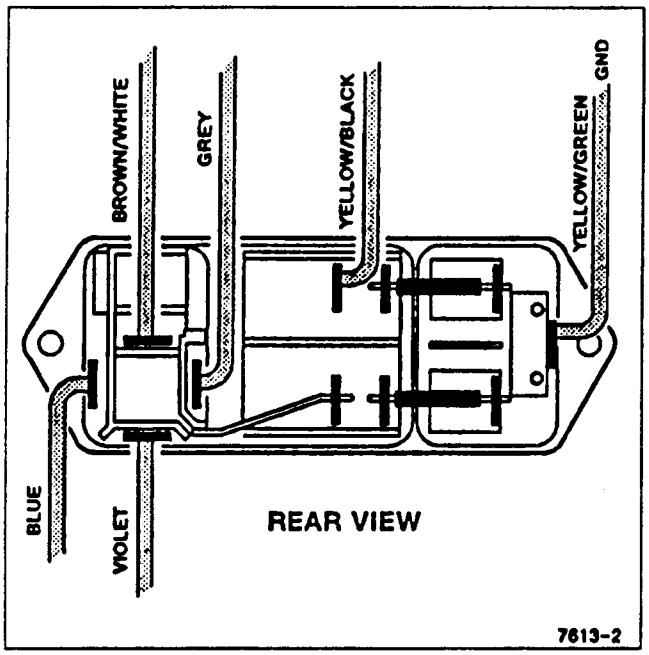


Figure 3-1. Power transformer primary connections.

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 in 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 reuse 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 corrugated cardboard carton with inside dimensions of no less than 6 inches greater than the instrument dimensions. Use a carton with a test strength of at least 200 pounds per square inch. 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.

CUSTOM PLUG-IN KITS

Applications

Tektronix, Inc. provides a variety of blank plug-in kits (see Table 3-1) for users that require a way to design their own plug-in units:

- ☐ Test engineers often require custom interfaces such as specialized signal or timing generators, amplifiers or converters, and signal routers to complete a test system.
- ☐ Design engineers frequently need to prototype a component manufacturer's "suggested circuit" or integrate an evaluation board when selecting a new component.
- ☐ Educators need sturdy demonstration aids and circuit construction tools for senior lab projects that do not tie up power supplies and valuable bench space.
- ☐ Instrument and equipment manufacturers in focused applications require a platform that does not require the development of new electrical and mechanical packages.

This is why the modular instruments line includes custom plug-in kits. The kits provide a mechanical package and development boards that allow rapid construction and wiring of circuits. The plug-ins are compatible with both TM 500 and TM 5000 mainframe power supplies.

Power Where Its Needed

Each 56-conductor slot connector supplies a wide assortment of dc voltages and isolated ac voltages to generate +5 V supplies, dual analog supplies, and other specialized sources. In addition, each mainframe slot has a dedicated pair of series pass NPN and PNP power transistors internal to the mainframe to simplify power supply design. Approximately 15 watts can be dissipated per slot of a TM 5000 mainframe (10 watts for a TM 500 mainframe).

Signals To Go

In addition to delivering power to the plug-ins, each 56-conductor slot edge-connector includes uncommited conductors to transfer signals (with Option 2) to and from other slots, or to and from the rear panel of power module mainframes (up to 6 in a TM 506A or TM 5006A mainframe). The Rear-Interface Data Book, listed in Table 3-1, describes the rear-interface system in greater detail and lists rear interface signals for existing instruments.

A Flexible Extender Cable (see Table 3-1) for the 56-conductor edge connector is available to extend the plug-in kit outside of the mainframe housing. A series of construction notes provides direction for building custom circuits.

Also, hardware is available to add GPIB capability to any of the custom plug-in kits listed below.

Single Compartment With Power Supply Board Kit

This kit includes parts and a pre-etched circuit board layout for (1) a ground-referenced positive and negative supply, capable of 7 to 20 V at up to 400 mA, and (2) a ground-reference supply, nominally 5 V, not adjustable, with up to 1 ampere current capability. The circuit board includes the edge-connector interface and has about 30 square inches of 0.1 inch grid perforated board with plated holes for circuit development.

Single Compartment With Development Board Kit

This kit comes without the power supply components or the pre-etched power supply circuit. The board includes the edge-connector interface and has about 35 square inches of board development area.

Single Compartment Without Board Kit

This kit comes without a board for applications where custom circuit boards are fabricated.

Dual Compartment With Development Boards Kit

This kit has two development boards (30 and 35 square inches of development area) for applications that require additional power, circuit area, or front-panel space.

Table 3-1

Custom Plug-In Kit Ordering Information

Item	Order Part Number
Single Compartment with Power Supply Board[1]	040-0803-XX
Single Compartment with Uncommitted Board[1]	040-0652-XX
Single Compartment Without Board[1]	040-0821-XX
Dual Compartment with Two Boards[1]	040-0754-XX
Rear-Interface Data Book	070-2088-XX
Flexible Extender Cable	067-0645-XX

[1]GPIB hardware listing is available with kit.

Custom Circuit Board Fabrication

The following information is provided for those engineers and technicans who want to fabricate their own circuit boards.

Figure 3-2 illustrates a typical edge-connector main interface and GPIB circuit board (TM 500-series Power Modules **do not** support the GPIB capability). The illustration provides the circuit board dimensions and hole spacing required to fit TM 500-series and TM 5000-series Power Modules.

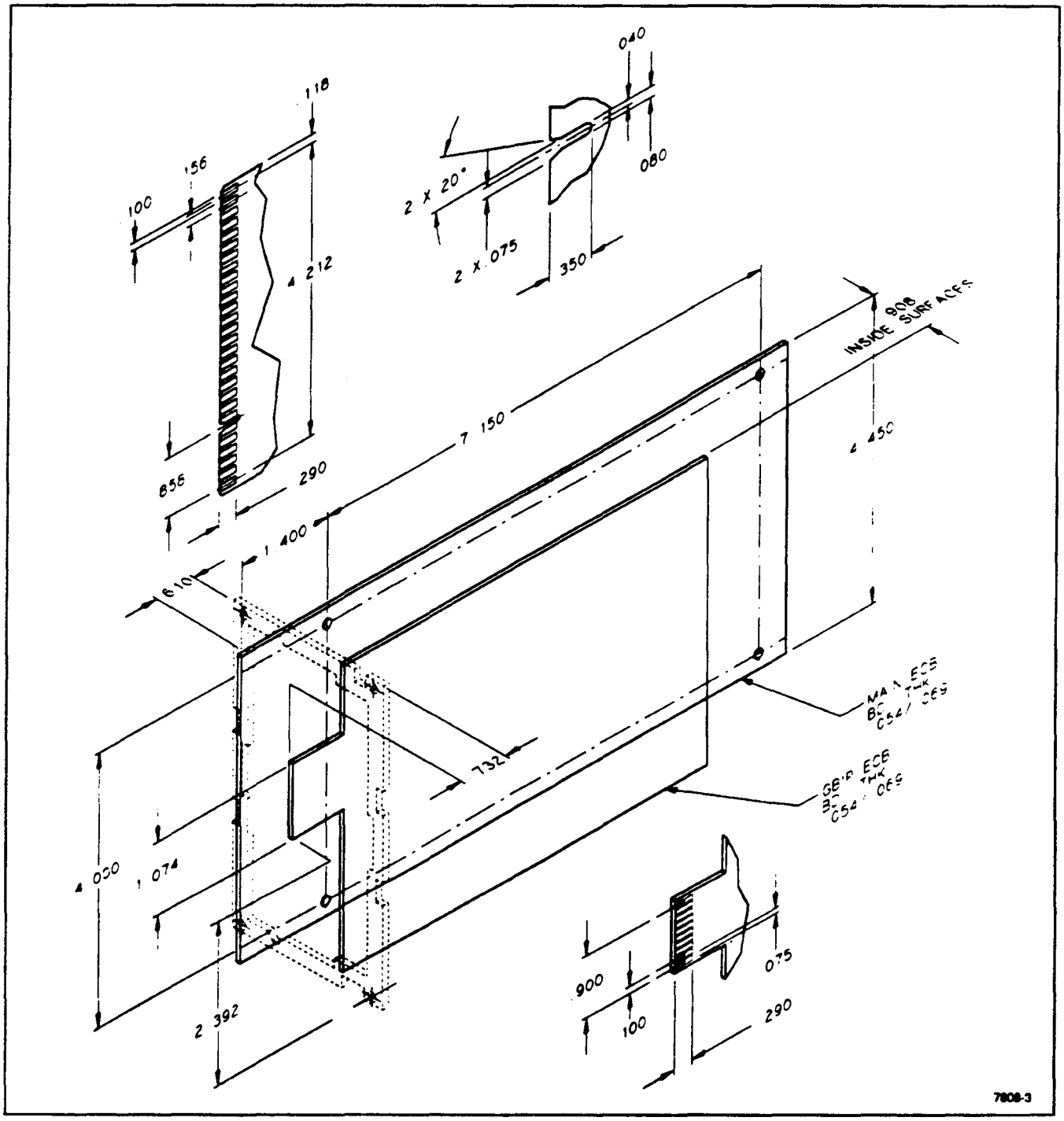


Figure 3-2. Dimensions for plug-in module circuit boards.

OPTIONS

The following options are available for the TM 503B. Also, refer to Table 2-1, Power-cord and Plug Identification, in Section 2 for further information on Options A1 through A5.

Option 02 — allows customizing the interface. Also, see Option 2 in Section 2—Operating Instructions.

Option 13 — adds 016-0362-02 Plug-in Tool Box, one compartment wide.

Option A1 — changes the power to Universal European (220 Volt, 6 Ampere).

Option A2 — changes the power to United Kingdom (240 Volt, 6 Ampere).

Option A3 — changes the power to Australian (240 Volt, 6 Ampere).

Option A4 — changes the power to North American (250 Volt, 10 Ampere).

Option A5 — changes the power to Switzerland (220 Volt, 6 Ampere).

OPTIONAL ACCESSORIES

The following optional accessories are available for the TM 503B:

Protective Front Cover 200-3554-00

Rain Cover 016-0621-00

Carrying Case 016-0565-01

Plug-in Tool Box, one compartment wide 016-0362-02

Custom Plug-in Kits —

Single compartment with power supply board 040-0803-02

Single compartment with uncommitted board 040-0652-05

Single compartment without board 040-0821-03

Double compartment with two boards 040-0754-07

Plug-in Extender Cable 067-0645-02

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.

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.

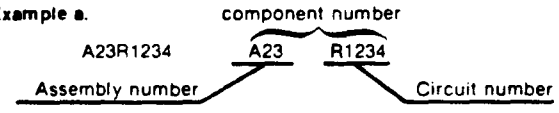
ABBREVIATIONS

Abbreviations conform to American National Standard Y1.1.

COMPONENT NUMBER (column one of the Electrical Parts List)

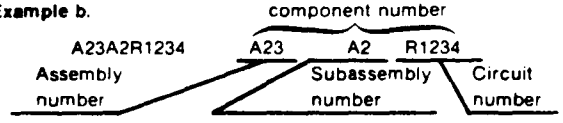
A numbering method has been used to identify assemblies, subassemblies and parts. Examples of this numbering method and typical expansions are illustrated by the following.

Example a.



Read: Resistor 1234 of Assembly 23

Example b.



Read: Resistor 1234 of Subassembly 2 of Assembly 23

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.

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 NUMBER TO MANUFACTURER

Mfr. Code	Manufacturer	Address	City, State, Zip Code
01121	ALLEN-BRADLEY CO	1201 S 2ND ST	MILWAKEE WI 53204-2410
03508	GENERAL ELECTRIC CO SEMI-CONDUCTOR PRODUCTS DEPT	W GENESEE ST	AUBURN NY 13021
04222	AVX CERAMICS DIC OF AVX CORP	19TH AVE SOUTH PO BOX 867	MYRTLE BEACH SC 29577
26742	METHODE ELECTRONICS INC BACPLAIN DIVISION	7444 W WILSON AVE	CHICAGO IL 60656
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
61935	SCHURTER INC	1016 CLEGG COURT	PETALUMA CA 94952
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 P O BOX 500	BEAVERTON OR 97077-0001
TK1544	COMPUTER CONNECTIONS	30608 SAN ANTONIO ST	HAYWARD CA 94544

Component No.	Tektronix Part No.	Serial/Assembly No. Effective	Dscont	Name & Description	Mfr. Code	Mfr. Part No.
A1	671-1584-00			CIRCUIT BD ASSY :POWER SUPPLY	80009	671-1584-00
FL100	119-3436-00			FILTER,ELEC :LINE FILTER W/AC CONN,ON	61935	CD23.4101.151
F100	159-0003-00			FUSE,CARTRIDGE :3AG,1.6A,250V,25 SEC (STANDARD ONLY)	71400	MDX 1 6/10
F100	159-0018-00			FUSE,CARTRIDGE :3AG,0.8A,250V,30 SEC (OPTION A1,A2,A3,A4,A5 ONLY)	71400	MDL 8/10
T100	120-1772-00	B010100	B010654	TRANSFORMER,PWR :48-440HZ	75498	128-7065-EA
T100	120-1772-01	B010655		TRANSFORMER,PWR :48-440HZ	75498	128-7065-EC
W100	196-3196-01			LEAD,ELECTRICAL :18 AWG,2.25 L,5-4	TK1544	ORDER BY DESCR

Component No.	Tektronix Part No.	Serial/Assembly No. Effective	Dscont	Name & Description	Mfr. Code	Mfr. Part No.
A1	671-1584-00			CIRCUIT BD ASSY:POWER SUPPLY,388-9702-XX W1 RED	80009	671-1584-00
A1C1030	281-0774-00			CAP,FXD,CER DI:0.022MFD,20%,100V	04222	MA201E223MAA
A1C2020	281-0774-00			CAP,FXD,CER DI:0.022MFD,20%,100V	04222	MA201E223MAA
A1C2050	281-0774-00			CAP,FXD,CER DI:0.022MFD,20%,100V	04222	MA201E223MAA
A1C3010	281-0774-00			CAP,FXD,CER DI:0.022MFD,20%,100V	04222	MA201E223MAA
A1C3060	281-0774-00			CAP,FXD,CER DI:0.022MFD,20%,100V	04222	MA201E223MAA
A1C4011	281-0774-00			CAP,FXD,CER DI:0.022MFD,20%,100V	04222	MA201E223MAA
A1C4021	281-0774-00			CAP,FXD,CER DI:0.022MFD,20%,100V	04222	MA201E223MAA
A1C4030	290-1186-00			CAP,FXD,ELCTLT:4700UF,20%,50WVDC	56289	81D472M050KD5
A1C4060	290-1186-00			CAP,FXD,ELCTLT:4700UF,20%,50WVDC	56289	81D472M050KD5
A1C5010	290-1187-00			CAP,FXD,ELCTLT:18000UF,20%,16WVDC	56289	81D183M016KD5
A1C5050	281-0774-00			CAP,FXD,CER DI:0.022MFD,20%,100V	04222	MA201E223MAA
A1CR3031	152-0488-00			SEMICOND DVC,DI:BRIDGE,SI,200V,1.5A	80009	152-0488-00
A1CR3070	152-0198-00			SEMICOND DVC,DI:RECT,SI,200V,3A,A249	03508	1N5624
A1CR4010	152-0198-00			SEMICOND DVC,DI:RECT,SI,200V,3A,A249	03508	1N5624
A1CR4012	152-0198-00			SEMICOND DVC,DI:RECT,SI,200V,3A,A249	03508	1N5624
A1CR4020	152-0198-00			SEMICOND DVC,DI:RECT,SI,200V,3A,A249	03508	1N5624
A1CR4070	152-0198-00			SEMICOND DVC,DI:RECT,SI,200V,3A,A249	03508	1N5624
A1J1040	131-2484-00			TERM SET,PIN:8 PIN,INSULATED	27264	09-61-1081
A1J1070	131-1078-00			CONN,RCPT,ELEC:CKT BD,28/56 CONTACT	31781	303-056-520-301
A1J1071	131-1078-00			CONN,RCPT,ELEC:CKT BD,28/56 CONTACT	31781	303-056-520-301
A1J1072	131-1078-00			CONN,RCPT,ELEC:CKT BD,28/56 CONTACT	31781	303-056-520-301
A1J2020	131-2527-00			TERM SET,PIN:HEADER,1 X 7,0.156 CTR	26742	3107-11-207-01
A1J3060	131-2789-00			CONN,RCPT,ELEC:HEADER,1 X 4,0.156 SPACING	27264	09-61-1045
A1Q1080	151-0938-00			TRANSISTOR:PNP,SI,TO-220 FULL PAK	80009	151-0938-00
A1Q2010	151-0938-00			TRANSISTOR:PNP,SI,TO-220 FULL PAK	80009	151-0938-00
A1Q3010	151-0937-00			TRANSISTOR:NPN,SI,TO-220 FULL PAK	80009	151-0937-00
A1Q3080	151-0937-00			TRANSISTOR:NPN,SI,TO-220 FULL PAK	80009	151-0937-00
A1Q5040	151-0937-00			TRANSISTOR:NPN,SI,TO-220 FULL PAK	80009	151-0937-00
A1Q5050	151-0938-00			TRANSISTOR:PNP,SI,TO-220 FULL PAK	80009	151-0938-00
A1R3030	303-0202-00			RES,FXD,CMPSN:2K OHM,5%,1W	01121	GB 2025
A1R3031	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	GB5115
A1R5031	315-0102-00			RES,FXD,FILM:1K OHM,5%,0.25W	57668	NTR25JE01K0

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:

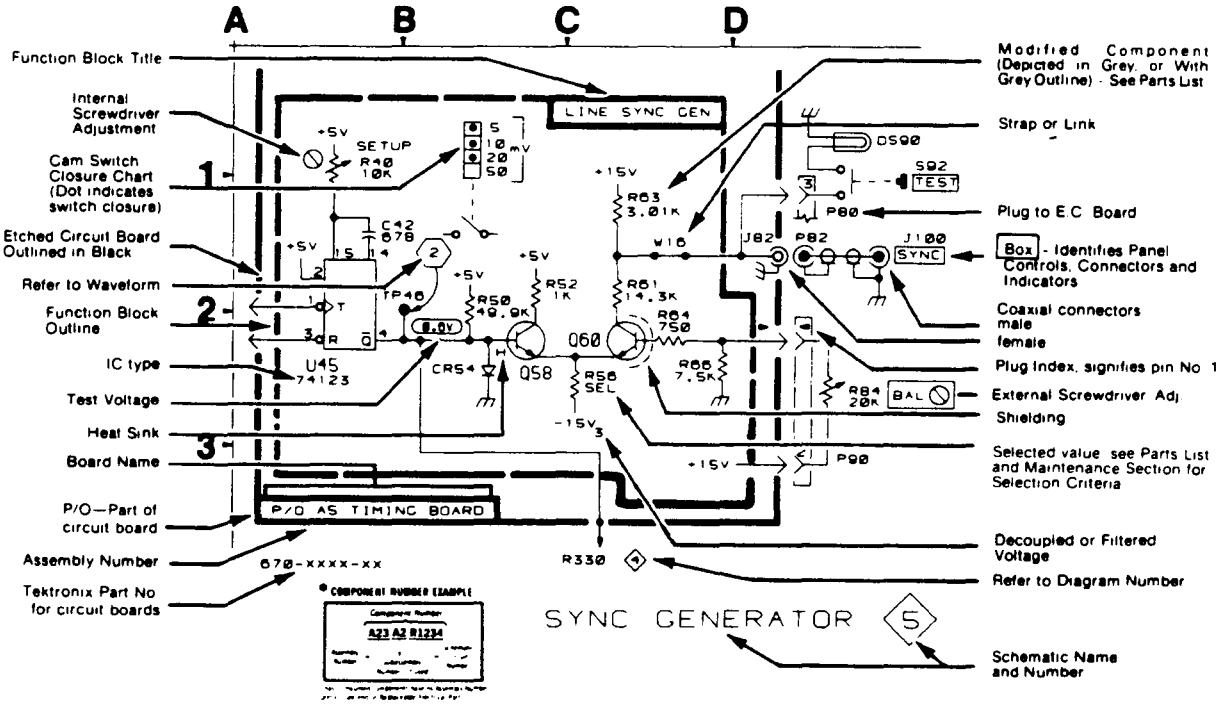
Capacitors = Values one or greater are in picofarads (pF). Values less than one are in microfarads (μF).
Resistors = Ohms (Ω).

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

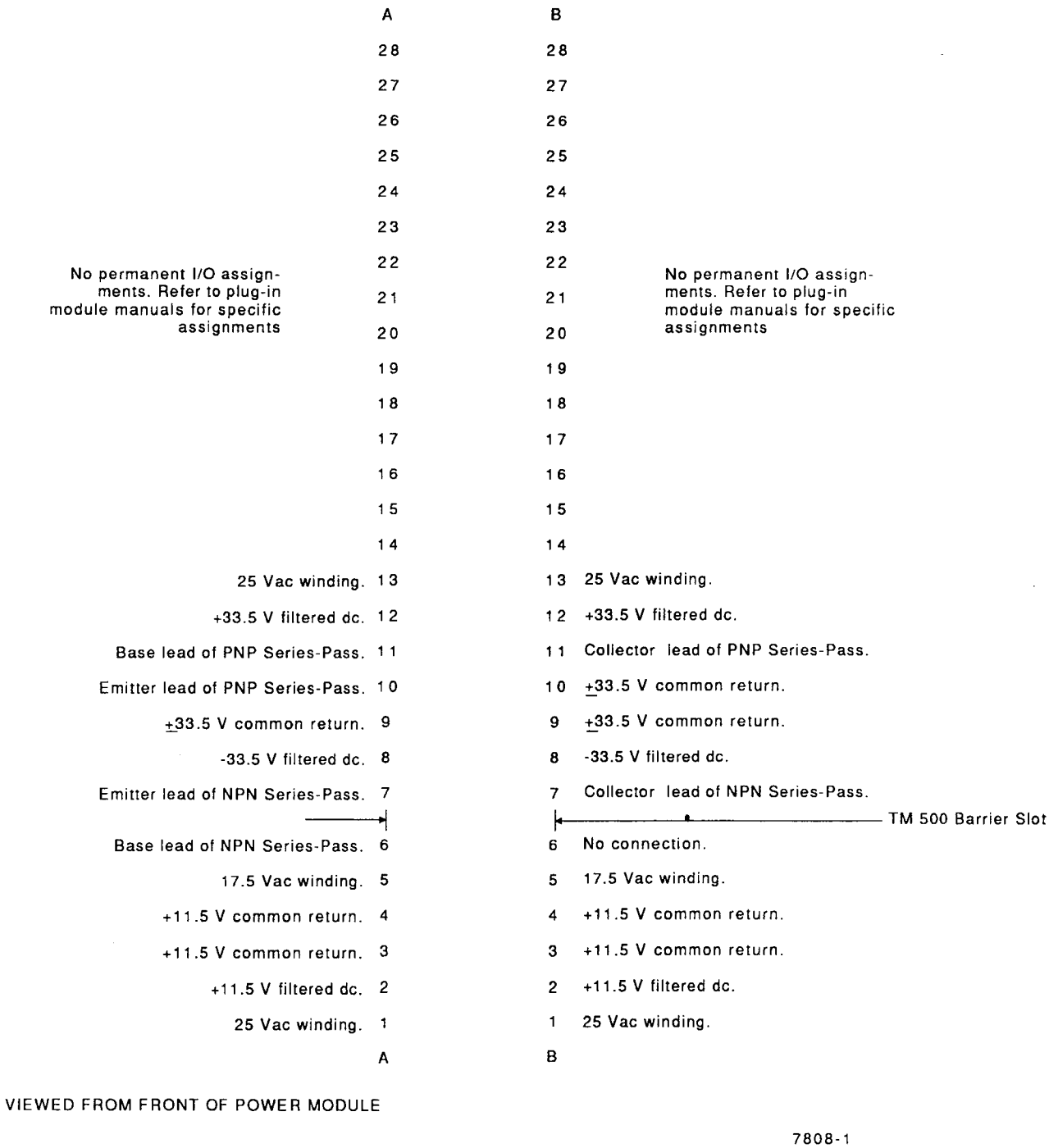
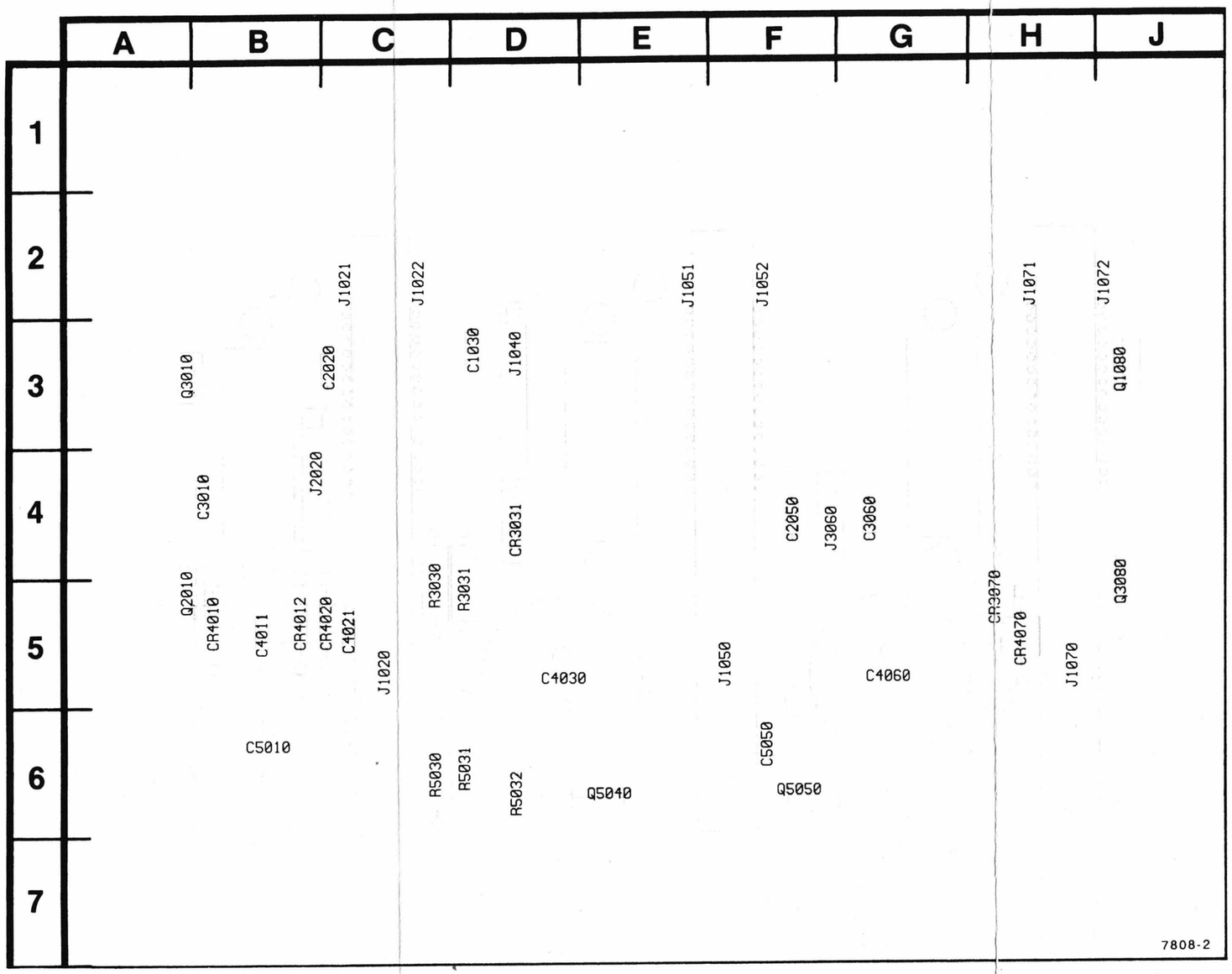


Figure 6-1. Plug-in compartment interface pin assignments.



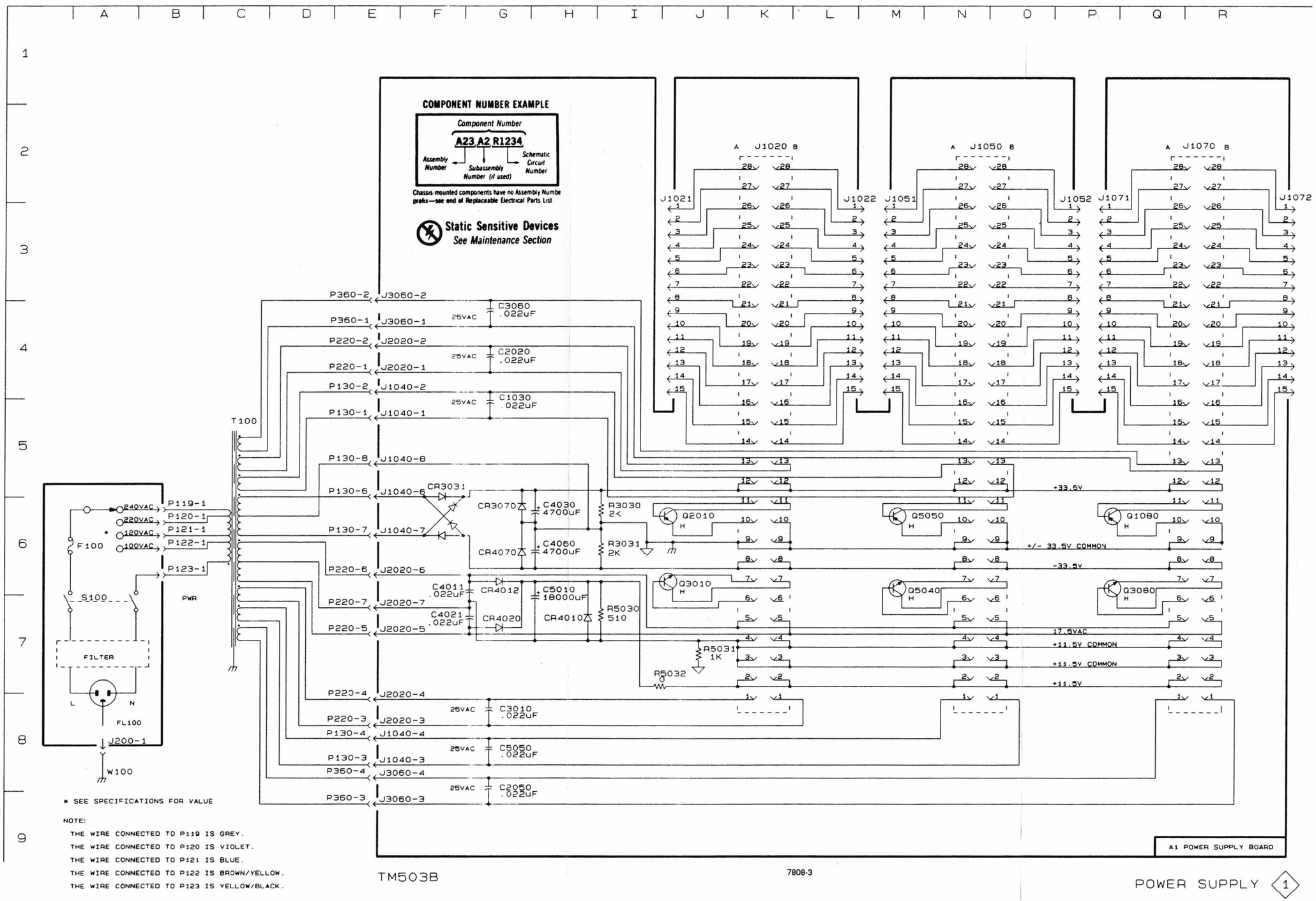
A1

Figure 6-2. Power supply circuit board assembly (A1).

Table 7-1 (A1)

POWER SUPPLY 1 - POWER SUPPLY A1

CIRCUIT NUMBER	SCHEMATIC LOCATION	BOARD LOCATION	CIRCUIT NUMBER	SCHEMATIC LOCATION	BOARD LOCATION
C1030	G5	D3	J2020	E4	B4
C2020	G4	C3	J2020	E6	B4
C2050	G8	F4	J3060	E3	F4
C3010	G8	B4	J3060	E8	F4
C3060	G4	G4			
C4011	G6	B5	P119	B6	OFF BD.
C4021	G7	C5	P120	B6	OFF BD.
C4030	H6	D5	P121	B6	OFF BD.
C4060	H6	G5	P122	B6	OFF BD.
C5010	H6	B6	P123	B6	OFF BD.
C5050	G8	F6	P130	E4	OFF BD.
			P130	E8	OFF BD.
CR3031	F6	D4	P130	E5	OFF BD.
CR3070	G6	H5	P220	E6	OFF BD.
CR4010	H7	B5	P220	E4	OFF BD.
CR4012	G6	B5	P360	E8	OFF BD.
CR4020	G7	C5	P360	E3	OFF BD.
CR4070	G6	H5			
			Q1080	P6	J3
F100	A6	OFF BD.	Q2010	J6	A5
FL100	A8	OFF BD.	Q3010	J6	A3
			Q3080	P6	J4
J1020	K2	C5	Q5040	M6	E6
J1021	J3	C2	Q5050	M6	F6
J1022	L3	C2			
J1040	E8	D3	R3030	I6	C4
J1040	E4	D3	R3031	I6	D4
J1040	E5	D3	R5030	I7	C6
J1050	N2	F5	R5031	J7	D6
J1051	M3	E2	R5032	I7	D6
J1052	P3	F2			
J1070	R2	H5	S100	A7	OFF BD.
J1071	P3	H2	T100	C5	OFF BD.
J1072	R3	H2	W100	A8	OFF BD.
J200	A8	OFF BD.			



* SEE SPECIFICATIONS FOR VALUE

NOTE:

THE WIRE CONNECTED TO P119 IS GREY.
THE WIRE CONNECTED TO P120 IS VIOLET.
THE WIRE CONNECTED TO P121 IS BLUE.
THE WIRE CONNECTED TO P122 IS BROWN/YELLOW.
THE WIRE CONNECTED TO P123 IS YELLOW/BLACK.

TM503B

7808-3

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.

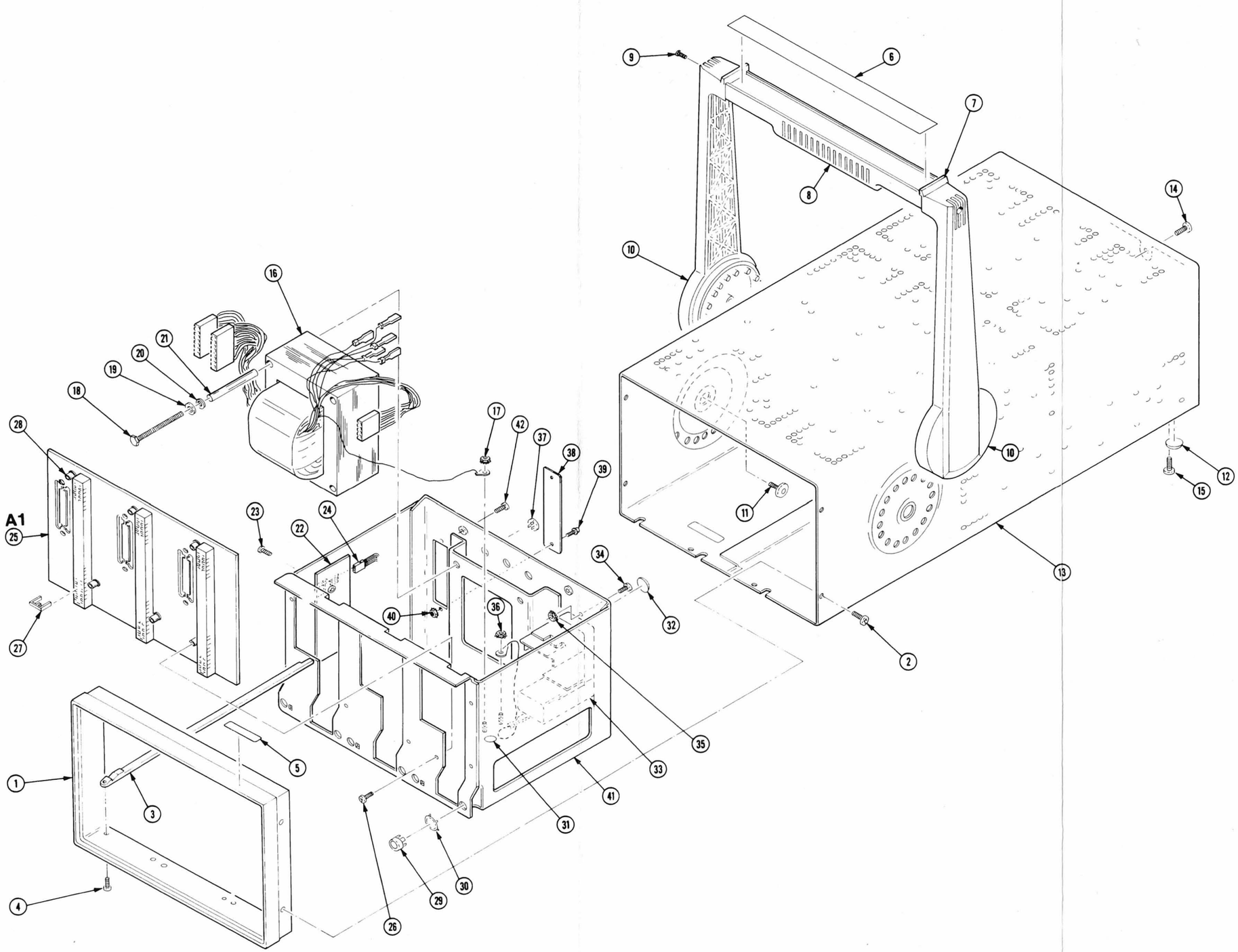
ABBREVIATIONS

Abbreviations conform to American National Standards Institute Y1.1

CROSS INDEX - MFR. CODE NUMBER TO MANUFACTURER

Mfr. Code	Manufacturer	Address	City, State, Zip Code
0JR05	TRIQUEST CORP	3000 LEWIS AND CLARK HWY	VANCOUVER WA 98661
0KB01	STAUFFER SUPPLY	810 SE SHERMAN	PORTLAND OR 97214
07416	NELSON NAME PLATE CO	3191 CASITAS	LOS ANGELES CA 90039
12327	FREEWAY CORP	9301 ALLEN DR	CLEVELAND OH 44125-4632
74932	INDUSTRIAL SPECIALIES INC		WARREN MI 48091
78189	ILLINOIS TOOL WORKS INC SHAKEPROOL DIV	ST CHARLES ROAD	ELGIN IL 60120
80009	TEKTRONIX INC	14150 SW KARL BRAUN DR P O BOX 500	BEAVERTON OR 97077-0001
83309	ELECTRICAL SPECIALITY CO SUB OF BELDEN CORP	345 SWIFT AVE	SOUTH SAN FRANCISCO CA 94080-6206
93907	TEXTRON INC CAMCAR DIV	600 18TH AVE	ROCKFORD IL 61108-5181
TK0435	LEWIS SCREW CO	4300 S RACINE AVE	CHICAGO IL 60609-3320
TK0858	STAUFFER SUPPLY CO (DIST)	810 SE SHERMAN	PORTLAND OR 97214
TK1569	GERHART TOOL AND DIE	1116 W ISABEL ST	BURBANK CA 91506
TK1943	NEILSEN METAL INDUSTRIES INC	3501 PORTLAND ROAD NE	SALEM OR 97303

Fig. & Index No.	Tektronix Part No.	Serial/Assembly No. Effective	Dscont	Qty	12345 Name & Description	Mfr. Code	Mfr. Part No.
1-1	426-2289-00			1	FRAME PNL,CAB.:	80009	426-2289-00
					ATTACHING PARTS		
-2	211-0503-00			6	SCREW,MACHINE:6-32 X 0.188,PNH,STL	93907	ORDER BY DESCR
					END ATTACHING PARTS		
-3	351-0286-08			3	GUIDE,PL-IN UNI :LOWER,NYLON	0JR05	ORDER BY DESCR
-4	213-0813-00			3	SCREW,TPG,TF :4-20,0.312L,PLASTITE,FLH,STL	93907	ORDER BY DESCR
					END ATTACHING PARTS		
-5	334-7566-00			1	MARKER,IDENT:MKD TM503B	80009	334-7566-00
-6	334-7342-00			1	MARKER,IDENT:MARKED TEKTRONIX,HANDLE	80009	334-7342-00
-7	348-1068-00			2	FOOT,HANDLE:NON SKID	80009	348-1068-00
-8	367-0398-00			1	HANDLE,GRIP:LEXAN	TK2352	ORDER BY DESCR
					ATTACHING PARTS		
-9	211-0467-00			2	SCREW,MACHINE:6-32 X 1.0,FILLISTER HEAD	80009	211-0467-00
					END ATTACHING PARTS		
-10	367-0397-00			2	ARM,PIVOT:HANDLE	TK2352	ORDER BY DESCR
					ATTACHING PARTS		
-11	212-0144-00			2	SCREW,TPG,TF:8-16 X 0.562 L,PLASTITE,SPCL H D	93907	225-38131-012
					END ATTACHING PARTS		
-12	348-0430-00			4	BUMPER,PLASTIC:BLACK POLYURETHANE	74932	SJ5027
-13	200-3646-00			1	COVER,PLUG-IN:POWER SUPPLY,ALUMINUM	80009	200-3646-00
					ATTACHINAG PARTS		
-14	211-0504-00			2	SCREW,MACHINE:6-32 X 0.250,PNH,STL	TK0435	ORDER BY DESCR
-15	212-0001-00			4	SCREW,MACHINE :8-32 X 0.25,PNH,STL	TK0435	ORDER BY DESCR
					END ATTACHING PARTS		
-16	----- -----			1	TRANSFORMER,PWR: (SEE T100 REPL)		
					ATTACHING PARTS		
-17	210-0586-00			1	NUT,PL,ASSEM WA:4-40 X 0.25,STL CD PL	78189	211-041800-00
					END ATTACHING PARTS		
-18	212-0516-00			4	SCREW,MACHINE :10-32 X 2.0,HEX HD,STL	93907	ORDER BY DESCR
-19	210-0805-00			4	WASHER,FLAT:0.204 ID X 0.438 OD X 0.032,STL	12327	ORDER BY DESCR
-20	210-0102-00			4	WASHER,FLAT :0.202 ID X 0.343 OD X 0.030 THK	0KB01	ORDER BY DESCR
-21	166-0227-00			4	INSUL SLVG,ELEC:0.187 ID X 1.5 L,MYLAR	80009	166-0227-00
-22	214-4289-01			2	HEAT SINK,XSTR:ALUMINUM	TK1943	ORDER BY DESCR
					ATTACHING PARTS		
-23	211-0102-00			6	SCREW,MACHINE:4-40 X 0.5,FLH,100 DEG,STL	93907	ORDER BY DESCR
-24	175-4306-00			1	CA ASSY,SP,ELEC:3,22 AWG,4.0 L,RIBBON	80009	175-4306-00
-25	----- -----			1	CIRCUIT BD ASSY:PWR SPLY (SEE A1 REPL)		
					ATTACHING PARTS		
-26	211-0008-00			6	SCREW,MACHINE:4-40 X 0.25,PNH,STL	93907	ORDER BY DESCR
					END ATTACHING PARTS		
					CIRCUIT BD ASSY INCLUDES:		
-27	214-1593-02			3	.KEY,CONN PLZN:CKT BOARD CONN	80009	214-1593-02
-28	129-0160-00			6	.SPACER,POST:0.25 L,4-40 THRU,BRS	80009	129-0160-00
-29	348-0640-00			6	GROMMET,PLASTIC:BLACK,ROUND,0.188 ID	80009	348-0640-00
-30	214-3026-00			6	SPRING,GROUND:CU BE	TK1569	ORDER BY DESCR
-31	334-3379-00			1	MARKER,IDENT :MARKED GROUND SYMBOL	07416	ORDER BY DESCR
-32	348-0430-00			4	BUMPER,PLASTIC:BLACK POLYURETHANE	74932	SJ5027
-33	119-3358-00			1	FUSE DRAWER:VOLTAGE SELECTOR	80009	119-3358-00
-34	211-0025-00			2	SCREW,MACHINE:4-40 X 0.375,FLH,100 DEG,STL	TK0435	ORDER BY DESCR
-35	210-0586-00			2	NUT,PL,ASSEM WA:4-40 X 0.25,STL CD PL	78189	211-041800-00
-36	210-0586-00			1	NUT,PL,ASSEM WA:4-40 X 0.25,STL CD PL	78189	211-041800-00
-37	134-0159-00			3	BUTTON,PLUG:0.38 DIA,PLASTIC	80009	134-0159-00
-38	200-2467-01			1	COVER,CONNECTOR:ALUMINUM	80009	200-2467-01
-39	211-0244-00			2	SCR,ASSEM WSHR:4-40 X 0.312,PNH STL	TK0858	211-0244-00
-40	210-0586-00			2	NUT,PL,ASSEM WA:4-40 X 0.25,STL CD PL	78189	211-041800-00
-41	441-1910-01			1	CHAS,PWR SPLY:ALUMINUM,ASSEMBLY	80009	441-1910-01
-42	211-0504-00			2	SCREW,MACHINE:6-32 X 0.250,PNH,STL	TK0435	ORDER BY DESCR



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.

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Manual Change Information

Date: October 8, 1990 **Change Reference:** N/A

Product: TM 503B **Manual Part Number:** 070-7808-00

Description

The following changes and additions should be made to the Replaceable Electrical Parts List of the Instruction Manual.

Replaceable Electrical Parts (partial)

Component Number	Tektronix Part Number	Serial/Assembly No. Effective	Dscont	Name and Description	Mfr. Code	Mfr. Part No.
F100	159-0003-00			FUSE, CARTRIDGE,: 3AG, 1.6A, 250V, 25 SEC (STANDARD ONLY)	71400	MDX 1 6/10
F100	159-0018-00			FUSE, CARTRIDGE,: 3AG, 0.8A, 250V, 30 SEC (OPTION A1, A2, A3, A4, A5 ONLY)	71400	MDL 8/10

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MANUAL CHANGE INFORMATION

Date: OCT 1992 **Change Reference:** M78301

Product: TM503B **Manual Part Number:** 070-7808-00

DESCRIPTION

Product Group 75

For serial numbers B011866 and above, please make the following changes to meet UL requirements:

SECTION 1
SPECIFICATION

Page 1-3, Table 1-3 (Source Power Requirements)

Line Frequency changes to 50/60 Hz.

Maximum Power Consumption changes to 145 Watts Max.

SECTION 5
REPLACEABLE ELECTRICAL PARTS

Page 5-3

Replace the current information with the following:

Component No.	Tektronix Part Number	Serial Number Effect	Serial Number Discont	Part Name & Description	Mfr Code	Mfr Part Number
W100	196-3196-01	B010100	B011865	LEAD,ELECTRICAL:18 AWG,2.0 L,5-4	0J7N9	ORDER BY DESCRIPTION
W100	196-3196-02	B011866		LEAD,ELECTRICAL:18 AWG,2.0 L,5-4	0J7N9	ORDER BY DESCRIPTIOn

SECTION 7
REPLACEABLE MECHANICAL PARTS

Page 7-3

Replace the current information with the following:

Fig. & Index No.	Tektronix Part Number	Serial Number Effect	Serial Number Discont	Qty	12345 Part Name & Description	Mfr Code	Mfr Part Number
1 -17	210-0586-00	B010100	B011865	1	NUT,PL,ASSEM WA:4-40 X 0.25,STL CD PL	0KB01	ORDER BY DESCRIPTION
1 -17	210-0457-00	B011866		1	NUT,PL,ASSEM WA:6-32 X 0.312,STL CD PL	0KB01	ORDER BY DESCRIPTION
1 -36	210-0586-00	B010100	B011865	1	NUT,PL,ASSEM WA:4-40 X 0.25,STL CD PL	0KB01	ORDER BY DESCRIPTION
1 -36	210-0457-00	B011866		1	NUT,PL,ASSEM WA:6-32 X 0.312,STL CD PL	0KB01	ORDER BY DESCRIPTION
1 -41	441-1910-01	B010100	B011865	1	CHAS,PWR,SPLY:ALUMINUM,ASSEMBLY	TK1943	ORDER BY DESCRIPTION
1 -41	441-1910-03	B011866		1	CHAS,PWR,SPLY:ALUMINUM,ASSEMBLY	TK1943	ORDER BY DESCRIPTION