SG503 SWITCH TOLERANCE

Engineering has found a tolerance problem in the band switch on some instruments which allows a contact sequencing error during band changes.

This may cause failure of the oscillator transistor. (Q130).

They are working on a fix for the plant and field and will supply us with more information and parts as soon as they can.

--Written by Mark Walker
TM500 Engineering
April, 1975

SG503 - Q130 REPLACED WITH 151-0211-01

Transistor Q130 was recently replaced by a more reliable transistor. The new P/N is 151-0211-01. If your customer's SG503 fails to operate because of a defective Q130, be sure to replace the defective transistor with the above P/N and correct old manuals to reflect the change of the more reliable part.

--submitted by John Bookout
TM500 Marketing
April, 1975

SG503 - Q600 FAILURE PREVENTION

At power turn-on, there is a high initial current flow through Q600 into the +5.2V series pass transistor. Failure reports received here in Beaverton indicate Q600 is failing prematurely as a result of this high current surge.

The cure is simple. Current limit Q600 by lifting the collector lead out of the circuit board and inserting R601 (a 22Ω resistor, Tek PN 301-0220-00) in series with Q600. Please make this change to any SG503 below B041026 coming into your service center and correct old manuals to reflect this change.

--Paul Egan
February, 1976

SG 503 Q190 LEAD CONFIGURATION

Due to inquiries from the field and lack of documentation of P/N 151-0514-00, I am providing this lead configuration information. Before trimming any of the leads on this device, you should note that the collector lead, Figure 1, has a 45^{o} angular cut. I suggest that you mark the ceramic body of the transistor with a pencil or felt tip pen to indicate the collector. Once the leads are trimmed, your mark will be your guide for the collector.

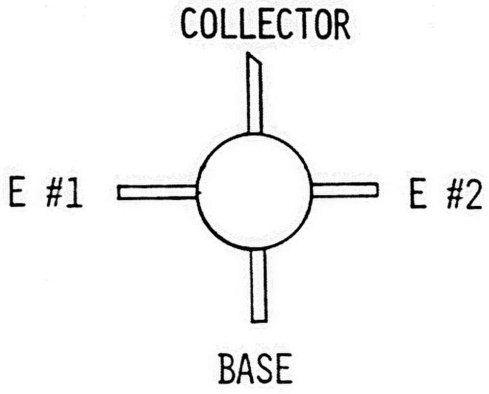


FIG. #1 TOP VIEW

Rich Andrusco
May, 1979
ISSUE 9-08

SG 503 156-0230-00 VENDOR COMPATIBILITY

The TM 500 Line has found the "NEC" brand devices (156-0230-00) are causing problems. These devices will not toggle above 110 MHz when used with +5V and ground as the power supply. NEC has been disqualified on all ECC digital I.C.'s.

Rich Andrusco
Oct. 1979

SG503 MAINTENANCE NOTES

Out of Range At About 1 MHz -

Suspect U390 - Plessey brand biggest problems.

No Output and Flashing Display -

Suspect Oscillator circuits.

Display Does Not Vary With Output -

Suspect Auto Ranging Circuits - Q410, CR410, and Q420

No Display -

Verify that U432C-10 is Lo, a Hi will disable display.

No Display - Except In 50 kHz Position -

1. Check for Reference Clock signal at U460D-11.
2. If signal is okay suspect Auto Clock Enable circuits.

50 kHz Oscillator Has No Output -

Suspect C134 has leakage.

Certain Bands Are Defect -

Suspect Band Selection switch, selected coil, or selected capacitor.

One Band Flashes at Lo or High End of Band -

Adjust core in selected coil, especially 25-50 MHz and 10-25 MHz ranges.

Oscillator O.K. But No Output From Buffer Amplifier -

1. Suspect LR190 is open, if open you'll have -20 Volts on Q190 Collector.
2. If Q190 Collector is okay check for signal on cathode of CR225A. If signal is present suspect the Pk-Pk Detector is open or the Attenuators are bad.

To Determine If Your Oscillator Ckts. Or Leveling Ckts. are bad -

Remove Q300 and connect one end of a 2KΩ potentiometer to Q300's Emitter circuit and the wiper arm of the potentiometer to Q300's Collector circuit. If the oscillator breaks into oscillations where varying the potentiometer, your Leveling ckts. are bad.

(continued)

SG503 MAINTENANCE NOTES (CONTINUED)

Leveling Circuit Defective -

1. Check for +.7 Volts at U280-2 and for @ 6 Volts at U280-6.
2. If +.7 Volts is not present check divider string R255 through R265.

+5 Volt Supply Bad -

1. Lift F620 and see if +5 Volts now reads @ +11.2 Volts
   A. If +11.2 Volts is present your problem is external to supply.
   B. If +11.2 Volts is absent your supply is bad.
2. If Q600 or Q620 is defective change both.

Readout Miscounts At Higher Frequencies -

Suspect U390, U350, or U400 devices or sockets.

Leveling Problems -

Suspect U225 and Q190.

Sinewave Flattens At Higher Frequencies -

Suspect Q190, CR200, CR202, VR200, and VR202.

Leveling Or Loading Problem On One Range Only -

Suspect selected coil on coil circuit board.

No Output On A Number Of Ranges -

Suspect plates of C100 are shorting together.

Sinewave Distorted, has Spikes, or Ringing -

Suspect Q160 is open.

Distorted Waveform At 50 MHz And Above -

Suspect C204, C208, and C212.

Clipped Waveforms (Positive, Negative, or Both) -

Suspect CR200, CR202, VR200, and VR202

(continued)

SG503 MAINTENANCE NOTES (CONTINUED)

Peak to Peak Detector (U255) Checkout -

Using a DM501 on the 200 ohm range you should have 50 ohm in both directions across the signal path pins. When checking across the control pins you should have 50 ohm in one direction and ∞ in the reverse position.

Leveling Problems Across More Than One Range -

Suspect U225

Amplitude Potentiometer Has No Effect -

1. Suspect U225 is cracked, when using ohm meter it may check good.
2. Suspect CR216 and/or CR218 is open.
3. Suspect open cable between P230 and P265.
4. Suspect U280 or Q300 is open.

No Output -

1. Suspect L200 is shorting to shield.
2. Suspect 4.5 Volt supply is shorted to ground which will cause L630 to overheat.

50 kHz - 100 MHz Lo Band Oscillator, All Bands Not Operating Properly -

Suspect LR135 is broken, not the coil by the resistor.

Display Is Blank Except Left Hand Decimal Point -

Suspect Clock Oscillator and associated Dividers plus Enabling Gates.

Display Miscounts When Unit Is Hot -

1. Suspect Pre-scaler I.C.'s, U390 or U400, if over 1 MHz.
2. Suspect 7490 I.C.'s if below 1 MHz.

The Display Has One or More Digits Reading Zero With No Change In Frequency While Remaining Digits May Be Free-Running -

Suspect U430, U432, U435, U436, or U437

No Display -

Suspect Q290, Q296, or R475 is open.

Display Is All Zeros With No Variations -

Suspect L660 is open.

(continued)

SG503 MAINTENANCE NOTES (CONTINUED)

Display Has One Or More Digits Blanked, But Not All, and Remaining Digits Normal -

Suspect U510, U520, and U530.

Binding Range Switch -

Coil circuit board or wafer switch on coil circuit board needs replacement.

Display at @130 - 160 MHz, Goes To All Zeros And Stays There -

Suspect U390 or U400, maybe heat sensitive.

Unit Normal Excpet In Refence Positions Where Display Free Runs -

Suspect defective cable between P280 and P290.

Replacing L110 -

If L110 requires replacement the old tuning slug should be used in the new coil. Otherwise, you may not be able to adjust the new coil to meet distortion and/or leveling in the 25 to 50 MHz Band.

Normal Tuning Slug Positions In Coils -

L116 Slug set to bottom resonance

L114 Slug set to top resonance

L112 Slug set to bottom

L110 Slug set to top

L100 Slug set to top

Submitted by--
Rich Andrusco

Inserted by--
Terry Turner

Oct. 1980 ISSUE 10-20

SG 503 - REPAIRING INTERMITTENT S240

Reference: SG 503 Manual, P/N 070-1622-01, A3 Attenuator - Output Buffer Board

To repair S240 without replacing the entire assembly, this procedure may be used:

Remove the slide guide portion of the intermittent S240 by cutting the anchor posts on the component side of A3 with a diagonal cutter, then push the remaining plastic through the mounting hole.

Making sure that the contact arms are aligned with their corresponding pads (if they're not, the switch will be intermittent), mount the new guide (P/N 351-0355-00) by pushing the anchor posts through the mounting holes. While applying firm, steady pressure, heat the protruding portions of the posts on the back of A3 with a soldering iron until the melted plastic laps over the board enough to hold the guide securely.

Stan Uffner
July, 1981
ISSUE 11-13

SG503 LEVELING BETWEEN 1.3 AND 2.0 MHZ

Because of a number of bad diode leveler hybrids (A3U225 P/N 155-0107-00) some SG503s may be out of specification for leveling between 1.3 and 2.0 MHz. Date codes 024 and 034 have been positively identified as bad and there may be others.

If A3U225 is replaced, do not use parts from the above date codes and be sure to check leveling in this frequency range.

--Terry Turner
92-236, Ext. 1288-WR
ISSUE 12-17
AUG 27

SG503 MAIN CIRCUIT BOARD REPLACEMENT

S/N Range: B010100 - B069999

Mod 44724 rolled the Main board P/N 672-0447-00 to P/N 672-0447-01, which is not a direct replacement for S/N's B010100 - B069999. The discrepancy that is encountered is step 3 of the adjustment procedure (.5v p-p and 5v p-p amplitude set) cannot be performed.

The solution was to bring back the 672-0447-00 for this S/N range (B010100 - B069999).

Martin DeLuke
Clark County Service Support
C1-866, (206) 253-5617
Issue 16-7

WIZARD WORKSHOP ARTICLES

SG503 BAND SWITCH CIRCUIT BOARD
REPLACEMENT MOD KIT NOW AVAILABLE

S/N: B090100

Mod: M58343

Manual: 070-6770-00

When replacing Band Switch circuit boards, Tek P/N's 672-0447-00 and 672-0447-01 use mod kit, Tek P/N 050-2325-00.

This mod kit will consist of Tek P/N's 672-0232-00, Band SW Circuit Board and 671-0339-00, Display Circuit Board.

Martin DeLuke
Clark County Service Support
C1-866, (206) 253-5617
Issue: 18-1

SG503/SG504: Kilo Dial

A few kilo dials (P/N 331-0360-00), used on the SG503 and SG504, have been found to have the numbers in reverse order. The small (center) portion should have numbers from 0 through 9 in counter clockwise order.

Customer Service stock has been purged, as of July 3, 1991, and the vendor has been contacted. If you have any inventory of these dials (331-0360-00), they should be checked to ensure the numbers are in the correct order.

Thanks to Steve Houser, DCFO Service Center, for bringing this to our attention.

Dick Freshour
MSD Service Support, 92-265
Phone: (503) 629-1840
FAX: (503) 629-5613
Issue: 21-7

PRODUCT MODIFICATION SUMMARY EXPLANATION

A product modification summary is a history of the modifications made to an instrument after the initial instrument design. Only modifications which affect replaceable parts are described (for example, one cannot purchase a bare circuit board, only a completely assembled and tested board, therefore changes to bare circuit boards are not described in a mod summary). These changes may have occurred for a number of reasons: components may no longer be manufactured by the vendor, product improvement, product enhancement, to facilitate product manufacture, etc.

A product modification summary consists of two parts: (1) index pages and (2) summary pages. The index pages lists the modifications, in serial number sequence, with a description of each. The summary pages provide additional details, if required. The index pages indicate the location of the appropriate summary pages.

Shown below is an example of the header which appears at the top of each page in a mod summary and the header which appears above each description on the index pages. Following the example, are descriptions of each of the terms in the headers.

PRODUCT MODIFICATION SUMMARY

2465 OSCILLOSCOPE

INDEX PAGE: 1 TITLE: PROCESSOR AND DIGITAL CONTROL

SERIAL NUMBER	CLASS	CHANGE NUMBER	PAGE	KIT PN	KIT PAGE

INDEX PAGE

INDEX PAGE should not be construed as a page number, but rather as a section number within the mod summary. The number which appears after INDEX PAGE (1 in the example above) refers to the number, within the diamond, on the tab of each schematic page in the instrument service manual. Thus, a mod summary will generally have several INDEX PAGEs, with each referring to a single schematic page in the instrument service manual.

For those service manuals without diamonds on the tabs, the INDEX PAGE numbers are arranged according to the order of the schematics in the instrument service manual, with the first INDEX PAGE corresponding to the first schematic in the manual.

Some service manuals arrange the schematics by circuit boards. In these cases, one INDEX PAGE per circuit board is provided, even though the circuit board may have more than one schematic page.

If numerous modifications have been made to the circuit represented by a schematic, an INDEX PAGE may actually consist of several pages. Since each page refers to the same schematic, the INDEX PAGE number for each of the pages will be the same, as

will the title. To differentiate between such pages, a page number is placed at the bottom, right-hand corner of each page. Using 10.2 as an example of one such page number, note that this number has two parts. The first part of the page number is 10. This number refers to the INDEX PAGE to which the page belongs, and hence the schematic number, to which the modifications on the page apply. The second part of the page number, separated from the first by a period, is 2 . This means it is the second page in the sequence, within those pages which share the same INDEX PAGE number. As an example, suppose INDEX PAGE 10 consists of 5 pages, those pages would be numbered as follows: 10.1, 10.2, 10.3, 10.4, and 10.5.

Three additional INDEX PAGEs are included - Miscellaneous, Modification Kits, and Parts Replacement Kits. Detailed information about these pages is provided below.

TITLE

The index page title corresponds to the schematic page tab in the service manual.

SERIAL NO.

The modifications are arranged by instrument serial number with the highest serial number being the most recent modification. If specific serial number information is not appropriate or not available, "NA" is listed under SERIAL NO. Modifications with an NA under SERIAL NO. will be listed in order of the CHANGE NO. Some modifications may not affect all instrument configurations (options). Information listed to the right of the serial number details these exceptions.

CLASS

The classification (CLASS) defines the urgency of field installation. The classifications are as follows:

1 - Required

2 - Recommended

3 - Information Only

A Required modification (1) is one that should be installed in every instrument. It usually involves operator safety or instrument damage. In most cases, a special modification kit is provided.

A Recommended modification (2) is one that has been recommended for installation during routine maintenance in the instrument.

An Information Only modification (3) is one which is neither required nor necessarily recommended. In most cases, these modifications do not need to be installed unless the instrument has problems in the area indicated by the modification.

CHANGE NO.

CHANGE NO. is a number assigned to the modification for internal tracking purposes. Occasionally, for clarity of explanation, a index entry for a product modification will be separated into sections. To indicate this, a suffix number will be assigned to each index entry (for example, M45078-1 and M45078-2) to allow for discrete handling of each section of the modification.

PAGE

PAGE indicates where additional information for the modification can be found. The first digit of the page number indicates SECTION. The next two digits, immediately to the left of the decimal, indicate INDEX PAGE. The two digits to the right of the decimal indicate SUMMARY PAGE (see below).

SECTION - This number is usually "1". A product modification summary may have more than one section, when supplemental service manual(s) are available or more than one instrument is combined in one modification summary, for example, 8000 Series Emulators (in this case a table of contents is provided).

INDEX PAGE - This is the number of the index page and usually is taken from the associated schematic diagram.

SUMMARY PAGE - This number is assigned in numerical order when the change information is inserted. Each index page may have from XXX.01 to XXX.99 summary pages.

The summary pages are arranged according to the SECTION first, INDEX PAGE second and the SUMMARY PAGE last. Page 112.21, for example, indicates SECTION ONE, INDEX PAGE twelve, and SUMMARY PAGE twenty-one.

All Section 1 pages are located at the front of the summary pages. All summary pages for each index page are grouped together. The summary pages are arranged according to the numerical order of the two numbers after the decimal point.

If a summary page is required for a modification that affects more than one index page, the summary page number is assigned from the first index page on which the change appears.

KIT PN

KIT PN is the part number of a Modification Kit or Parts Replacement Kit affected by the change. A kit initially set up by a modification is listed as XXX-XXXX-00. Each subsequent change to the parts contained in the kit is listed with the corresponding suffix change, for example, XXX-XXXX-01, XXX-XXXX-02, etc. Each version is listed with the entry which effected that change. Usually, only the most current version of the kit is included in the modification summary.

KIT PAGE

This is the summary page on which the latest version of the kit can be found.

Description of Modification

A description of the modification appears on the index page under each header. It includes information about the problem being solved and components being changed. If the affected circuit board part number changes, this also is indicated. Additional information, if necessary, is found on the indicated summary page.

MISCELLANEOUS INDEX PAGE

This page includes all changes to the product that cannot be referenced on another INDEX PAGE. This page generally lists (though it is not limited to) mechanical hardware changes.

MODIFICATION KIT PAGE

This page lists the most current version of the modification kits applicable to the product. A modification kit includes parts and instructions used to improve reliability, to provide instrument enhancement, or to facilitate field installation of a catalog option.

USEABLE SN RANGE

Serial number range of the product into which the kit can be installed.

KIT TITLE

The kit title is taken from the modification kit title.

PAGE NO.

This is the summary page on which a copy of the kit can be found.

LABOR TIME

The time required for kit installation.

KIT NUMBER

The part number of the kit. Kits are listed in numerical order.

PARTS REPLACEMENT KIT PAGE

This page lists the latest version of the Parts Replacement Kits. A Parts Replacement Kit is a kit of parts and instructions (a copy of which is included in the summary pages) to replace a part for which a direct replacement is no longer available. Please refer to the MODIFICATION KIT INDEX PAGE above for an explanation of each column.

REVISION DATE EXPLAINED

Every page of the mod summary index has a date at the bottom of the page. If every entry on a page has been entered on the same date then, by definition (established here), no revision has taken place. The date at the bottom of the page is formatted, for example, DEC 1984.

Whenever new entries are added to a page which already has entries, revision markers, "|", will be placed along the right margin, next to the most recent revision. Any previously existing revision markers are removed from the page. When a revision has occurred, the date at the bottom of the page is changed to correspond to the date the revision was entered.

If a page has no entries, the date the mod summary for that product was established is referenced at the bottom of the page, for example, DEC 1984. However there are exceptions. The word processing system originally used to produce the mod summaries has been replaced by a newer system. As a result, the date listed at the bottom of the mod summaries, for products which were in existence prior to the introduction of the new word processing system, actually reflects the date the mod summary was converted from the old system to the new. For products introduced after the new word processing system came on-line, the date at the bottom of the page reflects the date the mod summary for the instrument was established, provided there are no revision markers in the right margin.

PRODUCT MODIFICATION SUMMARY
SG503

INDEX PAGE: 1 TITLE: OSCILLATOR, BUFFER AND OUTPUT

SERIAL NUMBER	CLASS	CHANGE NUMBER	PAGE	KIT PN	KIT PAGE
B030695	3	M23444	101.01		

To improve the flatness of the OUTPUT signal, increase harmonic suppression and prevent a distorted OUTPUT signal, several changes were made.

SERIAL NUMBER	CLASS	CHANGE NUMBER	PAGE	KIT PN	KIT PAGE
B041026	3	M23674-1			

To prevent intermittent (squegging) oscillations in the 0.5 - 1MHz FREQUENCY RANGE, R116, 470Ω 5% 0.25W (315-0471-00), was added between pins 1 and 4 of L120 on the Coil circuit board (A2).

SERIAL NUMBER	CLASS	CHANGE NUMBER	PAGE	KIT PN	KIT PAGE
B041026	3	M23674-2			

To ensure stability, C214 and C215, 1000pF 200V (283-0156-00) were added in parallel to CR214 and CR216, respectively, while C218, 1000pF (283-0156-00), was removed. The Attenuator circuit board part number changed from 670-3073-01 to 670-3073-02.

SERIAL NUMBER	CLASS	CHANGE NUMBER	PAGE	KIT PN	KIT PAGE
B041026	3	M23674-3	101.02		

To increase component reliability, several component changes were made on the Main circuit board which changed part number from 670-2978-01 to 6702978-02.

INDEX PAGE: 1 TITLE: OSCILLATOR, BUFFER AND OUTPUT

SERIAL NUMBER	CLASS	CHANGE NUMBER	PAGE	KIT PN	KIT PAGE
B051230	3	M24022		050-0785-01	101.03

To improve reliability, Q190 was replaced which necessitates the changeing of C610 from 100pF to 0.01μF, the relocation of L184 and the addition of R611 (5.6kΩ). Partially superseded by M38466 in index 3.

SERIAL NUMBER	CLASS	CHANGE NUMBER	PAGE	KIT PN	KIT PAGE
B051800	3	M23194	101.04		

To improve coupling between the reduction gear and the FREQUENCY VARIABLE capacitors (C100A,B,C), the coupling shaft and variable capacitor were replaced. The Main circuit board part number changed from 670-2978-02 to 670-2978-03.

SERIAL NUMBER	CLASS	CHANGE NUMBER	PAGE	KIT PN	KIT PAGE
B063389	3	M30595-1	101.05		

Attenuator - Output Bluffer circuit board was redesigned to improve flatness and to provide mounting for previously added components.

SERIAL NUMBER	CLASS	CHANGE NUMBER	PAGE	KIT PN	KIT PAGE
B063389	3	M30595-2			

To improve decoupling of the -22 volt power supply, C194, a .01μF ±200% 50V capacitor (pn 283-0204-00), was added between R190 - R192 (-22volt end) and ground. The part number of the Attenuator - Output Buffer circuit board changed part number from 670-3073-02 to 670-3073-03.

PRODUCT MODIFICATION SUMMARY
SG503

INDEX PAGE: 1 TITLE: OSCILLATOR, BUFFER AND OUTPUT

SERIAL NUMBER	CLASS	CHANGE NUMBER	PAGE	KIT PN	KIT PAGE
B063389	3	M30595-3			

To improve the flatness of the 100 to 250 MHz range, a test selected resistor (R177) was added between the Main circuit board ground and the Attenuator - Output Buffer circuit board ground.

SERIAL NUMBER	CLASS	CHANGE NUMBER	PAGE	KIT PN	KIT PAGE
B066111	2	M37948	101.06	050-1310-00	101.07

To ensure that it will not be necessary to select U225, the P-P Detector, R265, the low range adj. potentiometer was replaced. The part number of the Main circuit board changed from 670-2978-05 to 670-2978-06.

SERIAL NUMBER	CLASS	CHANGE NUMBER	PAGE	KIT PN	KIT PAGE
B069200	3	M50472			

To facilitate manufacturing, the Dual High Frequency Differential Amplifier circuit board was removed from the Main circuit board assembly and added to the Band Switch circuit board assembly, pn 672-0447-00. The Main circuit board, pn 670-2978-06, was replaced with the Band Switch circuit board assembly, pn 672-0447-00, which consists of the Main, Coil, and Dual High Frequency Differential Amplifier circuit boards.

SERIAL NUMBER	CLASS	CHANGE NUMBER	PAGE	KIT PN	KIT PAGE
B079230	3	M44724-1	101.08		

To improve operation of the latch assembly, facilitate manufacturing of mechanical components, and to update the front panel to new corporate colors, extensive mechanical changes were made. Also, to provide clearance, several resistors were changed on the Band Switch circuit board assembly (Main circuit board); the part number of the Band Switch circuit board assembly was changed from 672-0447-00 to 672-0447-01.

PRODUCT MODIFICATION SUMMARY
SG503

INDEX PAGE: 1 TITLE: OSCILLATOR, BUFFER AND OUTPUT

SERIAL NUMBER	CLASS	CHANGE NUMBER	PAGE	KIT PN	KIT PAGE
B080350	3	M54634			

To ensure the wiper lead of R265 (0.5V P-P Amplitude Set) is long enough for proper mounting, the 100Ω, 0.5W, trimmer variable resistor with in-line leads, pn 311-1175-00, was replaced with a 100Ω, 0.5W, trimmer variable resistor with leads in a triangular configuration, pn 311-1222-00. The new variable resistor can be mounted without modifying the lead configuration. The part number of the Main circuit board did not change.

PRODUCT MODIFICATION SUMMARY
SG503

INDEX PAGE: 2 TITLE: AUTO-RANGING COUNTER

SERIAL NUMBER	CLASS	CHANGE NUMBER	PAGE	KIT PN	KIT PAGE
B060000	3	M30663		050-0858-00	102.01

To prevent temperature sensitive U350 from causing unstable LED readout, U350 was replaced with a microcircuit replacement circuit board (670-5045-00). To accommodate the new circuit board, several changes were made on the Main circuit board which changed part number from 670-2978-03 to 670-2978-04.

SERIAL NUMBER	CLASS	CHANGE NUMBER	PAGE	KIT PN	KIT PAGE
B069200	3	M50472			

To facilitate manufacturing, the Dual High Frequency Differential Amplifier circuit board was removed from the Main circuit board assembly and added to the Band Switch circuit board assembly, pn 672-0447-00. The Main circuit board, pn 670-2978-06, was replaced with the Band Switch circuit board assembly, pn 672-0447-00, which consists of the Main, Coil, and Dual High Frequency Differential Amplifier circuit boards.

SERIAL NUMBER	CLASS	CHANGE NUMBER	PAGE	KIT PN	KIT PAGE
B079230	3	M44724-1	101.08		

To improve operation of the latch assembly, facilitate manufacturing of mechanical components, and to update the front panel to new corporate colors, extensive mechanical changes were made. Also, to provide clearance, several resistors were changed on the Band Switch circuit board assembly (Main circuit board); the part number of the Band Switch circuit board assembly was changed from 672-0447-00 to 672-0447-01.

PRODUCT MODIFICATION SUMMARY
SG503

INDEX PAGE: 3 TITLE: POWER SUPPLY & DISPLAY

SERIAL NUMBER	CLASS	CHANGE NUMBER	PAGE	KIT PN	KIT PAGE
B030695	3	M23444	101.01		

To reduce the noise of 50-100 MHz range, C635 was added to the +5V Power Supply and other changes were made to eliminate ground loops.

SERIAL NUMBER	CLASS	CHANGE NUMBER	PAGE	KIT PN	KIT PAGE
B041026	3	M23674-3	101.02		

To increase component reliability, several component changes were made on the Main circuit board which changed part number from 670-2978-01 to 670-2978-02.

SERIAL NUMBER	CLASS	CHANGE NUMBER	PAGE	KIT PN	KIT PAGE
B051230	3	M24022		050-0785-01	101.03

To improve reliability, Q190 was replaced which necessitates the changing of C610 from 100pF to 0.01μF, the relocation of L184 and the addition of R611 (5.6kΩ).

SERIAL NUMBER	CLASS	CHANGE NUMBER	PAGE	KIT PN	KIT PAGE
B052550	3	M24962		050-0938-00	103.01

To ensure component availability, the seven segment LED used as DS510, DS520 and DS530 were changed from 150-1011-00 to new indicator lamps (150-1011-01).

PRODUCT MODIFICATION SUMMARY
SG503

INDEX PAGE: 3 TITLE: POWER SUPPLY & DISPLAY

SERIAL NUMBER	CLASS	CHANGE NUMBER	PAGE	KIT PN	KIT PAGE
B052650	3	M30263			

To increase component availability, DS500 (150-1004-00) was replaced with a new LED lamp (150-1040-00).

SERIAL NUMBER	CLASS	CHANGE NUMBER	PAGE	KIT PN	KIT PAGE
B063300	3	M30973		050-0882-00	103.02

To prevent cracking of holders when LED is inserted, the holder for DS500 was changed from a 378-0746-00 to a 378-0746-01.

SERIAL NUMBER	CLASS	CHANGE NUMBER	PAGE	KIT PN	KIT PAGE
B064290	3	M32558-3			

To prevent destruction of U695 if the -22 volt regulator is shorted to ground, CR697, a 152-0333-00 diode, was added between pins 5 and 7 of U695. The cathode connects to pin 5. The part number of the Main circuit board changed from 670-2978-04 to 670-2978-05.

SERIAL NUMBER	CLASS	CHANGE NUMBER	PAGE	KIT PN	KIT PAGE
B06611	2	M38466	103.03	050-0785-01	101.03

To eliminate an unstable display, several component changes were made.

INDEX PAGE: 3 TITLE: POWER SUPPLY & DISPLAY

SERIAL NUMBER	CLASS	CHANGE NUMBER	PAGE	KIT PN	KIT PAGE
B069200	3	M50472			

To facilitate manufacturing, the Dual High Frequency Differential Amplifier circuit board was removed from the Main circuit board assembly and added to the Band Switch circuit board assembly, pn 672-0447-00. The Main circuit board, pn 670-2978-06, was replaced with the Band Switch circuit board assembly, pn 672-0447-00, which consists of the Main, Coil, and Dual High Frequency Differential Amplifier circuit boards.

SERIAL NUMBER	CLASS	CHANGE NUMBER	PAGE	KIT PN	KIT PAGE
B079230	3	M44724-1	101.08		

To improve operation of the latch assembly, facilitate manufacturing of mechanical components, and to update the front panel to new corporate colors, extensive mechanical changes were made. Also, to provide clearance, several resistors were changed on the Band Switch circuit board assembly (Main circuit board); the part number of the Band Switch circuit board assembly was changed from 672-0447-00 to 672-0447-01.

SERIAL NUMBER	CLASS	CHANGE NUMBER	PAGE	KIT PN	KIT PAGE
B079230	3	M44724-2			

To allow use of new readout lamps, the layout of the Display circuit board was changed. The red, light emitting diode lamps, pn 150-1011-01, used for DS510, DS520 and DS530, and pn 150-1040-00, used for DS500, were replaced with four new red LED readout lamps, pn 150-1011-02. Also, the LED lens holder, pn 378-0746-01, was removed. The part number of the Display circuit board was changed from 670-2954-00 to 670-2954-02.

PRODUCT MODIFICATION SUMMARY
SG503

INDEX PAGE: 4 TITLE: SWITCH DETAILS

SERIAL NUMBER	CLASS	CHANGE NUMBER	PAGE	KIT PN	KIT PAGE
B041026	3	M23674-1			

To prevent intermittent (squegging) oscillations in the .5-1MHz FREQUENCY RANGE, R116, 470Ω 5% 0.25W (pn 315-0471-00), was added between pins 1 and 4 of L120 on the Coil circuit board (A2).

SERIAL NUMBER	CLASS	CHANGE NUMBER	PAGE	KIT PN	KIT PAGE
B063300	3	M25065			

To prevent 'squegging' on 1-2.5MHz range, R118, 470Ω 5% 0.25W (pn 315-0471-00), was added on the back of the Coil circuit board between pins 1 and 4 of L118.

SERIAL NUMBER	CLASS	CHANGE NUMBER	PAGE	KIT PN	KIT PAGE
B064290	3	M32558-1			

To ensure that the 1-2.5MHz band range is centered, C118 was made a test selected part with a nominal value of 33pF (pn 283-0615-00).

SERIAL NUMBER	CLASS	CHANGE NUMBER	PAGE	KIT PN	KIT PAGE
B064290	3	M32558-2			

To eliminate excessive loading of the oscillator in the .5-1 and 1-2.5MHz ranges, R116 and R118 were made test selected parts with a nominal value of 470Ω (pn 315-0471-00).

PRODUCT MODIFICATION SUMMARY
SG503

INDEX PAGE: 5 TITLE: MISCELLANEOUS

SERIAL NUMBER	CLASS	CHANGE NUMBER	PAGE	KIT PN	KIT PAGE
B051400	3	M23393			

To facilitate manufacture, the pin connector sockets (pn 136-0327-01) on the Attenuator circuit board were replaced with new sockets (pn 136-0263-04) which require larger circuit board holes.

SERIAL NUMBER	CLASS	CHANGE NUMBER	PAGE	KIT PN	KIT PAGE
B051800	3	M23194	101.04		

To improve coupling between the reduction gear and the FREQUENCY VARIABLE capacitors (C100A,B,C), the coupling shaft and variable capacitor were replaced. The Main circuit board part number changed from 670-3978-02 to 670-2978-03.

SERIAL NUMBER	CLASS	CHANGE NUMBER	PAGE	KIT PN	KIT PAGE
B062810	3	M30337			

To facilitate manufacturing, the four (4) brass screws (pn 211-1082-00) used to mount the Actuator Cam Switch bearing blocks were replaced with four (4) steel screws (pn 211-0244-00).

SERIAL NUMBER	CLASS	CHANGE NUMBER	PAGE	KIT PN	KIT PAGE
B063070	3	M24251	105.01	050-1077-00	105.02

To ensure the plug-in latch functions easily and adequately, the latch assembly was replaced with a new latch assembly.

INDEX PAGE: 5 TITLE: MISCELLANEOUS

SERIAL NUMBER	CLASS	CHANGE NUMBER	PAGE	KIT PN	KIT PAGE
B063090	3	M30470	105.03		

To improve the support of plug-ins at the interface connector, two support pins and two washers were added to the bottom frame rail.

SERIAL NUMBER	CLASS	CHANGE NUMBER	PAGE	KIT PN	KIT PAGE
B064590	3	M33052			

To prevent the latch knob from disengaging from the plug-in latch retaining bar when the plug-in is removed from the Power Module, the latch release bar was redesigned and the part number changed from 105-0718-00 to 105-0718-01.

SERIAL NUMBER	CLASS	CHANGE NUMBER	PAGE	KIT PN	KIT PAGE
B064870	3	M32382			

To prevent cracking of subpanels when mounting to front of frame sections, 4 mounting screws, pn 213-0227-00 (6-32 X .500) were replaced with 4 screws, pn 213-0123-00 (6-32 X .375).

SERIAL NUMBER	CLASS	CHANGE NUMBER	PAGE	KIT PN	KIT PAGE
B065060	3	M33534			

To prevent cables with Peltola connectors from falling out of BNC to cable end connectors, pn 131-1315-00, the connector was modified and the part number changed to 131-1315-01.

INDEX PAGE: 5 TITLE: MISCELLANEOUS

SERIAL NUMBER	CLASS	CHANGE NUMBER	PAGE	KIT PN	KIT PAGE
B065151	3	M31896			

Plug-in support was modified to facilitate assembly and to prevent damage during installation. The part number changed from 386-3657-00 to 386-3657-01.

SERIAL NUMBER	CLASS	CHANGE NUMBER	PAGE	KIT PN	KIT PAGE
B067250	3	M38698			

To facilitate manufacturing, the 4-40 X 0.312 inch double sems screw-washer assembly, pn 211-0116-00, was replaced with a 4-40 X 0.290 inch square cone, flat rim screw-washer assembly, pn 211-0292-00.

SERIAL NUMBER	CLASS	CHANGE NUMBER	PAGE	KIT PN	KIT PAGE
B068600	3	M46838			

To improve reliability, microcircuit sockets were removed from the Main circuit board, A1, except for U280 and U610 which changed from pn 136-0514-00 to pn 136-0727-00 and for U695 which changed from pn 136-0269-02 to pn 136-0728-00.

SERIAL NUMBER	CLASS	CHANGE NUMBER	PAGE	KIT PN	KIT PAGE
B069200	3	M50472			

To facilitate manufacturing, the Dual High Frequency Differential Amplifier circuit board was removed from the Main circuit board assembly and added to the Band Switch circuit board assembly, pn 672-0447-00. The Main circuit board, pn 670-2978-06, was replaced with the Band Switch circuit board assembly, pn 672-0447-00, which consists of the Main, Coil, and Dual High Frequency Differential Amplifier circuit boards.

INDEX PAGE: 5 TITLE: MISCELLANEOUS

SERIAL NUMBER	CLASS	CHANGE NUMBER	PAGE	KIT PN	KIT PAGE
NA	3	M51322			

To facilitate manufacturing and test, the cam switch assembly was removed from the Band Switch circuit board assembly, pn 672-0447-00, and was added to the Coil circuit board, pn 670-2983-02. Four, 4-40 X 0.312 inch long, pan head screws with washer assemblies, pn 211-0244-00, were replaced with 4-40 X 0.29 inch long, pan head screws with washer assemblies, pn 211-0292-00.

SERIAL NUMBER	CLASS	CHANGE NUMBER	PAGE	KIT PN	KIT PAGE
B079230	3	M44724-1	101.08		

To improve operation of the latch assembly, facilitate manufacturing of mechanical components, and to update the front panel to new corporate colors, extensive mechanical changes were made. Also, to provide clearance, several resistors were changed on the Band Switch circuit board assembly (Main circuit board): the part number of the Band Switch circuit board assembly was changed from 672-0447-00 to 672-0447-01.

PRODUCT MODIFICATION SUMMARY
SG503

MODIFICATION KITS

USABLE SN RANGE	KIT TITLE	PAGE NO.	LABOR TIME	KIT PN
ALL	REMOTE AMPLITUDE CONTROL CONTROL AND BCD OUTPUT	106.01	**	040-0717-00

** Part A - 0.25h, Part B - 0.25h and Part C - 0.2h

PRODUCT MODIFICATION SUMMARY
SG503

PARTS REPLACEMENT KITS

USABLE SN RANGE	KIT TITLE	PAGE NO.	LABOR TIME	KIT PN
B010100-B051229	Q190 REPLACEMENT	101.03	1.0h	050-0785-01
B010100-B059999	U350 REPLACEMENT	102.01	1.5h	050-0858-00
B010100-B063299	DS500 REPLACEMENT	103.02	0.6h	050-0882-00
B010100-B052549	3 LED REPLACEMENT	103.01	0.5h	050-0938-00
B010100-B063069	PLUG-IN LATCH ASSEMBLY REPLACEMENT	105.02		050-1077-00
B010100-B066110	U225 REPLACEMENT	101.07	0.75h	050-1310-00
B051230-B066110	U610 REPLACEMENT	103.04	0.3h	050-1359-00

product modification

37948

SG503

R265 REPLACED

Effective Prod SN B066111

To allow for variations in characteristics ofd the P-P Detector, U225, R265, the .5V P-P Amplitude Set potentiometer was increased from 50Ω to 100Ω and R262, a 150Ω resistor connected between R265 and R260, the OUTPUT AMPLITUDE potentiometer, was reduced to 100Ω.

PARTS REMOVED:

A1	1 ea	670-2978-05	Circuit board, Main

PARTS ADDED:

A1	1 ea	670-2978-06	Circuit board, Main

The new Main circuit board, pn 670-2978-06, is the same as the old except:

PARTS REMOVED:

R262	1 ea	321-0114-00	Resistor, film, 150Ω 1% 0.125W
R265	1 ea	311-1221-00	Resistor, var, nonwir, TRMR, 50Ω 0.5W

PARTS ADDED:

R262	1 ea	321-0636-00	Resistor, film, 100Ω 0.5%, 0.125W
R265	1 ea	311-1175-00	Resistor, var, nonwir, TRMR, 100Ω 0.5W

Parts Replacement Kit, pn 050-1310-00, is available to facilitate the replacement of U225 in pre-modified instruments.

product modification

050-1310-00

M37948

U225 REPLACEMENT

For TEKTRONIX® SG503 Leveled Sine-Wave Generator

Serial Numbers B010100 - B066110

Microcircuit, pn 155-0107-00, and R265-R262, a 100Ω potentiometer and a 100Ω resistor connected in series, are required to replace U225. R265, the .5V P-P Amplitude Set potentiometer, is changed to 100Ω to accommodate for variations in characteristics of U225.

NOTE

If the serial number of your SG503 Sine-Wave Generator is greater than those listed above, or if this Parts Replacement Kit has been installed, disgregard the instructions and use microcircuit, pn 155-0107-00, as a direct replacement for U225.

PARTS INCLUDED IN PARTS REPLACEMENT KIT:

Ckt. No.	Quantity	Part Number	Description
U225	1 ea	155-0107-00	Microcircuit, Li, Diode Leveler
R265	1 ea	311-1175-00	Resistor, var, nonww, 100Ω, 0.5W
R262	1 ea	321-0636-00	Resistor, film, 100Ω, o.5%, 0.125W
	1 ea	----- -----	Label, 050-kit

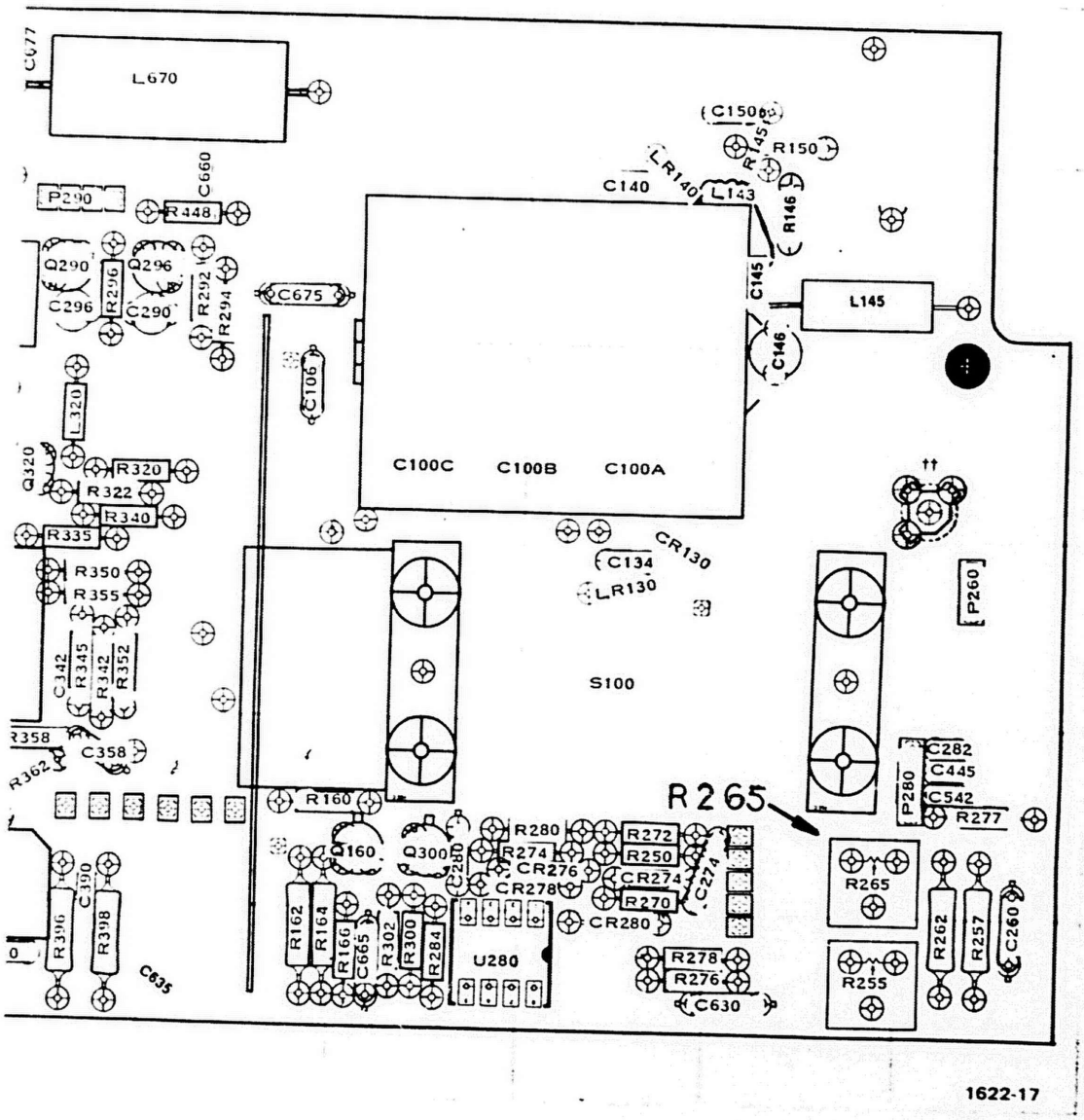


Fig. 1. Partial Main Circuit Board

INSTRUCTIONS:

( ) 1. Remove the right and left side electrical sheilds.

( ) 2. Temporarily remove R260, the OUTPUT AMPLITUDE VOLTS P-P knob, (turn R260 completely CCW before removing knob), remove the R260 mounting hardware, and swing R260 out to gain access to R262 and R265.

( ) 3. Replace R265, a 50Ω potentiometer, with the 100Ω potentiometer from the kit. See Fig. 1.

( ) 4. Replace R262, a 150Ω resistor located next to R265, with the 100Ω resistor from the kit.

( ) 5. Reinstall R260 and the control knob removed in step 2.

( ) 6. Remove the ten (10) screws that fasten the cover to the Attenuator circuit board, A3, and remove the cover.

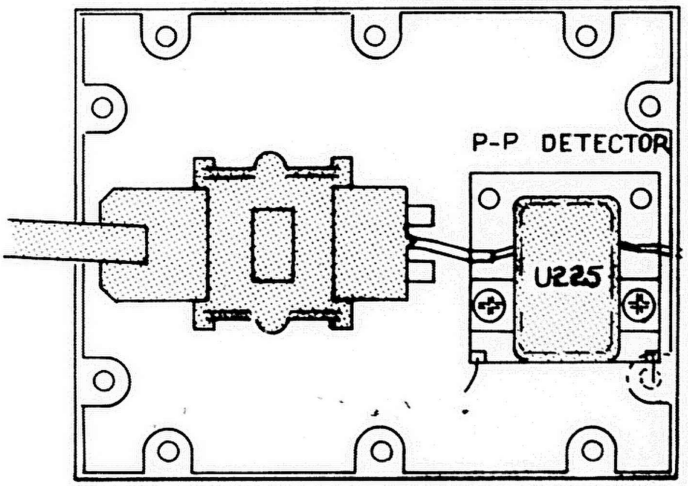


Fig. 2. PARTIAL ATTENUATOR CIRCUIT BOARD, A3

( ) 7. Replace U225 with the microcircuit from the kit as follows:

a) Put the AMPLITUDE MULTIPLIER Switch in the X.01 position.

b) Remove the two mounting screws.

c) Unsolder the two gold leads from the circuit board, the two bare wires from U225, and remove U225.

d) Mount the new microcircuit from the kit, using the screws removed above, solder in place and solder the two bare wires to U225.

e) Reinstall Attenuator cover.

( ) 8. Refer to the Calibration procedure in your Instruction Manual and recalibrate as necessary.

( ) 9. For future reference, correct the Electrical Parts List in your Instruction Manual with the information included in the kit parts list.

( ) 10. Remove the protective backing from the 050-kit label and place the label on a clean area of the frame rail near the serial number tag.

RH:sc

EXTENSIVE MECHANICAL CHANGES MADE

Effective SN: B079230

To improve operation of the latch assembly, facilitate manufacturing of mechanical components, and to update the front panel to new corporate colors, extensive mechanical changes were made.

Also, to provide clearance, the OUTPUT AMPLITUDE VOLTS P-P control, R260, a 2kΩ variable resistor, was replaced with a physically smaller 2.5kΩ variable resistor. To accommodate the change in value of R260, the value of R257 was changed from 2.1kΩ to 2.61kΩ; the value of R262 was changed from 100Ω to 125Ω. R257 and R262 are located on the Main circuit board.

For further information, refer to the following Remove/Add lists.

PARTS REMOVED:

A1	1 ea	672-0447-00	Circuit board assembly, Band Switch
R260	1 ea	311-1531-00	Resistor, var, ww, 2kΩ, 5%, 1.5W
	1 ea	105-0718-01	Bar, latch release
	1 ea	105-0719-00	Latch, retaining, plug-in
	2 ea	210-0405-00	Nut, pl, hex, 2-56 X 0.188L
	2 ea	210-1270-00	Washer, flat
	2 ea	211-0034-00	Screw, mach, 2-56 X 0.50L
	4 ea	213-0123-00	Screw, tpg, tf, 6-20 X 0.375L, 100°, poz
	1 ea	213-0254-00	Screw, tpg, tf, 2-32 X 0.250L
	1 ea	214-1061-00	Contact, elect, grounding
	1 ea	214-1989-00	Lever, slide sw, gray
	1 ea	333-1864-00	Panel, front
	2 ea	337-1399-02	Shield, elec, side w/insulator
	1 ea	337-1956-00	Shield, elec, rear subpanel
	1 ea	366-1190-00	Knob, gray
	1 ea	366-1527-00	Knob, gray
	1 ea	366-1690-00	Knob, latch, silver gray
	1 ea	386-2848-00	Subpanel, front
	1 ea	426-0724-08	Frame section, plug-in bottom
	1 ea	426-0725-05	Frame section, plug-in top

PARTS ADDED:

A1	1 ea	672-0447-01	Circuit board assembly, Band Switch
R260	1 ea	311-2204-00	Resistor, var, ww, 2.5kΩ, 5%, 0.5W
	1 ea	105-0865-00	Bar, latch release
	1 ea	105-0866-00	Latch, retaining, plug-in
	2 ea	105-0932-00	Latch, panel, side
	1 ea	210-0940-00	Washer, flat
	1 ea	211-0025-00	Screw, mach, 4-40 X 0.375
	3 ea	211-0101-00	Screw, mach, 4-40 X 0.250L
	2 ea	211-0244-00	Screw assem, wsher, 4-4- X 0.312
	2 ea	213-0793-00	Screw, tpg, tf, 2-32 X 0.437L
	1 ea	214-1989-01	Lever, slide sw, gray
	1 ea	214-3143-00	Spring, latch
	2 ea	214-3364-00	Fastener, latch, silver gray
	1 ea	214-3406-00	Spring, ground, flat
	1 ea	333-3051-00	Panel, front
	2 ea	337-3039-00	Shield, elec, side w/insulator
	1 ea	337-3065-00	Shield, elec, front subpanel
	1 ea	366-0549-00	Knob, gray
	1 ea	366-1190-02	Knob, gray
	1 ea	366-1851-01	Knob, latch, ivory gray
	1 ea	366-1861-02	Knob, gray
	1 ea	378-2030-08	Lens, LED display, red, printed SG503
	1 ea	386-4866-00	Support, frame, rear, Al
	1 ea	426-0724-25	Frame section, plug-in bottom
	1 ea	426-0725-24	Frame section, plug-in top

The new Band Switch circuit board assembly, pn 672-0447-01, is the same as the old Band Switch circuit board assembly, pn 672-0447-00, except for the following:

PARTS REMOVED:

R257	1 ea	321-0224-00	Resistor, film, 2.1kΩ, 1%, 0.125W
R262	1 ea	321-0636-00	Resistor, film, 100Ω, 0.5%, 0.125W

PARTS ADDED:

R257	1 ea	321-0233-03	Resistor, film, 2.61kΩ, 0.25%, 0.125W
R262	1 ea	321-0927-07	Resistor, film, 125Ω, 0.1%, 0.125W

product modification

050-0858-00

M30663

Type SG503

U350 REPLACEMENT

For TEKTRONIX® SG503 Leveled Sine-Ware Generator

Serial Numbers B010100 - B059999

IC replacement circuit board PN 670-5045-00 and several component changes are necessary to replace U350 to assure correct LED readout at high ambient temperatures.

NOTE: If the serial number of your instrument is above those listed, or if this kit has been installed, disregard the instructions and use 670-5045-00 as a direct replacement for U350.

4-16-80
Supersedes: 3-17-77

PARTS INCLUDED IN PARTS REPLACEMENT KIT

Ckt No.	Quantity	Part Number	Description
L362	1 ea	108-0733-00	Coil, 130nH
Q320	1 ea	151-0402-00	Transistor
C336	1 ea	283-0204-00	Capacitor, cer., 0.1µF 50V 20%
R323	1 ea	315-0750-00	Resistor, comp., 75Ω 1/4W 5%
R352	1 ea	321-0132-00	Resistor, prec., 232Ω 1/8W 1%
	1 ea	670-5045-00	Circuit board, IC Replacement

INSTRUCTIONS:

( ) 1. Remove the left and right side electrical shields.

( ) 2. Remove the following parts from the front of the Main circuit board:

a) U350, a 156-0534-00 IC.

b) C328, a .1µF 50V capacitor.

c) C335, C342, and C345, three .01µF 50 volt capacitors.

d) C360, a 470pF 100V capacitor.

e) R338, a 470Ω 1/4W resistor.

f) R340, a 3.3k 1/4W resistor.

g) R345, a 1k 1/4W resistor.

( ) 3. Replace the following components located on the front of the Main circuit board:

a) L362, a 50nH coil mounted tepee fashion with R362, with the 130nH coil from the kit.

b) R352, a 220Ω 1/4W resistor, with the 232Ω 1/8W 1% resistor from the kit.

c) Q320, a 151-0367-00 transistor, with the 151-0402-00 transistor from the kit, except bend the collector lead out, and insert the base and emitter leads only, into the socket.

( ) 4. Install the following components on the front of the Main circuit board:

a) Insert the pins of the IC replacement circuit board into U350 socket pins 1, 3, 4, 6, 7, 8, 9, and 11.

INSTRUCTIONS: (Cont'd)

b) Cut off both leads of R323, the 75Ω 1/4W resistor, to about 3/4 of an inch. Insert one lead into the collector socket of Q320, and solder the other lead along with one lead of C323, a 51pF capacitor on the IC replacement circuit board, to the collector of Q320, tepee fashion above the circuit board.

c) C336, a .1μF 50 volt capacitor, between the lead of R335 that connects to pin 3 of U350 and ground.

Make the following change on the back of the Main circuit board:

( ) 5. Remove the ten screws that fasten the shield to the Attenuator circuit board.

( ) 6. Remove the six Attenuator circuit board mounting screws, one from each corner (into the back of the Main circuit board) and two counter sink screws that fasten the Output Buffer Amplifier heat sink to the side rail. DO NOT LOOSEN THE 3 NUTS THAT HOLD THE HEAT SINK BRACKET TO THE CIRCUIT BOARD!

NOTE: It may be necessary to remove the screws that fasten the Main circuit board to the rails to allow the removal of the Attenuator circuit board.

Unclip the AMPLITUED MULTIPLIER Switch lever from the switch actuator and lift the Attenuator circuit board straight up to remove it. DO NOT BEND INTERCONNECT PINS!

( ) 7. Remove R360, a 51Ω 1/4W resistor, and reinstall the Attenuator circuit board.

For future reference fasten the Instruction Manual Modification Insert in your Instruction Manual.

FIG. 1

050-0858-00

Page 4 of 4

102.01

INSTRUCTION MANUAL

MODIFICATION INSERT

U350 REPLACEMENT
Type SG503 SN B010100 - B059999

Installed in SN_____Date_____

This modification insert is provided to supplement the Instruction Manual for the above listed products. The information given in this insert supersedes that given in the Manual.

GENERAL INFORMATION

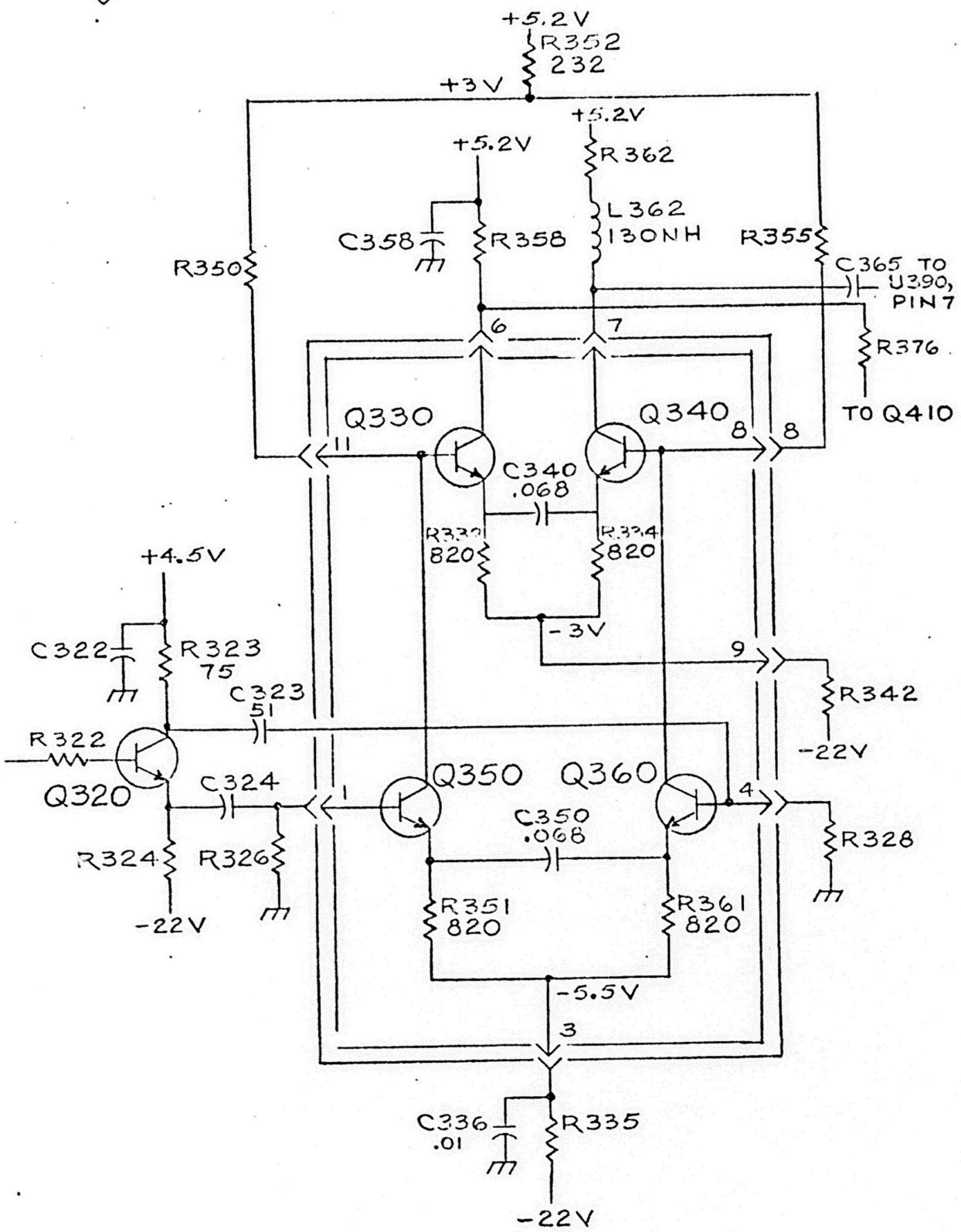
IC replacement circuit board PN 670-5045-00 and several component changes are necessary to replace U350 to assure correct LED readout at high ambient temperatures.

ELECTRICAL PARTS LIST

Ckt No.	Part Number	Description
		CAPACITORS
C323*	283-0299-00	51pF 500V 5%
C328	Delete	
C335	Delete	
C336	283-0204-00	.01μF 50V 20%
C340*	283-0249-00	.068μF 50V 10%
C342	Delete	
C345	Delete	
C350*	283-0249-00	.068μF 50V 10%
C360	Delete	
		INDUCTORS
L362	108-0773-00	130nH
		RESISTORS
R323	315-0750-00	75Ω 1/4W 5%
R332*	317-0821-00	820Ω 1/8W 5%
R334*	317-0821-00	820Ω 1/8W 5%
R338	Delete	
R340	Delete	
R345	Delete	
R351*	317-0821-00	820μ 1/8W 5%
R352	321-0132-00	232Ω 1/8W 1%
R360	Delete	
R361*	317-0821-00	820μ 1/8W 5%
		TRANSISTORS
Q320	151-0402-00	Silicon, NPN, SEL from 1N3571
Q330*	151-0402-00	Silicon, NPN, SEL from 1N3571
Q340*	151-0402-00	Silicon, NPN, SEL from 1N3571
Q350*	151-0402-00	Silicon, NPN, SEL from 1N3571
Q360*	151-0402-00	Silicon, NPN, SEL from 1N3571
		INTEGRATED CIRCUITS
U350	Delete	

* Mounted on 670-5045-00

DIAGRAM 2 AUTO-RANGING COUNTER - Partial



product modification

050-0938-00

M24962

Type SG503

3 LED REPLACEMENT

For TEKTRONIX® SG503 Leveled Sine Wave Generators

Serial Numbers B010100 - B052549

Seven segment LED PN 150-1011-01 replaces seven segment LED PN 150-1011-00 which is no longer available.

Because the characters displayed by the new LED's are larger and brighter, it is recommended that all of the LED's be replaced with the new type.

NOTE: If the serial number of your instrument is above those listed, or if this kit has been installed, disregard the instructions as LED PN 150-1011-01 is a direct replacement.

6-29-77

PARTS INCLUDED IN PARTS REPLACEMENT KIT

Ckt No.	Quantity	Part Number	Description
	1 ea	006-1356-00	Soder-Wick
DS510 DS520 DS530	3 ea	150-1011-01	Lamp, 7 segment LED

INSTRUCTIONS:

( ) 1. Remove the right and left side covers.

( ) 2. Remove the two 2-56 x .500 inch phillips screws that fasten the Display circuit board to the front panel.

( ) 3. Remove the main tuning capacitor shield mounting hardware and remove the shield.

( ) 4. Pull the Display circuit board out far enough to have access to the back of the circuit board.

REMOVE LED's AS FOLLOWS:

A) Use a 15 of 20 watt soldering iron.

NOTE: The kit contains SODER-WICK to facilitate the removal of solder from the board. To remove solder:

1. Place the SODER-WICK over the place to be unsoldered.

2. Apply a well tinned soldering iron to SODER-WICK and allow time for solder to be drawn into the SODER-WICK.

3. Use a clean section of the SODER-WICK for each connection.

B) Remove all of the old LED's from the Display circuit board before installing the new LED's.

To facilitate the installation of the new LED's remove any excess solder from the circuit board mounting holes, either with the SODER-WICK, or by applying a tiny bit of new solder to the hole and removing it with a "solder-sucker".

INSTRUCTIONS: (CONT'D)

( ) 5. Reassemble the instrument by performing Steps 2-4 in reverse order.

For future reference correct the Electrical Parts List in your Instruction Manual.

JT:plc

product modification

050-0882-00

M30973

Type SG503

DS500 REPLACEMENT

For TEKTRONIX® SG503 Leveled Sine Wave Generators

Serial Numbers B010100 - B063299

The LED lamp (DS500) pn 151-1040-00 replaces LED lamp pn 151-1004-00 which is no longer available. The new LED lamp necessitates replacing the LED mounting holder, pn 378-0746-00, with one which has a larger LED mounting hole, pn 378-0746-01.

NOTE: If the serial number of your instrument is above those listed, or if this kit has been installed, disregard the instructions and use 151-1040-00 as as direct replacement for DS500.

8-26-77

PARTS INCLUDED IN PARTS REPLACEMENT KIT

Ckt.No.	Quantity	Part Number	Description
DS500	1 ea	150-1040-00	Lamp, LED, red 2.5V 15mA
	1 ea	378-0746-01	Holder, LED mounting

INSTRUCTIONS:

( ) 1. Remove the left and right side electrical shields.

( ) 2. Remove the three mounting screws and hardware that mount the Variable Frequency capacitor shield to the Main circuit board.

( ) 3. Remove the four multi-wire connectors that connect the Display circuit board to the Main circuit board.

( ) 4. Remove the two Display circuit board mounting screws and nuts and carefully remove the Display circuit board assembly from the instrument.

( ) 5. Remove the insulating sleeving and LED mounting holder from DS500.

( ) 6. Unsolder and remove DS500 being carefull not to damage the wires connected to the back of the Display circuit board.

( ) 7. Install the new DS500 LED lamp.

( ) 8. Install the new LED mounting holder and reinstall the insulating sleeving.

Reassemble the instrument by performing Steps 1 thru 4 in reverse order.

JG:plc

product modification

38466

SG503

OSCILLATION PREVENTED

Effective Prod SN B066111 Usable SN Range B051230 - B066110*

To eliminate an unstable display due to an oscillation in the power supply, especially if more than one SG 503 is used in one Power Module, the following changes were made:

1) C610-R611, a .01μF capacitor and a 5.6kΩ resistor, connected between pins 2 and 6 of U610, were removed.

2) VR610, a 5.1 volt Zener diode connected between the emitter of Q610 and the junction of R697-R693-R680 and the emitter of Q690, was replaced with R613, a 2.4kΩ resistor.

PARTS REMOVED:

C610	1 ea	283-0204-00	Capacitor, cer, .01μF 20% 50V
R611	1 ea	315-0562-00	Resistor, cmpsn, 5.6kΩ 5% .250W
VR610	1 ea	152-0279-00	Diode, Zener, 5.1V 5%

PARTS ADDED:

R613	1 ea	315-0242-00	Resistor, cmpsn, 2.4kΩ 5% .250W

*Usable SN B010100 - B051229 if 050-0785-00 has been installed.

3-11-80

product modification

050-1359-00

M38466

Type SG503

U610 REPLACEMENT

For TEKTRONIX® SG503 Leveled Sine Wave Generator

Serial Numbers B051230 - B066110*

Integrated circuit part number 156-0067-00 and a 2.4kΩ resistor are required to replace U610. At the same time C610 - R611, a .01μF capacitor and a 5.6kΩ resistor, connected in series between pins 2 and 6 of U610 are removed and VR610 is removed.

*Usable SN B010100 - B051229 if 050-0785-00 has been installed.

NOTE: If the serial number of your SG503 is above those listed or if this kit or 050-0785-01 has been installed, disregard the instructions and use IC part number 156-0067-00 as a direct replacement for U610.

3-4-80

PARTS INCLUDED IN PARTS REPLACEMENT KIT:

Ckt. No.	Quantity	Part Number	Description
U610	1 ea	156-0067-00	Integrated circuit, Op Amp
R613	1 ea	315-0242-00	Resistor, cmpsn, 2.4kΩ 5% .25W
	1 ea		Marker, identification

INSTRUCTIONS:

( ) 1. Remove the left side electrical shield.

Make the following changes on the Main circuit board:

( ) 2. Remove C610-R611, a .01μF ceramic capacitor and a 5.6k resistor connected in series between pins 2 and 6 of U610.

( ) 3. Replace VR610, a 5.1 volt zener diode located near U610, with the 2.4kΩ resistor from the kit.

( ) 4. Replace U610, with the IC, from the kit.

Refer to the Calibration procedure in your Instruction Manual and recalibrate as necessary.

For future reference, fasten the Instruction Manual Modification Insert in your Instruction Manual.

Remove the protective backing from the identification marker and place the marker on a clean area of the frame rail near the serial number tag.

JT:cs

INSTRUCTION
MANUAL

MODIFICATION INSERT

U610 REPLACEMENT

SG503 SN B051230 - B066110

Installed in SN_____Date_____

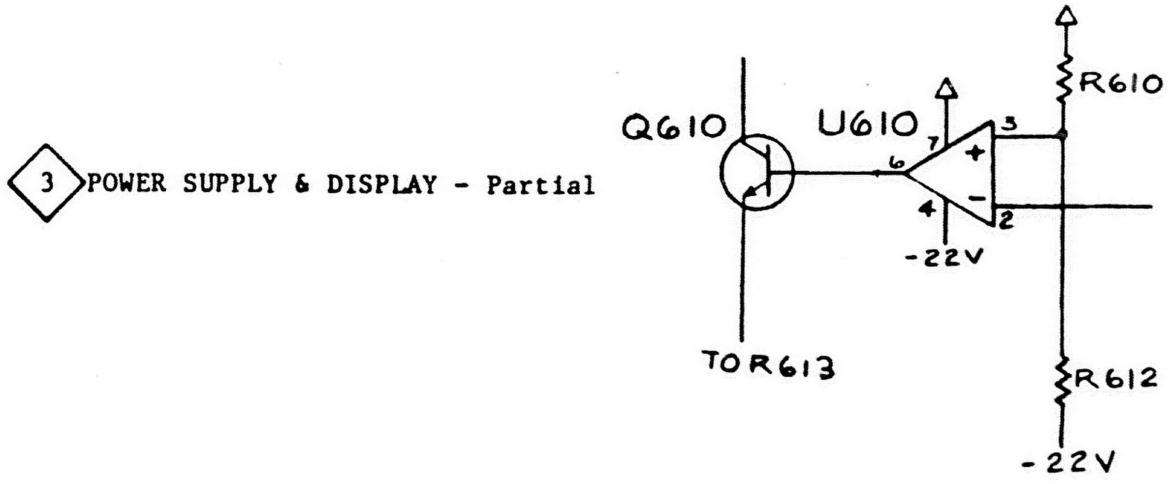
This modification insert is provided to supplement the Instruction Manual for the above listed products. The information given in this insert supersedes that given in the Manual.

GENERAL INFORMATION

Integrated circuit part number 156-C067-00 and a 2.4kΩ resistor are required to replace U610. At the same time VR610, C610 - R611, a .01μF capacitor and a 5.6kΩ resistor, connected in series between pins 2 and 6 of U610 are removed.

ELECTRICAL PARTS LIST

Ckt. No.	Part Number	Description
C610	DELETE	
R611	DELETE	
R613	315-0242-00	Resistor, cmpsn, 2.4kΩ 5% .250W
VR610	DELETE	



product modification

24251

Type SG503

IMPROVED PLUG-IN LATCH

Effective Prod SN B063070

To insure the plug-in latch functions easily and adequately, the plug-in retaining latch, knob securing pin and latch knob were replaced with a new plug-in retaining latch, release bar and latch knob.

PARTS REMOVED:

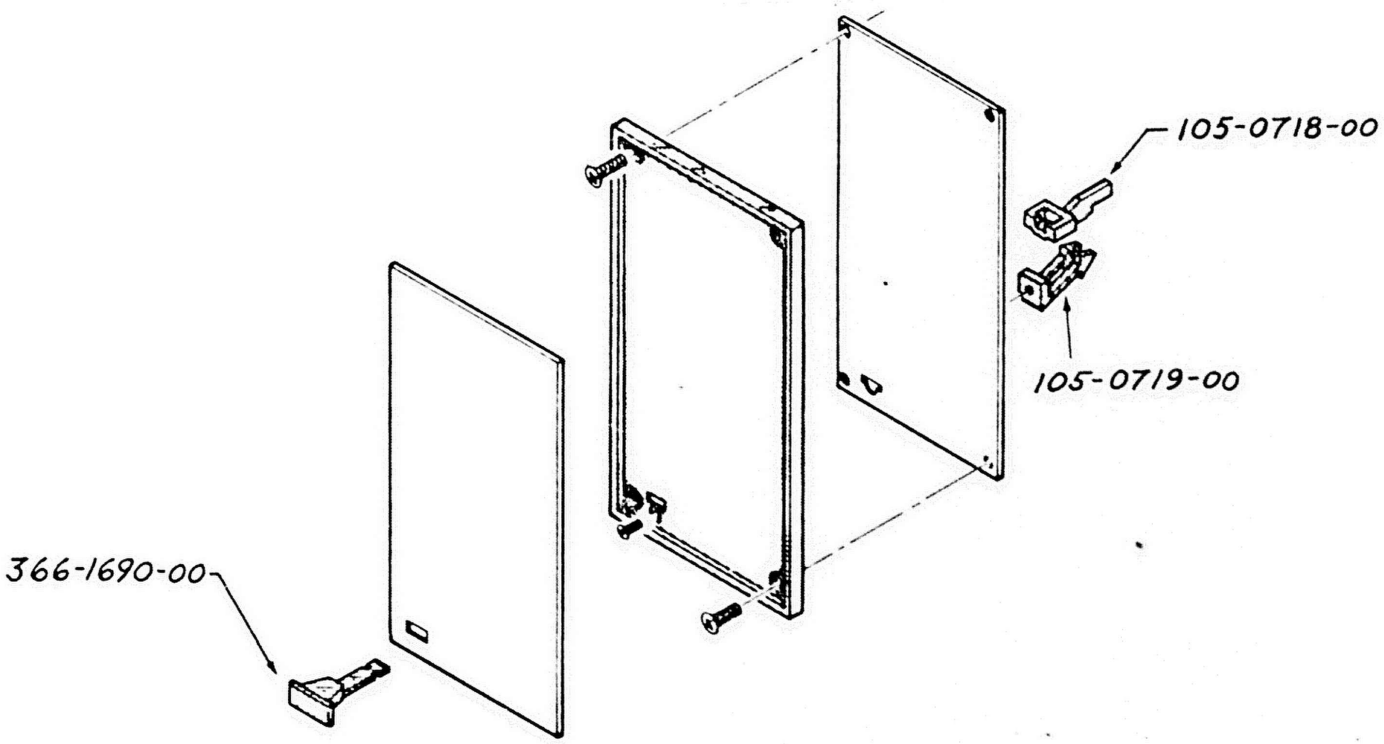
214-1513-01	Latch, plug-in retaining
214-1840-00	Pin, knob securing
366-1422-01	Knob, latch

PARTS ADDED:

105-0718-00	Bar, latch release
105-0719-00	Latch, plug-in retaining
366-1690-00	Knob, latch

(continued)

(continued)



LATCH ASSEMBLY

product modification

050-1077-00
M24251,M33052
M33270,M34461

Type: See Below

PLUG-IN LATCH ASSEMBLY REPLACEMENT

For the following TEKTRONIX® Plug-Ins*

Type AF 501	SN B010100 - B021069
Type AM 501	SN B010100 - B031999
Type AM 502	SN B010100 - B053579
Type AM 503	SN B010100 -
Type AM 511	SN B010100 -
Type DC 501	SN B010100 - B071539
Type DC 502	SN B010100 - B081989
Type DC 503	SN B010100 - B166789
Type DC 504	SN B010100 - B033829
Type DC 505	SN B010100 -
Type DC 505A	SN B010100 - B031829
Type DD 501	SN B010100 - B021240
Type DM 501	SN B010100 - B151349
Type DM 502	SN B010100 - B027629
Type FG 501	SN B010100 - B128319
Type FG 502	SN B010100 - B034499
Type FG 503	SN B010100 - B023229
Type FG 504	SN B010100 - B031174
Type LA 501	SN B010100 - B021179
Type MR 501	SN B010100 -
Type PG 501	SN B010100 - B084159
Type PG 502	SN B010100 - B031742
Type PG 505	SN B010100 - B021999
Type PG 506	SN B010100 - B032479
Type PG 508	SN B010100 - B021102
Type PS 501	SN B010100 - B052139
Type PS 502	SN B010100 -
Type PS 503	SN B010100 -
Type PS 503A	SN B010100 - B025429
Type PS 505	SN B010100 - B021999
Type RG 501	SN B010100 - B042869
Type SC 501	SN B010100 - B051759
Type SC 502	SN B010100 - B022399
Type SG 502	SN B010100 - B072369
Type SG 503	SN B010100 - B063069
Type SG 504	SN B010100 - B010569
Type SW 503	SN B010100 -
Type TG 501	SN B010100 - B033149
Type TR 501	SN B010100 -
Type TR 502	SN B010100 -
Type 067-0680-00	SN B010100 - B020310
Type 5A13N	SN B010100 - B039999
Type 5A14N	SN B010100 - B063428
Type 5A15N	SN B010100 - B081087
Type 5A18N	SN B010100 - B106175
Type 5A19N	SN B010100 - B033041
Type 5A20N	SN B010100 - All
Type 5A21N	SN B010100 - B069999
Type 5A22N	SN B010100 - B054430
Type 5A23N	SN B010100 - B054972
Type 5A24N	SN B010100 - B047242
Type 5A26	SN B010100 - B019999
Type 5A45	SN B010100 - B031285
Type 5B10N	SN B010100 - B088662
Type 5B12N	SN B010100 - B065857
Type 5B13N	SN B010100 - B082989
Type 5B31	SN B010100 - B030654
Type 5B40	SN B010100 - B032382
Type 5B42	SN B010100 - B070000
Type 5B44	SN B010100 - B030602
Type 5CT1N	SN B010100 - B021566

This Parts Replacement Kit contains parts to replace the Plug-in Latch with a new improved type.

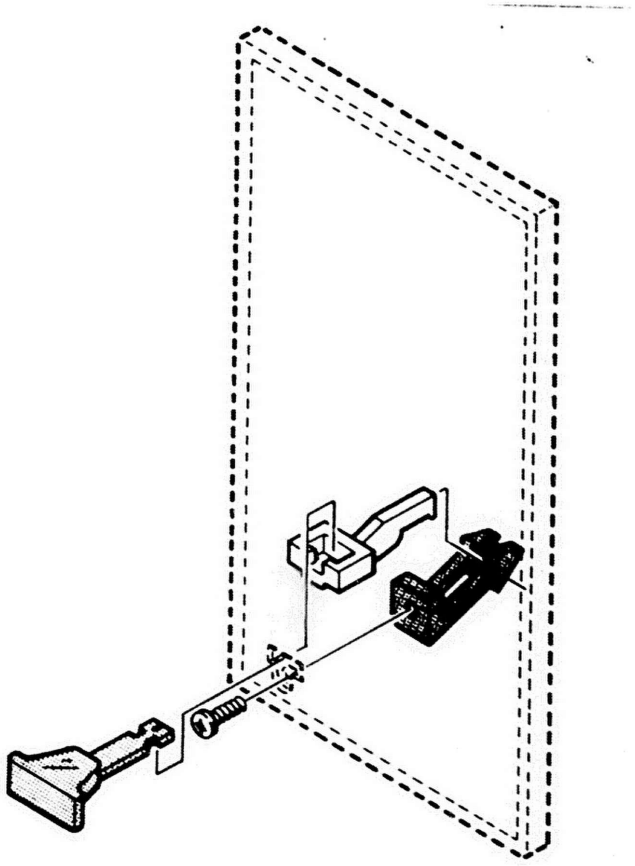
Since it is necessary to remove the Plug-in front panel to install the new latch, it is not recommended unless necessary.

*Not useable in 5A38.
**See note on page 2.

8-10-79

PARTS INCLUDED IN PARTS REPLACEMENT KIT:

Quantity	Part Number	Description
1 ea	105-0718-01	Latch, Release
1 ea	105-0719-00	Latch, Retaining, Plug-in
1 ea	366-1690-00	Knob, Plug-in latch
1 ea		Marker, identification



PLUG-IN LATCH ASSEMBLY DETAIL

**NOTE: If the serial number of your Plug-in is above those listed, or if this kit has been installed, disregard the instructions and use any of the Plug-in latch parts as a direct replacement.

INSTRUCTIONS:

( ) 1. Remove the Plug-in from the Main Frame (5000 Series Plug-Ins) or from the Power Module (TM500 Plug-Ins).

( ) 2. Using a pair of diagonal cutters, cut the latch knob off of the plug-in retainer.

( ) 3. Refer to the Maintenance section of your Instruction Manual and perform steps as necessary to remove the front panel.

( ) 4. Remove the plug-in retainer latch mounting screw, and the old Plug-in retainer latch.

( ) 5. Install the new plug-in retainer latch using the screw removed in step 4.

( ) 6. Reinstall the front panel by performing the steps shown in the Maintenance section of your Instruction Manual

( ) 7. Refer to the drawing and install the latch release and the Plug-in latch knob.

( ) For future reference, correct the Mechanical Parts List in your Instruction Manual.

( ) Remove the protective backing from the Identification marker and place the marker on a clean area of the frame rail near the serial number tag.

JT:cs

product modification

30470

Type SG503

PLUG-IN SUPPORT IMPROVED

Effective Prod SN B063090 *

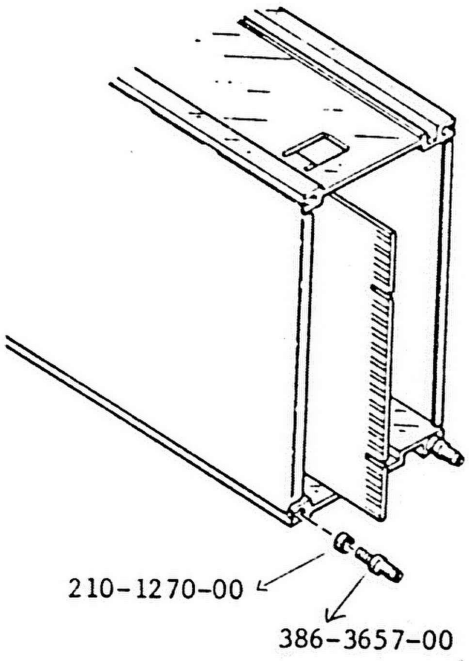
To improve the support of plug-ins at the interface connector in TM515 Portable Power Modules, two support pins and two washers were added to the bottom frame rail.

PARTS REMOVED:

NONE

PARTS ADDED:

210-1270-00**	Washer, flat .141 ID x .219 OD x .04	(2)
386-3657-00	Support, plug-in	(2)



Partial Rear View of Plug-In

*Usable in TM515 w/serial numbers B020583 - Up or TM506 w/serial numbers above B031860.

**Not used in double wide plug-ins.

9-20-77

product modification

040-0717-00

Type SG503

REMOTE AMPLITUDE CONTROL AND BCD OUTPUT

For TEKTRONIX® SG503 Leveled Sinewave Generators
All Serial Numbers

Modification kit PN 040-0717-00 contains parts and instructions as follows:

1) To convert the OUTPUT AMPLITUDE Control from a front panel control to a remote DC level operated control which is addressable thru the rear connector. The Constant Amplitude Sinewave Output voltage can be varied from .5V (with AMPLITUDE MULTIPLIER in the X1 position) to 5.5V p-p by changing the externally applied DC voltage from -1 volt to -11 volts.

2) To provide BCD and Decimal outputs at the rear connector.

3) If the SG503 is to be used as an uncalibrated signal source ONLY, the Sinewave Output can be rerouted to go through the rear connector.

PARTS INCLUDED IN MODIFICATION KIT

Ckt. No.	Quantity	Part Number	Description
	3 ea	131-1003-00	Receptacle, coax
	3 ea	136-0252-04	Socket, pin connector
R261	1 ea	315-0513-00	Resistor, comp 51k 1/4W 5%
	1 ea	175-1554-00	Cable, 50Ω coax 9.2" blue
	1 ea	175-1555-00	Cable, 50Ω coax 10.4" white
	1 ea	175-0826-00	Wire, ribbon w/3 wires, #26 stranded 3 inches
	1 ea	175-0827-00	Wire, ribbon w/4 wires, #26 stranded 4 inches
	1 ea	175-0827-00	Wire, ribbon w/4 wires, #26 stranded 5 inches
	1 ea	175-0827-00	Wire, ribbon w/4 wires, #26 stranded 6 inches

INSTRUCTIONS

( ) Remove the right- and left-hand electrical shields.

These instructions are divided into three parts as follows:

A Remote Amplitude control.

B BCD and Decimal output.

C Sine Output.

Any part of this kit may be installed independently of the other parts.

A REMOTE AMPLITUDE CONTROL

Make the following changes on the front of the Main circuit board:

( ) 1. Install two Peltola connectors (coax receptacle w/pin connector socket) in the locations labeled 'REMOTE'. One is at the front of the Plug-in between the FREQUENCY RANGE Switch and the VARIABLE FREQUENCY Control and the other is near pin 21 of the interconnect connector. See Fig. 1.

( ) 2. Install the blue coax w/connectors between the connectors installed in step A-1.

Make the following changes on the back of the Main circuit board. See Fig. 2.

( ) 3. Relocate the link connector at the front of the Main circuit board. from its present location between the circuit board pad connected to the center terminal of R260 (OUTPUT AMPLITUDE VOLTS P-P control) and pin 4 of P265 to connect between the circuit board pad that connects to the center conductor of the coax installed in step 2 and pin 4 of P265. See Fig. 2.

INSTRUCTIONS (Cont'd)

( ) 4. Install R261, a 51k 1/4W composition resistor, between the circuit board pad connected to pin 21B of the interconnect connector and ground. See Fig. 2.

B BCD and DECIMAL OUTPUT

Add ribbon wires to the front of the Main circuit board as follows:

( ) 1. The 6 inch length of 4 conductor ribbon wire between circuit pads labeled '1A, 1B, 1C, 1D' (connected to interconnect connector pins 24A, 23A, 22A and 21A) and circuit board pads between U510 and U437 labeled '1A, 1B, 1C, 1D', respectively.

( ) 2. The 5 inch length of 4 conductor ribbon wire between circuit board pads labeled '2A, 2B, 2C and 2D' (connected to interconnect connector pins 20A, 19A, 18A and 17A) and circuit board pads between U436 and four, 1/4W composition resistors labeled '2A, 2B, 2C and 2D, respectively.

( ) 3. The 4 inch length of 4 conductor ribbon wire between circuit board pads labeled '3A, 3B, 3C and 3D' (connected to interconnect connector pins 16A, 15A, 14A and 25A) and circuit board pads between U481 and U530 labeled '3A, 3B, 3C and 3D', respectively.

( ) 4. The 3 inch length of 3 conductor ribbon wire between circuit board pads labeled '10^{1}; 10^{0} and 10^{-1}' (connected to interconnect connector pins 23B, 26B and 27B) and circuit board pads between U480 and CR694 labeled '10^{1}, 10^{0} and 10^{-1}', respectively.

C SINE OUTPUT

Make the following changes on the back of the Main circuit board:

( ) 1. Remove the short blue coax connected between the OUTPUT connector on the front panel and the Attenuator circuit board.

( ) 2. Install a Peltola connector (coax receptacle w/pin connector) in the circuit board pad connected to interconnect connector pin 28A (center conductor) and pin 28B (shield).

( ) 3. Install the white coax cable between the connector on the side of the Attenuator circuit board and the connector installed in step C-2.

Note: Transferring the output signal from the front panel to the rear interconnect connector will disturb the constant amplitude specification unless the insertion loss between the output and the 50Ω load is the same as it would be when the standard cable (012-0482-00) is connected to the output connector on the front panel.

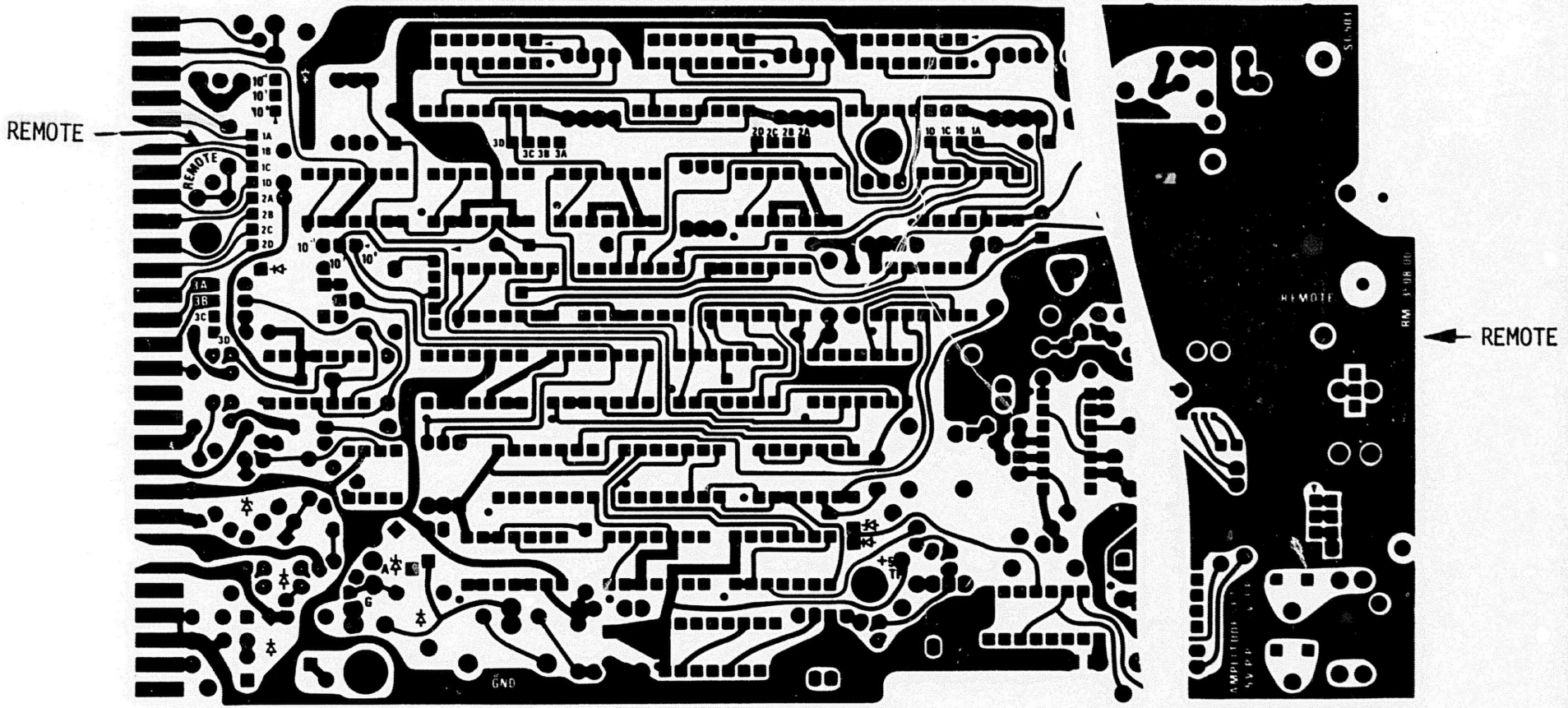


FIG. 1 - PARTIAL MAIN CIRCUIT BOARD (FRONT)

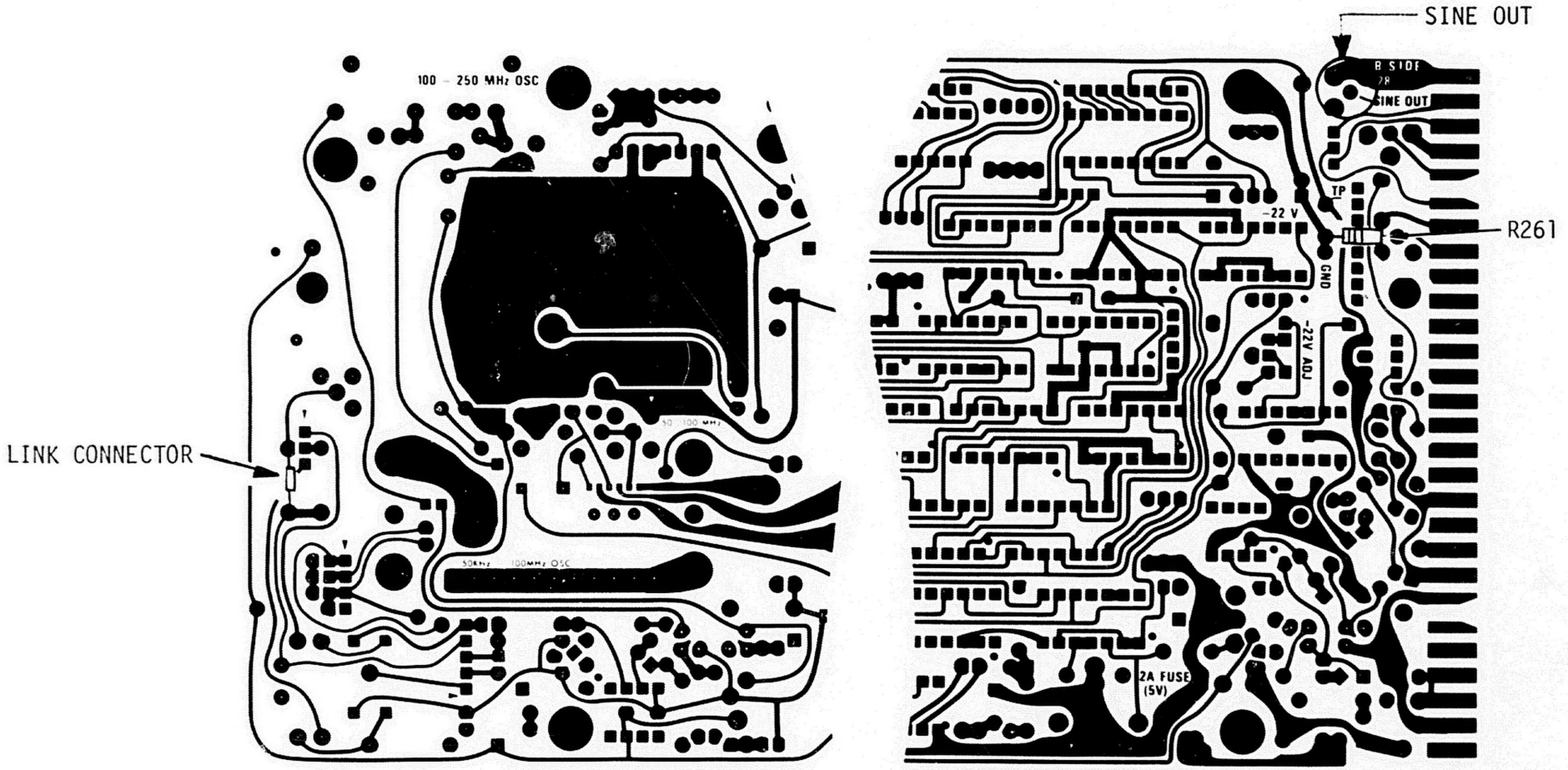


FIG. 2 - PARTIAL MAIN CIRCUIT BOARD (BACK)