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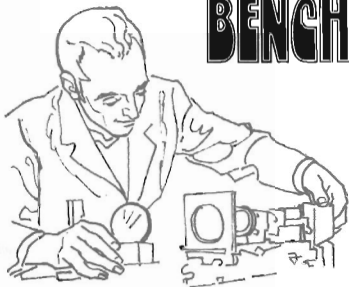
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BENCH BRIEFS

SERVICE NOTE

INDEX

This Index lists the many electronics products Service Notes currently available from Hewlett-Packard. Service Notes contain information that will help you get the most out of your purchases. Typically they contain parts placement information, calibration procedures or modifications to improve or update your HP products.

APRIL 1973

HEWLETT  PACKARD

Service Notes are listed in numerical order and a short description is included. To obtain any desired Service Notes, see the order form on the next page.

There are three types of service notes—general, instrument, and parts.

GENERAL SERVICE NOTES

These notes cover a very wide range of instruments, often being applicable to an entire product line. They are labeled with an "M" prefix and are listed at the front of the index. For example, M-49 gives recommendations on servo motor repairs.

INSTRUMENT SERVICE NOTES

The Service Notes contained in this index all relate to a specific instrument or series of instruments, and are labeled with the model number of the applicable product and a number suffix to identify that particular Service Note. In addition, a letter suffix may be added to indicate that a revision has been made on a previously issued Service Note.

For example, Service Note 8553L-4A is the fourth Service Note written for Model 8553L. The "A" indicates a revision of the original Service Note. If changes were required on this note, the number would become 8553L-4B, superseding the present note. Subsequent revisions would be indicated by incrementing the letter suffix to C, D, E, etc.

If you do not have a desired Service Note, or if the current letter suffix has been changed from that on your copy, request the new Service Note and destroy the superceded one. Having the latest Service Note is recommended since it contains the most current information.

PARTS SERVICE NOTES

A series of Service Notes exist that are related to a particular replacement part and they are identified with the part number preceded by a "P". For example, P-05055-60013.

These Service Notes often give modification instructions or precautions for use of the part.

Parts Service Notes are not listed in this index since they are automatically shipped with the replacement part when required.

To obtain Service Notes for your HP instruments, cut the order form from the index and write in the complete Service Note number.

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An additional order form is available at the end of the index. If both order forms are used, send the complete number of the desired service notes to the correct address above.

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GENERAL

- AUTOGRIP:** Autogrip retrofit instructions for older X-Y Recorders.
- M19C** Recommended replacement of precision potentiometers.
- M20E** Recommended procedures for component replacement on etched circuit boards.
- M-23-B** Cabinet to rack mount conversion kit.
- M-37** Transient-response test set for constant-voltage, regulated DC power supplies.
- M-38** Trouble shooting tips for HP Power Supplies.
- M-40** Identification photos of terminal posts, pin connectors, stand offs and feed thro. etc.
- M-44** New part numbers for analog head assemblies.
- M-45-B** Recommended cleaning and lubricating of rotary switcher.
- M-47** Main power wiring for cabinet models.
- M-48** Recommended procedure for cleaning Autogrip tables (Supersedes Autogrip-1, July 1965, Paragraph 6-1).
- M-49** Recommendations on Servo Motor Repairs.
- M-50-B** Recommended touch-up paints for HP computer products.

OEM PERIPHERALS

- SP2-1** Lubrication for Friden Model SP-2 Motorized Tape Punch used with HP Data Acquisition system

2D SERIES X-Y RECORDERS

- M011-2** More reliable replacement for Sweep Timing Capacitor

2FA X-Y RECORDERS

- M011-2** More reliable replacement for Sweep Timing Capacitor.
- 2FA-1** Serial Prefix below 619 Replace channel mounting yoke A-14370 with part number A-11385 for increased reliability

F-3B LINE FOLLOWER

- F-3B-1** Serial Prefix 645- and below. Modification for best performance when replacing line follower head.

60B/D LOGARITHMIC CONVERTERS

- 60D-1A** Modification for oven assembly.
- 60D-2A** Recommended replacement diodes

100B/C/D FREQUENCY STANDARDS

- M-4** Replacement of crystal oven mercury column thermostat.

115 B FREQUENCY DIVIDER & DIGITAL CLOCK

- H20-115BR-1** Modifications for increased output tick stability and alignment of output circuits.

117A VLF COMPARATOR

- 117A-5** Modification for elimination of erratic linear phase detector operation

120A OSCILLOSCOPE

- 120A-7** Modification for increased high voltage circuit reliability

120B OSCILLOSCOPE

- 120B-3** Modification for increased high voltage circuit reliability

122A DUAL TRACE OSCILLOSCOPE

- 122A-4** Serials prefixed below S21 -. Recommended power transformer replacement.
- 122A-5** Serials below S21-07401 Modification for increased high voltage circuit reliability.

130C OSCILLOSCOPE

- 130C-2** Serials prefixed below 445-. Modification for improved low frequency response and Common Mode rejection.
- 130C-3** Serials prefixed below 438 Modification for improved power supply reliability.
- 130C-4** Serials prefixed below 537-. Modification for improved diode turn-on protection
- 130C-5** Serials prefixed below 627- Modification for improved sweep time accuracy.
- 130C-6A** Preferred replacement for Q421, Q441, Q461.
- 130C-7** Serials 627-05110 & below. Modification to protect low voltage series regulator transistors
- 130C-8** Serials below 644-07511. Modification for increased high voltage circuit reliability
- 130C-9** Serials 938 & below. Recommended replacement of transistors Q1, Q2, Q201 & Q202.

132A DUAL BEAM OSCILLOSCOPE

- 132A-1** Serials 610-00525 & below Protection for low-voltage series regulator.
- 132A-2** Preferred replacement for Q621, Q641, Q661, and Q681
- 132A-3** Recommended replacement for R578.
- 132A-4** Serials 938-01335 & below. Recommended replacement of transistors Q1, Q5, Q201 & Q205

135 SERIES X-Y RECORDERS

- M011-2** More reliable replacement for sweep-timing capacitor.

136A X-Y RECORDERS

- M011-2** More reliable replacement for sweep-timing capacitor

140A OSCILLOSCOPE

- 140A-8A** Serials prefixed 520- & above. Preferred replacement of power transistors Q421, Q441, Q461, and Q481.
- 140A-12** Serials prefixed 748- & below. HVPS modification for increased Q601 reliability
- 140A-13A** Serials prefixed 520-thru 748-. Modification to correct Low Voltage Power Supply malfunction
- 140A/141A-6A** Serials prefixed 634 & below. Modification for use with new sampling plugins

141A STORAGE OSCILLOSCOPE

- 141A-3A** Preferred power transistor replacements
- 141A-5** Serials prefixed below 620-. Improvement of erase function.
- 140A/141A-6A** Serials prefixed 634 & below. Modification for use with new sampling plugins.
- 141A-7** Special serials with letter "H" following Prefix. Special instructions for ordering replacement CRT.
- 141A-8B** Serials below 634-00330 Modification for extended collimator voltage range.
- 141A-9A** Serials above 634-09330 & below prefix 801 - Modification for improved storage time.
- 141A-10** Serials prefixed 703- & above. Modification kit for remote erase
- 141A-12** Serials 634-00330 thru 635-00525 Modification kit for replacing mode switch
- 141A-13** Modification permits operation on 50, 60 and 400-Hz power.
- 141A-14B** Serials prefixed 815- & below. Modification for improved long-term storage.
- 141A-15** Serials prefixed 820- & below. Modification to protect CRT during Beam Under operation.

141B—187C

141A-16A Serials prefixed 801- & below. Modification to correct Low Voltage Power Supply malfunction.

141A-17 Procedure for correct CRT selection and installation.

141A-18 CRT Flood Gun Accelerator Modification.

141B OSCILLOSCOPE

141B/T-1 Serials 1104A00385 and below Preferred replacements

141B/T-2 Serials 1145A00565 and below Preferred replacements

141S STORAGE OSCILLOSCOPE

141S-1 CRT Flood gun accelerator modification.

141T DISPLAY SECTION

141B/T-1 Serials 1047A01300 and below Preferred replacements

141B/T-2 Serials 1113A02200 and below Preferred replacements

143A 8 X 10 OSCILLOSCOPE

143A-1 Serials below 838-00140. Modification to damp oscillations in 1400A plug-in

143A-2 High voltage protection fuse change

143A-3 Serial prefix 925 and Below Replacement CRT Information

143S DISPLAY SECTION

143S-1 Serial prefix 925 and below Replacement CRT Information.

180A/AR OSCILLOSCOPE

180A/AR-3A Serials 822-04194 & below. Modification for increased high voltage adjustment range and prevention of high voltage oscillator double moding.

180A/AR-4 Serials prefixed 822- & below Recommended replacement for R204.

COS-180A-5 Preferred replacement for the Sereet Regulator transistors.

180A/AR-U-6 Serials prefixed U939- & below. Preferred replacements for R126 and R310

180A/AR-6A Preferred replacement for R126 and R310.

180A/AR-7 Preferred replacement for Q104 and addition of R122 in the Gate Amplifier

180A/AR-8 Gate amplifier reliability modifications.

180A/AR-9 All serials preferred replacement for R305.

▶ 180A/AR-10 All serials. Procedure to install Option 807, Rear-panel connections.

180C/D OSCILLOSCOPE

180C/D-1 180C serials 1125A00140 & below. 180D serials 1125A00115 & below. Improved Alternate operation.

▶ 180C/D-2 All serials. Procedure to install Option 807 Rear-panel connections.

181A/AR STORAGE OSCILLOSCOPE

181A-1 Precautions for the replacement of storage cathode ray tube.

181A/AR-2 Serials 814-00300 & below. Modification to prevent high voltage oscillator double moding.

181A/AR-3 Serials prefixed 838- & below Modification to prevent storing in the NORMAL mode.

181A/AR-4 Serials prefixed 840- & below. Recommended replacement for A3R4.

181A/AR-5 Serials below 936-01826 (181A); Serials below 936-01926 (181AR). Gate amplifier reliability modification

181A/AR-6 Preferred replacement for A1R20

▶ 181A/AR-7 All serials. Preferred replacement for A1R50

▶ 181A/AR-8 Modification to install option 807 rear-panel connections

182A/C OSCILLOSCOPE MAINFRAME

▶ 182A/C-1 All serials. Modifications to install Option 807 Rear-panel connections

183A/B/C/D OSCILLOSCOPES

183A/B-1 Serials 926-00051 thru 926-00070 (183A/B); Serials 941-00101 thru 941-00200 (183A); Serials 963-00119 thru 963-00130 (183B). Modification for improved CRT reliability

183A/B/C/D-2A 183A serial prefix below 1113A, 183B serial prefix below 1112A, 183C serial prefix below 1117A, 183D serial prefix below 1115A Improved floodgun circuit reliability and positive floodgun turn off.

183A/B-3 Serials 941-00101 thru 958-00357 (183A); Serials 941-00101 thru 965-00144 (183B). Modification to improve the pulse response of the 1802A in the 183 system.

183A/B/C/D-4 Serials below 1107A00876 (183A); Serials below 1108A00386 (183B); Serials below 1111A (183C); Serials below 1109A00128 (183D). Modification to insure proper high voltage regulation.

183A/B/C/D-5 183A serial below 1109A00951, 183B serial below 1108A00386, 183C serial below 1120A00114, 183D serial below 1115A00138. Modification to reduce intensity flicker

183A/B/C/D-6 183A/B serial prefix below 1204A, 183C serial prefix below 1206A, 183D serial prefix below 1134A. Modification to improve trigger performance for single sweep operation

183A/B/C/D-7 183A/B serial prefix below 1204A, 183C/D serial prefix below 1208A Modification to improve alternate operation when using 180 series plug-ins.

183A/B/C/D-8 All serials. Preferred replacement for A7R9 and A7R16.

▶ 183A/B/C/D-9 Preferred replacement for A11A1R6.

184A/B OSCILLOSCOPE MAINFRAME

▶ 184A/B-1 All serials. Modifications to install Option 807 Rear-panel connections

185A OSCILLOSCOPE

185A-2A Modification for internal graticule CRT.

185B OSCILLOSCOPE

185B-1A Modification for internal graticule CRT

185B-5 Serials below 432-01276. Modifications for use with 187C

185B-6 Serials prefixed below 525- Modification for increased repeatability of X-Y Recording

187B DUAL TRACE VERTICAL AMPLIFIER

187B-1E Procedure for installation of probe diodes

187B-3 Serials below 232-01119. Modification for improved rise time.

187B-5 Serials below 325-01469. Modification for use with 10213A Sampling Probe Isolator

187B-6 Recommended replacement for CR513 and CR613.

187C DUAL TRACE VERTICAL AMPLIFIER

187C-1 Procedure for installation of probe cartridge

187C-2A Procedure for replacing probe cable

190A Q METER

190A-3 Serials below 2536 Modification for the replacement of the type 9005 tube.

191A TV WAVEFORM OSCILLOSCOPE

191A-1 Preferred replacement for A1R108.

191A/193A-1 Serials 716-00835 & below Modification to prevent high frequency roll-off problems.

191A/193A-2 Preferred replacement for A3CR301 and A3CR302.

193A TV WAVEFORM OSCILLOSCOPE

191A/193A-1 Serials 716-00835 & below Modification to prevent high frequency roll-off problems.

191A/193A-2 Preferred replacement for A3CR301 and A3CR302

193A-3 Serial 0967A01129 and below. Correct mounting polarity for C702

195A OSCILLOSCOPE CAMERA

- ▶ 195A-1 Serial prefix 947A. Reduced shutter sensitivity to line transients and static discharges

196A OSCILLOSCOPE CAMERA

196A-3 Beveled edge adapter ring for Tektronix oscilloscope to guard against light leakage

196A-4C Internal light-source modification kit.

197A OSCILLOSCOPE CAMERA

197A-1 Serials 610-01090 and below. Modification to improve switching between "Time" and "Bulb", and to prevent shutter from triggering on noise

197A-2 Serials prefixed 730- & below. Preferred replacement for transistors Q11 and Q41

197A-3 Serials 805-02251 & below. Modification to prevent shutter triggering on line noise.

197A-4 Option 12 fuse change

197A-5 Modification for adaption of polystyrol roll film back

- ▶ 197A-6 Serial prefix 913 and below. Reduced shutter sensitivity to line transients and static discharges

200AB AUDIO OSCILLATOR

200AB-1B Range switch replacement and frequency adjustment.

200AB-2D Test and adjustment procedures.

200AB-3D Serials 310-19474 & below. Modification to decrease hum and distortion

200CD-7B Tuning capacitor replacement procedure.

200CD WIDE RANGE OSCILLATOR

200CD-1C Range switch replacement and frequency adjustment

200CD-4D Test and adjustment procedures

200CD-7B Tuning capacitor replacement procedure

200CD-8B Modification to suppress hum at lower than 50/60 Hz operation

200CD-9A Modification to permit synchronizing with external signal source

201C AUDIO OSCILLATOR

201C-1 Serials 351-06257 & below. Modification to reduce distortion

200CD-7B Tuning capacitor replacement procedure.

202C LOW FREQUENCY OSCILLATOR

200CD-7B Tuning capacitor replacement procedure.

202H FM-AM SIGNAL GENERATOR

202H-7 Serials below 6330: Modification to improve piston attenuator probe head and associated components. All serials Replacement procedure for same

202H-9/202J-5 Serials prefixed above 537- Replacement of filter assembly FL100

202J FM-AM SIGNAL GENERATOR

202H-9/202J-5 Serials above 6847 Replacement of filter assembly FL100.

203A VARIABLE PHASE FUNCTION GENERATOR

203A-2A Serials 425-00575 & below. Recommended replacement parts for RF Amplifier A2

204C OSCILLATOR

204C-1 Serials 808-00500 & below Modification to improve operation

204D OSCILLATOR

204D-1 Serials 910-00273 & below Modification for ground continuity.

205A/AG AUDIO SIGNAL GENERATOR

205A/AG-1B Replacement of frequency range switch.

205AG-4 Change in replacement diodes

205AG-5 Using 6L6G (glass) to replace 6L6 (metal) for V5 and V6

200CD-7B Tuning capacitor replacement procedure

207H UNIVERTER

207H-1 Serial prefix 635A thru 1152A Recommended replacement for Q300 is 1850-0425.

209A SINE/SQUARE OSCILLATOR

209A-2 Serials 818-00500 & below. Modification to improve operation

209A-3 Revised flatness check.

209A-4 Serials 818-00951 thru 818-01149. Modification to assure front panel ground.

209A-5 Serials 818-01777 & below. Replacement of A1CR12.

209A-6 Serials 818-02226 & below Recommended replacement for A2C1 & A2C2.

211B PULSE GENERATOR

211B-1 Serial prefix 0817A Assembly error.

211B-2 Serial prefix 817 thru 1218A External sync wiring error

214A PULSE GENERATOR

214A-2 Serials prefixed below 433- Modification for improved heat dissipation.

214A-3B Serials below 545-02126 Updating modification.

214A-4A Serials below 550-02201. Modification to reduce trailing edge overshoot.

214A-5 Serials 722-04075 & below. Simple modification to prevent loss of trigger output pulses, jitter and variations in rise time, particularly at low line voltage

214A-7 Serials prefixed below 921- . Line filter replacement kit for use where high transient line voltages are encountered

216A PULSE GENERATOR

216A-1A Serials 717-00450 & below. Modification to improve operation of count-down mv and rate generator

216A-2 Serials below 820-00546. HP part No 1850-0099. Substituting Texas Instruments 2N964 for Motorola 2N964.

218A—394A

218A DIGITAL DELAY GENERATOR

218A-2 Serials 016-00465 & below Updating modification.

219B DIGITAL DELAY PLUG-IN UNITS

219B-1 Recommended replacement for CR702 and CR706

220A SQUARE WAVE GENERATOR

220A-1 Serials 909-00326 & below Modification for output saturation

221A SQUARE WAVE GENERATOR

221A-1 Serials below 927-00161. Modification for improved performance.

222A PULSE GENERATOR

222A-1A Serials 607-00875 & below. Modification to improve high frequency response.

222A-2 Serials 740-01375 & below. Add diode to permit applying up to 1 vdc to output terminals without damaging output circuit.

222A-3 Serials 842-01601 & below Modification to improve dc liability.

222A-4A Serials 842-01635 & below Modification to strengthen PULSE AMPLITUDE switch mounting.

222A-5 Serials 928-01846 & below. Modifications to prevent output pulse loss.

230A POWER AMPLIFIER

230A-5 RF alignment; selection and replacement of glass capacitor tubes and pistons; modifications; additional operating precautions and service information.

230A-6 Replacing 00230-60024 capacitor pistons.

232A GLIDE SLOPE SIGNAL GENERATOR

232A-3 Recommended replacement tubes

▶ 232A-4 All serials. Modification to convert from 20 to 40 channels.

241A PUSHBUTTON OSCILLATOR

241A-1 Serials below 324-00929 Modification for improved stabilization time

250B RX METER

250B-1 Replacement of RF transformer.

250B-2 Serials prefixed 737. Modification to prevent Power Supply turn on surges.

302A WAVE ANALYZER

302A-2 Serials below 412-03776, except serials prefixed 149. Modification for use with grounded input recorders.

302A-3 Illustrated parts identification.

302A-4A Serials below 741-05976 Recommended replacement for pilot lamp

310A HIGH FREQUENCY WAVE ANALYZER

310A-1A Installation of 100 Kc crystal calibration kit

310A-2A Serials below 415-00561. Modification for improved short circuit protection.

310A-5 Serials below 516-01001 Modification to reduce carrier balance noise.

310A-6 Serials below 516-01186 Modification for improved bandwidth accuracy.

312A WAVE ANALYZER

312A-1 Serials prefixed 712- & below Recommended replacement capacitor for A1C8 and A12C8

312A-2 Serials prefixed 701- & below Adding ferrite beads to prevent spurious responses or oscillation.

312A-3 Serials prefixed 706- & below Preferred replacement for A9Q3, 4, 5, & 6

312A-4 Serials 720-00360 & below Preferred replacement parts. H01-312A-1/H05-312A-1 Serials 720-00260 & below. Modifications for improved frequency stability and timing.

331A/332A DISTORTION ANALYZERS

331A/332A-1B Serials 716-02301 & above (331A); Serials 717-01061 & above (332A). Recommended replacement parts

331A/332A-4A, 333A/334A-2A Serials 602-00900 & below (331A); Serials 536-00525 & below (332A). Recommended replacement for A2CR6 and A2CR7.

331A/332A-5, 333A/334A-3 Modification to extend lifetime of A2Q4.

331A/332A-6, 333A/334A-4 Procedure for measuring noise in an AM carrier.

331A/332A-7 Serials 716-02300 & below (331A); Serials 605-01060 & below (332A) Modification to reduce zero offsets

333A/334A DISTORTION ANALYZERS

333A/334A-1B Recommended replacement for A2Q1

331A/332A-4A, 333A/334A-2A Serials 533-00250 & below (333A); Serials 538-00700 & below (334A). Recommended replacement for A2CR6 and A2CR7

331A/333A-5, 333A/334A-3 Modification to extend lifetime of A2Q4.

331A/332A-6, 333A/334A-4 Procedure for measuring noise in an AM carrier.

333A/334A-5 Serials 624-00800 & below (333A); Serials 625-00825 & below (334A). Modification to reduce zero offsets.

335B FM MONITOR & MODULATION METER

M-4 Replacement of crystal oven mercury column thermostat

335E FM MONITOR

334E-2B Replacement of 3140-0010 fan motor

340B NOISE FIGURE METER

340B/342A-4 Adjustment to protect against burnout

342A NOISE FIGURE METER

340B/342A-4 Adjustment to protect against burnout

343A VHF NOISE SOURCE

343A-1 New excess-noise specification and correction factor for excess noise.

347A WAVEGUIDE NOISE SOURCE

347A-1E Procedure for installing gas tubes.

349A UHF NOISE SOURCE

347A-1E Procedure for installing gas tubes.

350C/D ATTENUATOR

350C/D-1 Replacement Instructions for 10 db and 100 db attenuator assemblies.

382A PRECISION VARIABLE WAVEGUIDE ATTENUATOR

382A-1C Procedure for calibration and alignment.

382A-2F Procedure for replacement of resistive cards.

394A VARIABLE COAXIAL ATTENUATOR

394A-1 Serials 1834 & above Absolute accuracy specification correction.

400D VACUUM TUBE VOLTMETER

- 400D-2 Test, adjustment, and certification methods
- 400D-3D Serials 14770 & below Replacement components for feedback circuit
- 400D-4C Serials 17970 & below. Modification of the input attenuator to reduce residual noise
- 400D/H/L-10C Simplified calibration procedure
- 400D/H/L-11B Replacement Ranges Switch Assembly
- 400D/H/L-12 Recommended replacements for V1 and V2
- 400D/H/L-13 Procedure for replacement of 6AX5 rectifier.

400E/EL AC VOLTMETER

- 400E/EL-1 Pin connector compatibility.
- 400E/EL-2A Serials prefixed 536- & below Recommended replacement parts.

400F/FL/GL AC VOLTMETER

- 400F/FL-1B Serials 617-01375 & below Recommended replacement parts
- 400F/FL/GL-1A Serials 734-01526 & above (400F/FL); Serials 737-00456 & above (400GL) A2 circuit board change.

400H VACUUM TUBE VOLTMETER

- 400D-2 Test, adjustment, and certification methods.
- 400D-3D Serials 1137 & below. Replacement components for feedback circuit.
- 400D-4C Serials 2237 & below. Modification of the input attenuator to reduce residual noise.
- 400D/H/L-10C Simplified calibration procedure
- 400D/H/L-11B Replacement range switch assembly.
- 400D/H/L-12 Recommended replacement for V1 and V2
- 400D/H/L-13 Procedure for replacement of 6AX5 rectifier

400L LOGARITHMIC VACUUM TUBE VOLTMETER

- 400D-2 Test, adjustment, and certification methods
- 400D/H/L-10C Simplified calibration procedure.
- 400D/H/L-11B Replacement range switch assembly.
- 400D/H/L-12 Recommended replacements for V1 and V2
- 400D/H/L-13 Procedure for replacement of 6AX5 rectifier

403A AC VOLTMETER

- 403A-2 Serials 403-04000 & below Improved carrying handle
- 403A-3 Meter circuit diode replacement

403B AC VOLTMETER

- 403B-1 Serials 523-05300 & below Recommended replacement for Q7
- 403B-3 Serials 980-10636 to 0986A11570. Modification to eliminate effects of power line transients.
- 403B-4 Meter circuit diode replacement.

410B VACUUM TUBE VOLTMETER

- 410B-11 Replacement parts for probe assembly
- 410B-2I AC probe diode replacement
- 410B-4 Recommended replacement for V2 and V3
- 410B-5 Recommended replacement for C10
- 410C-5 Simplified field calibration procedures at very high frequencies.

410C ELECTRONIC VOLTMETER

- 410C-4 Precautions to take when measuring ac voltages.

- 410C-5 Simplified field calibration procedures at very high frequencies.

- 410C-8B Replacement procedure for AC probe diode.
- 410C-9 Serials 550-08750 and below Modification adds carrying handle.
- 410C-10 Procedure for replacing range and function switches.
- 410C-11 Preferred replacement capacitors.
- 410C-12 Serials 807-09953 & below. Modification to reduce noise on amplifier output

411A RF MILLIVOLTMETER

- 411A-1 Recommended replacement for V3.
- 411A-2 Serials 938-04685 thru 938-04719 Modification to eliminate meter ringing.

412A DC VACUUM TUBE VOLTMETER

- 412A-1 Meter replacement.
- 412A-3 Installation of demodulator assembly.
- 412A-6C Range switch maintenance.
- 412A-7A Replacement parts for voltage probe assembly
- 412A-8 Serials 134-07482 & below. Modification kit to reduce strain on the input cables.
- 412A-9A Safety precaution when using probe
- 412A-11 Serials 424-14482 & below. Instructions for adding a zero adjust control to prevent zero offset.
- 412A-12 Modification to reduce noise and zero offset
- 412A-13/413A-3 Modulator cable assembly available separately
- 412A-14A Mechanical Parts Identification.
- 412A-15 Serials 649-17582 & below. Modification to prevent regulator tube V105 breakdown.
- 412A/AR-1C Serials 424-14482 & below Recommended replacement for input circuit assembly
- 412A/AR-3 Serials 424-14482 & below Recommended replacement for CR101.

412AR DC VACUUM TUBE VOLTMETER

- 412A-3 Installation of demodulator assembly.
- 412A-7A Replacement parts for voltage probe assembly
- 412A-8 Serials 134-07482 & below Modification kit to reduce strain on the input cables.
- 412A-9A Safety precaution when using probe.
- 412A-1B Replacement of range switch assembly
- 412A-2 Serials 134-05282 & below. Modification for improved ground connection
- 412A-3 Serials 424-15082 & below Instructions for adding zero adjust control to prevent zero offset.
- 412A-4/413A-2 Modulator cable assembly available separately
- 412A-5 Illustrated parts identification.
- 412A-6 Serials 649-17582 & below. Modification to prevent regulator tube V105 breakdown.
- 412A/AR-1C Serials 424-14482 & below Recommended replacement for input circuit assembly.
- 412A/AR-3 Serials 424-14482 & below. Recommended replacement for CR101

413A DC NULL VOLTMETER

- 413A/AR-1 Serials 315-02310 & below. Recommended replacement for input circuit assembly.
- 413A-2 Modification to reduce noise and zero offset

313AR—465A

412A-13/413A-3 Modulator cable assembly available separately.

413AR DC NULL VOLTMETER

413A/AR-1 Serials 315-02310 & below. Recommended replacement for input circuit assembly.

412AR-4/413AR-2 Modulator cable assembly available separately

415C STANDING WAVE RATIO METER

415C-3 Serials prefixed 147- & below. Modification for improved linearity on 200X XTAL input.

419A DC NULL VOLTMETER

419A-1 Serials 532-00675 & below. Recommended replacement for transistors A1Q1 and A1Q2

419A-3B Serials 636-01275 & below. Modification to enable direct current measurements from 10 pa to 30 na.

419A-5A Serials 532-01275 & below. Replacement for BTS battery holder.

419A-6 Serials 707-01600 & below. Recommended replacement for F1

423A, 424A CRYSTAL DETECTOR

423A/424A-1 Replacement diode assemblies

425A DC MICRO VOLT-AMMETER

425A-1C Serials 930 & below. Procedure for replacing meter

425A-2A Serials 002-02550 & below. Circuit modifications to increase reliability and stability

425A-5 Serials 425-07150 & below. Procedure for reducing amplifier noise and zero offset.

425A-6 Modulators available in two sub-assemblies for greater reordering convenience.

427A VOLTMETER

427A-1B Modification to allow operation with battery or AC line supply

427A-3 Improved zero offset.

427A-4A Serials 621-02300 & below. Recommended replacements for A1Q4 and A1Q8

430B MICROWAVE POWER METER

430B-1 Procedure for checking and adjusting bias current.

430B-2 Modification for increased flexibility and convenience

431A POWER METER

431A-1C Modification to allow for battery power operation.

431A-2 Serials below 210-00666. Modification to improve electrical zero set control.

431A-3 Installation of equalizer network assembly.

431A-4/431B-4/431C-4 Serial prefix 210 and above. Preferred replacement ZERO control.

431A-5 Modification for smooth zero set operation below zero

431B POWER METER

431B-1 Procedure for installing long cable (between mount and meter) options.

431B-3 Serials below 423-04101. Recommended replacement for Q106 for easier recalibration.

431A-1C Modification to allow for battery power operation.

431A-4/431B-4/431C-4 Preferred replacement ZERO control

431C POWER METER

431C-1 Procedure for installing long cable options.

431C-2 Serials 618-01450 & below. Replacement zener diode kit for power supply

431C-3 Serials 707-04050 & below. Recommended replacement for F1.

431A-4/431B-4/431C-4 Preferred replacement ZERO control

432A POWER METER

432A-1 Calibration procedure (without using 8477A)

432A-2 Serials prefixed 843- & below. Increased stability during calibration.

432A-3 Serials below 937-01850. Modification for improved battery charger adjustment range.

432A-4A Serials 812-00200 & below. Modification for improved zero carryover and range-to-range tracking

432A-5 Serials prefixed 840- & below. Modification for compatibility with 8404 Power Meter Leveling Amplifier.

432A-6 Installation of long thermistor mount cable options

432A-7 Serials 957-02950 & below. Modification for operation in cold environments.

432A-8 Serials 843 & below. Recommended replacement for the A2 Logic Board

432A-9 Serials 968-03550 & below. Modification to improve stability for 100 ohm operation.

432B DIGITAL POWER METER

432B-1 Serial 1143A00310 and below. Recommended replacement for 115 V fuse is 2110-0201

432B-2 Serial prefix 1141A and below. Modification to improve operation with 5055A Digital Recorder.

434A CALORIMETRIC POWER METER

434A-1G Head Box installation procedure

434A-2 Operating precautions.

434A-4 Serials 229-01151 & below. Replacement procedure for motor and pump assembly.

432C POWER METER

▶ 432C-1 Serial prefix 1213A and below. Modification for computer operation

461A AMPLIFIER

461A-1A Serials 418-00700 & below. Replacement of transistors Q4, Q5, Q6, Q7, and Q8.

461A/462A-2 Procedure for eliminating noise caused by jarring the amplifier.

462A AMPLIFIER

461A/462A-2 Procedure for eliminating noise caused by jarring the amplifier.

463A PRECISION AMPLIFIER

463A-1 Serials 624-00150 & below. Recommended replacements for A1CR1 and A1CR2.

463A-2 How to align range switch to prevent pushbuttons from sticking.

463A-3 WARNING note to avoid shock or damage to instruments.

463A-4 Serials 738-00340 & below. Recommended replacement for A3Q4 and A3Q6.

463A-6 Prevention of Oscillations resulting in power supply damage.

465A AMPLIFIER

465A-1 Serials 530-00410 & below. Replacement of CS to increase gain accuracy at 5 Hz

465A-3A Recommended replacement for Q6

467A POWER AMPLIFIER/SUPPLY

467A-1 Serials 949-02245 & below. Recommended replacement for A1CR114 and A1CR107 for improved positive and negative output current limit.

477B THERMISTOR MOUNT

477B-1 Procedure for disassembly, assembly, and testing.

478A THERMISTOR MOUNT

478A-1B Procedure for checking and replacing the thermistor assembly

487B THERMISTOR MOUNT

X487B-1A Test procedures and thermistor replacement instructions

489A TWT AMPLIFIER

489A/491C-1 Serials below 226-00246 Installation of air duct kit

489A/491C-2A Serials below 449-00506 Increased TWT filament life

489A/491C-3 Serials below 449-00566 Improved power supply regulation

489A-4/491C-4/493A-3/495A-3 Serials below 811-01136 Modification for improved reliability.

489A-5/491C-5 Serials below 930-01316. Modification to increase adjustment range of K3.

491A TRAVELING WAVE TUBE AMPLIFIER

491A-1B Serials 130 & below Procedure for use of new, more rugged TWT.

491A-3 Serials 308 & below. Fan motor replacement.

491C TRAVELING WAVE TUBE AMPLIFIER

489A/491C-1 Serials below 226-00246 Installation of air duct kit

489A/491C-2A Serials below 449-00506. Increased TWT filament life

489A/491C-3 Serials below 449-00566. Improved power supply regulation.

489A-4/491C-4/493A-3/495A-3 Serials below 811-01136. Modification for improved reliability.

489A-5/491C-5 Serials below 930-01316 Modification to increase adjustment range of K3.

493A TRAVELING WAVE TUBE AMPLIFIER

493A-1 Serials below 304-00226. Installation of air duct kit

493A/495A-2A Serials below 449-00496. Modification to increase TWT filament life.

493A/495A-3 Preferred replacements for V403 and V404.

489A-4/491C-4/493A-3/495A-3 Serials below 826-01256. Modification for improved reliability.

493A-4/495A-4 Serials below 826-01256 Modification to protect TWT from current overloads

495A TRAVELING WAVE TUBE AMPLIFIER

495A-1 Serials below 746-01056 Kit to improve TWT cooling.

493A/495A-2A Serials below 449-00496. Modification to increase TWT filament life.

493A/495A-3 Preferred replacements for V403 and V404.

489A-4/491C-4/493A-3/495A-3 Serials below 826-02156. Modification for improved reliability

493A-4/495A-4 Serials below 826-01256 Modification to protect TWT from current overloads.

506A OPTICAL TACHOMETER PICK-UP

506A-2 Illustrated parts identification.

508A/B/C/D TACHOMETER GENERATORS

508A/B/C/D-1 Illustrated parts identification.

562A DIGITAL RECORDER

562A-1A Installation of analog circuitry assembly.

562A-2 Recommended replacement for A13Q7 and A13Q15.

560A-2D Procedure for replacement of clutch solenoid assembly

560A-9 Procedure for replacement of pawl magnet assemblies

560A-11B Installation of replacement print wheel assemblies

560A-13D Maintenance Kit.

560A-14A Printer mechanism maintenance schedule.

565A DIGITAL PRINTER

560A-1B Replacement of cam shaft parts

560A-2D Procedure for replacement of clutch solenoid assembly.

560A-9 Procedure for replacement of pawl magnet assemblies

560A-10B Procedure for replacement of print arm assembly

560A-13D Maintenance Kit.

560A-14A Printer mechanism maintenance schedule

560A-15A Serials 018-00213 & below. Modification for increased clutch reliability.

606A IIF SIGNAL GENERATOR

506A-2B Serials below 038-01732 Replacement of percent modulation or RMS voltmeter.

606A-3 Replacement of drive cable assembly.

606A-4 Serials 038-02230 & below. Replacement of tank coils.

606A-6 Serials 248-04131 & below. Modification for improving modulation meter accuracy.

606A-7 Serials below 177-06031. Modification for improved SWR and elimination of lamp selection.

606A-8 Illustrated parts identification.

606A/B-10 Written copy of Service Tips on a 606 Video Tape

608A/B VHF SIGNAL GENERATORS

608A-3A Procedure to replace oscillator and amplifier turret.

608A-7 Procedure for repair of output attenuators

608C VHF SIGNAL GENERATOR

608C-2A Serials below 247-04756. Modification for regulated DC filament operation

608C/D/E/F-3A Serial between 247-0456 and 548-06509. Modification to add fuse protection to DC filament supply and wiring.

608C/D/E/F-2B Serials below 832-07365 Modification for modulation oscillator

608C/D/E/F-8 Serials below 832-07540. Recommended replacement for R7 and R8

608C/D/E/F-9 Serials below 832-07415 Recommended replacement for fuse F1.

608D-3A Serials below 01287. Recommended replacement procedure for power monitor detector assembly.

608D-4A Serials below 02354. Recommended replacement of rectifiers for increased reliability.

608D VHF SIGNAL GENERATOR

608C-2A Serials below 247-081115. Modification for regulated DC filament operation.

608E/F—620B

608C/D/E/F-1A Series below 247-08115 and 548-11960. Modification to add fuse protection to DC filament supply and wiring

608C/D/E/F-2B Series below 828-12506. Modification for modulator oscillator

608C/D/E/F-8 Series below 828-12556. Recommended replacement for R7 and R8.

608C/D/E/F-9 Series below 828-12506. Recommended replacement for fuse F1.

608D-3A Series below 02383. Recommended replacement procedure for power meter detector assembly.

608D-4A Series below 04916. Recommended replacement of rectifiers for increased reliability

608D-6B Recommended replacement of CR1 is 1910-0011

608 E/F VHF SIGNAL GENERATOR

608C/D/E/F-1A Series below 610-00225. Modification to add fuse protection to DC filament supply and wiring.

608C/D/E/F-2B 608E series below 826-01221, 608F series below 827-00951. Modification for modulator oscillator

608C/D/E/F-8 608E series below 833-03821, 608F series below 832-01151. Recommended replacement for R7 and R8.

608C/D/E/F-9 608E series below 826-01321, 608F series below 832-01001. Recommended replacement for fuse F1

608E/F-1 608E series below 710-00371, 608F series below 710-00500. Recommended replacement of Q7.

608E/F-10 608E series below 833-02171, 608F series below 832-01301. Recommended replacement of C216 is 0180-1819.

608E/F-11 608E series below 832-02121, 608F series below 832-01251. Recommended replacement of CR1. Provides stronger harmonics for calibration

608E/F-12 608E series below 833-02671, 608F series below 832-01501. Modification to reduce RF leakage.

608E/F-13 608E series below 983-03673, 608F series below 977-01776. Modifications to reduce AM noise sidebands in the CW mode.

608E/F-14 All series. Power leveling procedure

608E/F-15 All Series. Recommended replacement for Q11 is 1854-0090.

608E/F-16 Written copy of service tips on a video tape.

608E/F-17 608E series 833-02670 and below, 608F series 832-01500 and below. Modification to install square pins to ALC board to improve serviceability.

612A SIGNAL GENERATOR

612A-4A Procedure for replacement for output attenuator

612A-5B Series 329 thru 299-01815. Replacement of rectifiers for increased reliability

612A-6 Series below 446-04467. Modification to improve modulator low frequency response

612A-7B Series below 533-04417. Modification for protection against turn on surge.

612A-8A Series below 6D1-05123. Modification to protect R95 and R97 variable RF tuning assembly

612A-9 Series below 712-05783. Preferred replacement for CR21 for improved precision of filament power supply

612A-10 Series below 352-03615. Modification for regulated DC filament operation.

614A SIGNAL GENERATOR

614A-1C Replacement of attenuator and power monitor probe

614A-3 Illustrated parts identification

614A-4 Fuse change.

M-13 Explanation of monitor system

616A/B UHF SIGNAL GENERATORS

616A-4A Replacement of attenuator and power monitor probe

616A-5 Illustrated parts identification.

616B-6 Series below 226-02591. Modification to reduce residual AM.

616B-7B Serial prefix 1128A and below. Modification to suppress transient at Sync input jack

618A SIGNAL GENERATOR

618A-3F Procedure for replacing and aligning the power monitor probe and output attenuator.

618A-4 Suppression of switching transients at Sync input.

618A-5 Modification for improved ventilation.

M-13 Explanation of monitor system

618B SHF SIGNAL GENERATOR

618B/620A-1A Series 338-04136 & below. Replacement of R103 to improve reliability

618B-5B Series 385 & below. Installation of fan modification kit

618B-6 Series 1335 & below. Modification to improve pulse and square wave operation.

618A-3F Procedure for replacing and aligning the power monitor probe and output attenuator.

618B-7A Suppression of switching transients at Sync input

M-13 Explanation of monitor system.

618C SIGNAL GENERATOR

618C-1A/620B-1A Series below 740-00701. Preferred replacement for R523 for improved A/F operation.

618C-2/620B-2 Series below 740-00576. Modification to lengthen klystron life.

618C-4 Series below 645-00277. Fan installation kits

618C-5 Serial prefix below 0979A. Suppression of switching transients at Sync input.

620A SHF SIGNAL GENERATOR

618B/620A-1A Series 338-04136 & below. Replacement of R103 to improve reliability.

620A-2D Replacement of attenuator and power monitor probe

620A-5A Series 1243 & below. Procedure for replacement of Cavity Assembly.

620A-6 Illustrated parts identification.

618A-5 Modification for improved ventilation.

618B-5B Series 243 & below. Installation of fan modification kit.

M-13 Explanation of monitor system.

620A-7B Suppression of switching transients at Sync input

620B SIGNAL GENERATOR

618C-1A/620B-1A Series below 740-00681. Preferred replacement for R523 for improved A/F operation.

618C-2/620B-2 Series below 740-00501. Modification to lengthen klystron life.

620A-2 Replacement of attenuator and power monitor probe.

620B-3A Suppression of switching transients at Sync input.

623B SHF TEST SET

- 623B-2B Serials 851 & below. Recommended replacement for fan motor and blade.
 623B-5 Procedure for replacement of attenuator assembly
 623B-6 Recommended replacement procedure for fan motor

624C X-BAND TEST SET

- 624C-1 Illustrated parts identification
 624C-2 Serials 007-01807 & below. Alternate replacement for V12.
 624C-3 Recommended replacement procedure for fan motor
 62401-1/H04-624C Recommended replacement procedure for fan motor

626A SHF SIGNAL GENERATOR

- 626A-1† Replacement cavity-kytstron assembly.
 626A-2A Modification to allow for operation from AC line of 50 to 400 Hz.
 626A-3 Illustrated parts identification.
 626A-5/628A-6 Serials below 976-01471. Modification for improved Sync and Sync-out thyristors.
 ▶ 626A-6 Serials 1210A01730 and below. Ext. Sync minimum pulse width.
 ▶ 626A-7 Serial prefix 003 and below. Selenium rectifier replacement

628A SHF SIGNAL GENERATOR

- 628A-2C Procedure for replacement of cavity-kytstron assembly
 628A-4 Illustrated parts identification.
 626A-5/628A-6 Serials below 652-01769. Modification for improved Sync and Sync-out thyristors.
 628A-2C Modification to allow for operation from AC line of 50 to 400 Hz.
 ▶ 628A-6 Serials 008-00328 and below. Selenium rectifier replacement.
 ▶ 628A-7 Serials 1149A01968 and below. Ext. Sync minimum pulse width

651A TEST OSCILLATOR

- 651A-8 Meter diode replacement

651B TEST OSCILLATOR

- 651B-1 Modification to convert power monitor to dBm/600 ohms
 651B-2A Modification to convert to 75-ohm output (Option 02)
 651B-3 Recommended replacement for A2R17.
 651B-4A Serials 911-01911 & below. Recommended replacement of power supply transistors
 651B-5 Serials 0961A06600 and below. Recommended replacement of power transistors.
 651B-6 Meter diode replacement.

652A TEST OSCILLATOR

- 652A-1 Recommended replacement for A2R17.
 652A-2A Serials 912-0465T & below. Recommended replacement of power supply transistors
 652A-4 Meter circuit diode replacement

653A TEST OSCILLATOR

- ▶ 653A-1A Serials 955-00281 and below. Improved Sync stability
 ▶ 653A-2 Maintenance procedures for attenuator switch

675A SWEEPING SIGNAL GENERATOR

- 675A-1 Serials 818-00351 & below. Recommended replacement for A11CR1 and A11CR2.

676A PHASE-AMPLITUDE TRACKING DETECTOR

- 676A-1 Procedure for system compatibility check

680 STRIP CHART RECORDERS

- 680-4A Recommended replacement for servo drive cable
 680-5 Recommended replacement for M302 chart drive motor.
 680-6 Serials 09826 and below. Recommended replacement for CR307 and CR308 is 1901-0033.

680 SERIES ELECTRONIC SWEEP OSCILLATORS

- 682A-4A Modification and adjustment procedures
 682A-5 Modification for increased reliability.
 684A-1C Replacement of BWO Tube

690A/B SERIES SWEEP OSCILLATORS

- 690A-1 Conversion of A Series to B Series.
 690A/B-1 Serials below 409-00161. Updating modifications.
 690A/B-2 Serials below 410-00186. Modifications for improved stability when power meter leveling.
 690A/B-3A Serials above 341-00121. Installation of option 01
 690A/B-4 Serials below 424-00361. Updating modifications
 690A/B-5A Serials below 435-00511. Modification for improved square wave modulation and reduction of RF interference.
 690A/B-6 Modification for the addition of a blanking output

690C/D SERIES SWEEP OSCILLATORS

- 690C/D-1 Serials below 548-00401. Anode fuse protection
 690C/D-2 Serials below 548-00806. Modification to reduce turn-on transients in 6.3V DC Power Supply
 690C/D-3 Serials 548-00401 & below. Recommended resistor changes for improved reliability.
 690C/D-4 Recommended replacement for neon lamps DS1, 2 & 3.
 690C/D-5 Serials below 630-01076. Modification for improved manual trigger operation.

694B, 695A, 696A, 697A, SWEEP OSCILLATORS

- 694B-1 Modification to prevent accidental blowing of anode fuse due to switching transients.

712C DC POWER SUPPLY

- 712C-1 Serials 545 & below. Modification to improve reference supply with constant current and line regulation

715A KLYSTRON POWER SUPPLY

- 715A-3A Replacement of regulated RF oscillator assembly.

716A KLYSTRON POWER SUPPLY

- 716A-1B Modification for improved klystron protection

735A DC TRANSFER STANDARD

- 735A-2 Serials 547-00330 & below. Modification to hold oven in place.

738AR VOLTMETER CALIBRATOR

- 738AR-1D Modification to enable calibration of 1-3-10 and 1 5-5-15 full scale Voltmeters.
 738AR-2A Serials 441-01255 & below. Modification for increased reliability

738BR—851B

738AR-3/738BR-1 Recommended replacement for L1.

738BR VOLTMEETER CALIBRATOR

738AR-3/738BR-1 Recommended replacement for L1

738BR-2 Serials 503-03200 & below. Preferred replacement capacitors.

740B DC STANDARD VOLTMETER

740A-4/740B-1A Serials 610-00310 & below. Addition to alignment instructions on inside top cover.

740B-4 Serials 722-00790 & below. Modification to eliminate possible intermittent operation of K1 Output Relay at low line voltage.

740B-5 Serials 722-00900 & below. Modification to center zero control

740B-6A Serials 946-00951 & above. Recommended replacement of sensitivity switch shafts.

741B DC STANDARD VOLTMETER

741B-2B Serials 634-00514 & below. Modification to increase reliability of Power Switch

741B-3 Serials 824-00540 & below. Modification to eliminate thermal voltage of variable Standard Vernier

741B-4 Serials 828-00560 & below. Modification for improved output voltage reliability

741B-5A Serials 844-00620 & below. Modification to stabilize loop bias adjustment.

741B-6A Serials 944-00781 & above. Recommended replacement of sensitivity switch shafts.

745A AC CALIBRATOR

745A-1 Serials 741-00235 & below. Modifications to improve performance.

745A-2A Serials 912-00410 & below. Modification to allow operation with 746A High Voltage Amplifier.

745A-3 Serials 741-00310 & below. Modification for increased AGC Level Control range.

745A-4 Serials 741-00310 & below. Recommended replacement for A3Q21.

745A-5 Troubleshooting procedure.

745A-6 Serials 912-00480 & below. Recommended transistor replacement to improve overload recovery at 100V - 100KHz

745A-7 Serials 953-00555 & below. Modification to prevent erroneous overload indications

745A-8 Reduce Acoustical Noise.

745A-9 Prevent Sticking of Pushbuttons

746A HIGH VOLTAGE AMPLIFIER

746A-1 Serials 933-00120 & below. Permanent filter screen mounting.

746A-2 Serials 933-00121 & below. Modification to eliminate parasitic oscillations.

746A-3 Modification for increased reliability.

746A-4 Serials 933-00215 & below. Modification to improve reliability of A9Q1 and A9Q2.

746A-5 Serials 933-00265 & below, excepting serials 933-00120, -00209, -00213, -00244, -00246, & -00262. Modification to eliminate high frequency oscillations.

746A-6A Serials 933-00215 & below, excepting serials 933-00214, -00213, -00211, -00209, -00204, -00202, -00200, -00199, -00194, -00192. Modification to raise the A5 Board high voltage output.

746A-7A Serials 933-00266 to 990-00356. 1000:1 Divider Adjust Reversal.

774D COAXIAL DIRECTIONAL COUPLER

774D-1 Explanation of differences between various kinds of Type N connectors

774D-2A/775D-1A Specifications correction for insertion loss.

776D COAXIAL DIRECTIONAL COUPLER

776D-1 Clarification of insertion-loss spec.

777D COAXIAL DIRECTIONAL COUPLER

777D-1 Clarification of insertion-loss spec

779D DIRECTIONAL COUPLER

779D-1 Clarification of insertion loss spec

X781 A COAXIAL DIRECTIONAL DETECTOR

X781A-1 Clarification of insertion-loss spec

786D COAXIAL DIRECTIONAL DETECTOR

786D-1/787D-1/788C-1 Clarification of insertion-loss spec.

787D COAXIAL DIRECTIONAL DETECTOR

786D-1/787D-1/788C-1 Clarification of insertion-loss spec.

788C COAXIAL DIRECTIONAL DETECTOR

786D-1/787D-1/788C-1 Clarification of insertion-loss spec.

789C COAXIAL DIRECTIONAL DETECTOR

789C-1 Clarification of insertion-loss spec.

796D COAXIAL DIRECTIONAL COUPLER

796D-1/797D-1/798C-1 Clarification of insertion-loss spec.

797D COAXIAL DIRECTIONAL COUPLER

796D-1/797D-1/798C-1 Clarification of insertion-loss spec.

798C COAXIAL DIRECTIONAL COUPLER

796D-1/797D-1/798C-1 Clarification of insertion-loss spec.

805A/C SLOTTED LINE

805A-3 Replacement of end connectors

851A SPECTRUM ANALYZER DISPLAY SECTION

851A-1 Serials 439-00402 & below. Modification for improved 1 MHz log display.

851A-2 Modification for added Video Amplifier protection

851A-3 Procedure for field installation of external sweep input

851A/B-6 Recommended transistor replacement.

851A/B-7 Recommended transistor replacement

851A/B-8/852A-4 Recommended replacement for A1 IF Gain Switch Assembly

851B SPECTRUM ANALYZER DISPLAY SECTION

851B-1/852A-1 Serials 808-01973 thru 850-02947. Modification for improved 15V power supply reliability

851B-2/852A-2 Serial prefixes 808 thru 923. Modification for improved -15V power supply performance and reliability

851B-3 Serials 813-02122 thru 933-03197. Modification for improved diode protection.

851A/B-6 Recommended transistor replacement

851A/B-7 Recommended transistor replacement

851A/B-8/852A-4 Serial prefixes 808 & below. Recommended replacement for A1 IF Gain Switch Assembly

852A SPECTRUM ANALYZER

- 851B-1/852A-1 Serials 830-00349 & below. Modification for unproved -15V power supply reliability
- 851B-2/852A-2 Serial prefixes 929 & below. Modification for improved -15V power supply performance and reliability
- 852A-3 CRT failures
- 851A/B-8/852A-4 Serial prefixes 809- & below. Recommended replacement for A1 1F Gain Switch Assembly.
- 852A-5 Serials 813-00150 thru 933-00394. Modification for improved diode protection.
- 852A-6 CRT flood gun accelerator modification.

885A PHASE SHIFTER

- 885A-1A A technique for calibrating Phase Shifters to high accuracy.

1104A TRIGGER COUNTDOWN

- 1104A-1 Revised bias adjustment procedure.

1105A PULSE GENERATOR

- 1105A-1 Replacement of R11.

1106A TUNNEL DIODE

- 1106A-1 All serial prefixes, repair policy.

1111A AC PROBE AMPLIFIER

- 1111A-1A Recommended diode replacement.

1121A AC PROBE

- 1121A-1 All serial prefixes; replacement probe assembly

1200 SERIES OSCILLOSCOPES

- 1200A-1 Serials below 808-00221 Improved LV regulator transistor mounting kit
- 1200A-3A Modification for additional High Voltage Oscillator transistor protection
- 1200A/B-4 1200A serials below 1047A01396, 1200B serials below 0931A00973. Increased protection for input pre-amplifier boards when making power measurements.

1201A/B DUAL TRACE OSCILLOSCOPE

- 1201A/B-1A Serials prefixed 901- & below. Modification to standardize erase time.
- 1201A/B-2A Serials 924 & below. Modification to eliminate momentary write gun turn-on after erasure.
- 1201A/B-3 1201A serials below 1117A00616, 1201B serials below 1120A00296. Increased protection for input pre-amplifier boards when making power measurements.
- ▶ 1201A/B-4 1201A serial prefix 1234A and below, 1201B serial prefix 1245A and below. Loss of intensity control
- 1201A/B- OPT 009-1 Serials 924 & below. Preferred replacement for VR6 on the storage-pulse board HP P/N 01201-66502

1202A/B OSCILLOSCOPE

- 1202A/B-1 1202A serials below 1044A00631, 1202B serials below 0931A00491. Increased protection for input pre-amplifier boards when making power measurements.

1205A/B OSCILLOSCOPE

- 1205A/B-1 1205A serials below 1045A00946, 1205B serials below 0931A00841. Increased protection for input pre-amplifier boards when making power measurements.

1206A/B OSCILLOSCOPE

- 1206A/B-1 1206A serials below 1044A00471, 1206B serials below 0931A00391. Increased protection for input pre-amplifier boards when making power measurements.

1207A/B OSCILLOSCOPE

- 1207A/B-1 Serials prefixed 901- & below. Modification to standardize erase time.
- 1207A/B-2A Serials 922 & below (1207A); Serials 924 & below (1207B). Modification to eliminate momentary write gun turn-on after erasure.
- 1201A/B- OPT 009-1 Serials 922 & below (1207A); Serials 924 & below (1207B). Preferred replacement for VR6 on the storage-pulse board HP P/N 01201-66502.
- 1207A/B-3 1207A serials below 0979A00191, 1207B serials below 1118A00246. Increased protection for input pre-amplifier boards when making power measurements.
- ▶ 1207A/B-4 Serial prefix 1212A and below. Loss of intensity control

1208A X-Y DISPLAY

- 1208A/OPTN H11-1 Serial prefix 922- & below. Preferred replacements for 1A2C1 and 1A2C2.
- 1208A H11/H12-1A Serials 922-00321 & below. Modification to eliminate momentary write gun turn-on after erasure.
- 1201A/B- OPT 009-1 Serial prefix 965 & below. Preferred replacement for VR6 on the storage-pulse board HP P/N 01201-66502.

1217A/B DUAL TRACE OSCILLOSCOPE

- 1217A/B-1 Serials 947 & below. Preferred replacement for A3Q29, 30, 35, and 36

1300A X-Y DISPLAY MONITOR

- 1300A-1 Preferred replacement for Q1 and Q2, or Q7 and Q8.
- 1300A-2 Fuse Change.
- 1300A-3 Preferred transistor replacements.
- 1300A-4 Serials 921-00960 & below. Modification for improved Z-axis amplifier reliability.
- 1300A-5 Preferred replacements for A2A1O1, O2, Q7, and Q8.
- 1300A-6 Replacement of A3Q7 and A3Q8.
- 1300A-7 Serials 956 & below. Preferred replacement for 1300A/A4C5 and 1309A/A6C5.
- 1300A-8 Serial prefix 915 to serial number J15J A01877. CRT protection circuit loading error.

1308A EIGHT CHANNEL MONITOR

- 1308A-1 Serials prefixed 955 & below. Replacement of CRT
- 1308A-2 Serial number 1148A00440 & below. CRT protection circuit loading error.
- 1308A-3 Serial prefix 1122A & below. Reduced vertical drift and DC offset
- ▶ 1308A-4 Serial prefix 1222A & below. Sweep Generator Hangup.

1309A X-Y MONITOR

- 1309A-1 Fuse Change.
- 1309A-7 Serials 958 & below. Preferred replacement for 1300A/A4 C5 and 1309A/A6 C5
- 1309A-2 Serial prefix 915 to serial number 1147A00846. CRT protection circuit loading error.
- 1309A-3 Serial prefix 1142 & below. Reduced vertical drift and D.C. offset.

1310A—1423A

1310A DISPLAY

- 1310A-1 Serial prefix 1148A & below. Intermittent or flickering display intensity
- 1310A-2 Serial prefix 1148A00215 & below. Insufficient high voltage
- 1310A-3 Serial prefix 1148A & below. Phosphor protection circuit reaction time reduction.
- 1310A-4 All serial prefixes. Service Tool.
- ▶ 1310A-5 High voltage transformer replacement

1311A DISPLAY

- 1311A-1 Serial prefix 1148A & below. Intermittent or flickering display intensity.
- 1311A-2 Serial prefix 1148A00161 & below. Insufficient high voltage
- 1311A-3 Serial prefix 1148 & below. Phosphor protection circuit reaction time reduction.
- 1311A-4 All serial prefixes. Service tool - extender cable for A12 and A14
- ▶ 1311A-5 All serials. High voltage transformer replacement.

1330A X-Y DISPLAY

- 1330A-1 Serial prefix 1150A & below. Z-axis amplifier and CRT protection.
- ▶ 1330A-2 All serials. Preferred replacement for high voltage oscillator

1331A/C/E DISPLAY

- 1331A/C/E-1 Serial prefix 958- Modification to prevent failure of filter capacitor ASC2.
- 1331A/C-2 Serial prefix 1149A & below. Z-axis amplifier and CRT protection.
- 1331C-1 All serials. Service Tool

1401A DUAL TRACE AMPLIFIER

- 1401A-1 Serials 514-00765 & below. Preferred replacement sets for Q101, Q102 and Q201, Q202.

1402A DUAL TRACE AMPLIFIER

- 1402A-1 Serials below 444-00426. Modification to eliminate intensity modulation
- 1402A-3 Serials below 524-00641. Modification for improved pulse response.
- 1402A-4 Modification for X-Y operation above 100 Hz
- 1402A-6A Serials below 535-01376. Modification for improved transient voltage protection.
- 1402-7 Some serials between 716-02450 & 716-02625, must change R460

1404A 4-CHANNEL VERTICAL AMPLIFIER

- 1404A-1 Serials 910 & below. Modification to improve high frequency trigger sensitivity.

1406A DIFFERENTIAL AMPLIFIER

- 1406A-1 Serials 704-00200 & below. Modification to increase life of Q1 and Q2
- 1406A-2 Serials 740-00250 & below. Preferred replacement for Q1, Q2, Q201 and Q202.
- 1406A-5A Serials 740-00250 & below. Modification to improve reliability.

1407A DIFFERENTIAL AMPLIFIER

- 1407A-1 Preferred replacement for V201 and V202

- 1407A-2 Serials 626-00175 & below. Modification to improve DC stabilizer operation.

- 1407A-3 Serials 704-00275 & below. Modification to prevent Q1 and Q2 burnout due to turn-on transients.

- 1407A-4 Serials 740-00325 & below. Preferred replacement for Q1, Q2, Q201 and Q202.

- 1407A-5A Serials 740-00250 & below. Modification to improve reliability

1410A SAMPLING VERTICAL AMPLIFIER

- 1410A-1 Improved method for adjusting 1 mv/cm vertical gain.
- 1410A-2 Serials 715-00275 & below. Preferred transistor replacement

1411A SAMPLING VERTICAL AMPLIFIER

- 1411A-1 Improved method of adjusting the 1 mv/cm vertical gain.
- 1411A-2 Serials 705-00300 & below. Preferred replacement for Q503 and Q504.
- 1411A-3A Serials 705-00300 & below. Simple change to reduce low-frequency distortion when using the 1432A 4GHz Sampler Head.
- 1411A-4A Serials 724-00375 & below. Modification to prevent "Lock up" between the 100 mv-200 mv/cm ranges

1415A TIME DOMAIN REFLECTOMETER

- 1415A-6B Serials below 512-00536. Modification for reduced interference.
- 1415A-7 Serials below 548-00986. Required modification for use with Model 141A Oscilloscope.
- 1415A-8A Serials below 548-00986. Modification for improved retrace blanking and dot intensity.
- 1415A-9A Serials below 512-00536. Improved X-Y recorder out operation
- 1415A-10A Serials 816-01911 & below. Modification for improved step stability.

1416A SWEEP FREQUENCY INDICATOR

- 1416A-1 Serials 848-00921 & below. Preferred replacement transistors.

1420A TIME BASE

- 1420A-2 Serials 441-00325 & below. Modification for operation with DC stabilized vertical plug-ins
- 1420A-3A Serials below 639-01876. Improved trigger sensitivity potentiometer.
- 1420A-4 Serials below 620-01676. Using aged 6DJ6s for V101, V102, V103, V111, V202, V203 to improve stability.
- 1420A-5A Serials 639-02359 & below. Preferred replacement for R254.

1421A TIME BASE AND DELAY GENERATOR

- 1421A-1A Serials prefixed below 803-. Modification for additional gate protection against transient voltages.
- 1421A-2A Serials prefixed 545 & below. Modification for operation with DC stabilized vertical plug-ins.
- 1421A-4 Serials prefixed below 803-. Modification to prevent burnout of CR305, 306, 311, 312, when integrator output is accidentally grounded.
- 1421A-5 Serials below 803-02700. Preferred replacement for R280.

1423A TIME BASE

- 1423A-J Serials 705-00350 & below. Modification to prevent burnout of CR305, 306, 311, and 312 when integrator output is accidentally grounded.

1423A-2 Serials 709-00350 & below Recommended replacement for A204.

1423A-3 Serials below 847-00491 Modification to improve reliability.

1424A SAMPLING TIME BASE

1424A-1 Serials 801-00225 & below Diode holders for threshold detector tunnel diodes.

1424A-2 Serials 801-00225 & below Replacement of Mode and Level pots and knobs

1424A-3A Serials 803-00270 & below Replacement of A4

1424A-4 Recommended diode replacement.

1424A-5 Serials 822 & below. Recommended replacement of A1R3.

1425A SAMPLING TIME BASE

1425A-1 Serials 707-00168 & below. Modification to increase range of Minimum Delay. Preferred replacement for A3Q3.

1425A-2 Trouble shooting guide for Threshold Detector.

1425A-3 Preferred replacements for A2VR1, R10, A2T1, and A3T1.

1425A-4 Serials 748-00675 & below. Tunnel diode holders available

1425A-5 Recommended diode replacement.

1430A SAMPLER

1430A-1 Serials 715-00325 & below Replacing CR110 or CR111.

1431A SAMPLER

1431A-1 Serials 707-00205 & below Recommended diode replacement.

1700A OSCILLOSCOPE

- ▶ 1700A-1A Serials prefixed 1046A & below. Modification to improve low temperature turn-on and high frequency auto triggering.

1700A-2 Serial prefix 1102A & below. Modification to prevent sweep time switches from dragging or hanging up.

1700A-3 Serials 1119A00310 & below. Excessive Battery Charge.

1700A-4A Serial prefix 1141A & below. Leaky line rectifier A2Z1.

- ▶ 1700A-5 Modification for selectable triggering

1701A OSCILLOSCOPE

1701A-1A Serials prefixed 0983A & below. Modification to improve low temperature turn-on and high frequency auto triggering.

1701A-2 Serials prefixed 1102A & below. Modification to prevent sweep time switches from dragging or hanging up.

1701A-3 Serials 1119A00555 & below. Excessive battery charge.

1701A-4A Serial prefix 1204A & below. Leaky line rectifier A2Z1

- ▶ 1701A-5 Serial prefix 1117A & above. Modification for selectable triggering.

1702A OSCILLOSCOPE

1702A-1 Serial prefix 1230 & below. Reduced sensitivity to CRT charged particles.

1703A OSCILLOSCOPE

1703A-1 Serial prefix 1230 & below. Reduced sensitivity to CRT charged particles.

- ▶ 1703A-2 Serials 1150A00160 & below. Wiring error on high voltage multiplier.

1706A OSCILLOSCOPE

1706A-1A Serial prefix 1137A & below. Leaky line rectifier A2Z1

1707A OSCILLOSCOPE

1707-1 Serials 1117A00145 & below. Excessive battery charge

1707A-2A Serial prefix 1209A & below. Leaky line rectifier A2Z1

- ▶ 1707A-3 Modification for selectable triggering.

1750B DUAL TRACE VERTICAL AMPLIFIER

1750B-1 Serials below 435-00176 Modification for increased frequency response.

1750B-2 Serials below 543-00616. Modification for Improved DC stability of the B Trigger Out amplifier

1750B-4 Serials prefixed below 516 Modification for improved DC balance

1754A FOUR CHANNEL AMPLIFIER

1754A-4 Serials prefixed below 530-. Modification for improved DC stability of the Trigger Out amplifier.

1755A DUAL TRACE VERTICAL AMPLIFIER

1755A-1 Serials below 605-01491 Improved B trigger out DC stability.

1801A DUAL-CHANNEL VERTICAL AMPLIFIER

1801A-1B Serials below 714-01400. Modification to improve Sync Amplifier linearity.

1801A-5 Serials prefixed below 644-. Modification to permit operation with 1820A or 1821A Time Bases with serial prefixed 640 & above.

1801A-6B Serials prefixed 828- & below. Modification to improve triggering in Chop Mode.

1804A FOUR-CHANNEL VERTICAL AMPLIFIER

1804A-2 Serials prefixed 838- & below. Modification to improve pulse response with position change.

1805A DUAL CHANNEL VERTICAL AMPLIFIER

- ▶ 1805A-1 Serial prefix 1233A & below. Replacements for A6U1 and A6U2

1815A/B TDR/SAMPLER

1815A/B-1A Serials 941 & below (1815A). Serials 939 & below (1815B). Modification to reduce the duty cycle of HP models 1106A/1108A, thus preventing the possibility of over-dissipating the diode.

1815A/B-2 Serials 978 & below (1815A); Serials 975 & below (1815B) Modification necessary to make the 1815A/B and remote sampler usable in a model 183 Oscilloscope.

1815A/B-3 1815A serial prefix 1130A & below. 1815B serial prefix 1129A & below. Improved 1156A tunnel diode mount reliability

1816A 4GHz SAMPLER

1816A-1 Serials below- 00130 Modification for improved low frequency distortion adjustment.

1820A TIME BASE

1820A-1 Serials prefixed below 640-. Modification for compatibility with model 1801A

1820A-3A Serials 711-00350 & below. Modification to improve internal triggering amp

1820A-4 Serials prefixed 809- & below. Preferred replacement VR201 zener diode.

1820B/E—2212A

1820A-6 Preferred replacements for C301, 2, 3, and 4.

1820B/E TIME BASE PLUG-INS

1820B-1 Preferred replacement of sweep timing capacitors.

1821A TIME BASE AND DELAY GENERATOR

1821A-1 Serials prefixed 712—& below. Modification to improve triggering at high frequencies with temperature changes.

1821A-2C Serials 712—01550 & below. Modification to improve triggering at extreme settings of Vertical Position control.

1821A-3 Serials prefixed below 640—. Modification kit to permit operating with 1801A Amplifier with serials prefixed 644 & above.

1821A-5 Serials prefixed 809—& below Preferred replacement VR201 and VR203 zener diodes

1821A-6 Serials prefixed 805—& below Modification for elimination of high frequency oscillations.

1821A-7A Preferred replacement of sweep timing capacitors

1821A-8 Trigger modification for computer field service applications HF parts kit no. 01821-69503

1821E/F TIME BASE AND DELAY GENERATOR

1821A-7A Preferred replacement of sweep timing capacitors.

1822A TIME BASE PLUG-IN

1822A-1 Preferred replacement of sweep timing capacitors

1822A-2 Prefix 0907A & below. Preferred replacements

1830A VERTICAL AMPLIFIER

1830A-1 Serials below 968. Recommended replacement for A2 preamplifier board and A5 output amplifier board

1830A-2 Serials below 981—. Modification to prevent oscillations.

1831A/B VERTICAL AMPLIFIER

1831A/B-1 All serials. Reduced cross coupling

1840A TIME BASE

1840A-1 Serials 941 & below Modification to improve triggering above 200 MHz

1840A-2 Serial prefix 941. Improved trigger compatibility

1840A-3A Serial prefix 1120A & below. Recommended replacement for tunnel diodes CR8 and CR9

1840A-4 Serial prefix 1102A & below. Recommended replacement for A1Q11, A1Q12, A1Q13 and A1Q26

1840A-5 All serials. Troubleshooting aid, supplements service manual

▶ 1840A-6 Preferred replacement for A1R21

1841A TIME BASE

1841A-1 Troubleshooting aid, supplements service manual

1841A-2 Serial prefix 1116A & below Recommended replacement for tunnel diodes.

1841A-3 Serial prefix 1116A & below Recommended replacement of FET 1855-0062 for improved reliability.

1841A-4 All serials. Preferred replacement for A1R17 and A1R90

1900A PULSE GENERATOR MAINFRAME

1900A-1 Serials prefixed below 931—. Modification for elimination of +25 volt power supply oscillation

1900A-2 Serials prefixed below 939—. Modification for improved reliability of +25 volt power supply

1900A-3 Serials below 924-00196. Modification for improved reliability of 70 volt power supply

1901A PULSE GENERATOR MAINFRAME

1901A-1 Serials prefixed below 931 Modification for elimination of +25 volt power supply oscillation.

1905A RATE GENERATOR PLUG-IN

1905A-1 Serials below 905-00151. Modification for improved minimum rate output

1906A RATE GENERATOR

1906A-1 Serials 946-00138 & below. Modification to eliminate double triggering.

1908A DELAY GENERATOR PLUG-IN

1908A-1 Serials below 833-00125. Modification to improve compatibility with 1906A

1915A VARIABLE TRANSITION TIME OUTPUT

1915A-2C Serials below 925-00191. Modification to decrease Output Pulse transition times.

1915A-3 Serials 925-00181 thru 936-00250. Modification to decrease transition times at low range settings.

1915A-4 Serials below 946-00356. Modification to improve Transition Time Circuitry

1915A-5 Serials prefixed 946 & below Preferred replacements for A3Q18 and A3Q19

1915A-6A Serials 946-00326 & below Modification for improved reliability

1915A-7 Serials 960 & below. Modification to eliminate saturation of +12 volt power supplies when amplitude vernier is full CW

1915A-8 Serials prefixed 0984A & below. Recommended replacement for transistor heat sinks.

1915A-9 Serial prefix 1102A & below. Improved reliability kit

▶ 1915A-10B Serial prefix 1203A & below. Improved reliability

1915A-11 Serial prefix 1203A & below Reduction of output transistor failures

1917A PULSE GENERATOR OUTPUT AMPLIFIER

1917A-1 Serials below 947-00176 Modification to eliminate Voltage Shifter oscillation.

1917A-2 Serials below 944-00156 Modification to eliminate Leading Edge Transition Time shift.

1920A PULSE GENERATOR OUTPUT AMPLIFIER

1920A-1 Serials below 943-00136. Modification for improved performance.

1925A WORD GENERATOR

1925A-1 Serials below 953-00166 Modification to eliminate spurious output.

1925A-2 Serials 953-00250 & below Modification to improve output in the manual mode.

2070A DATA LOGGER

2070A-1 All 2070A option 005 Data Loggers with storage.

2210 VOLTAGE-TO-FREQUENCY CONVERTER

2210-1 Recommended replacement of A2 Chopper Stabilized Amplifier.

2212A VOLTAGE-TO-FREQUENCY CONVERTER

2212A-1 Serials prefixed 644—& below Recommended replacement for A3C17

2212A-2 Serials prefixed 644—& below. Modification to reduce zero drift.

2212A-3 Serials prefixed below 730—. Modification to prevent erroneous count at low temperature.

- 2212A-4 Modification to speed up overload recovery.
- 2212A-5 Modification to reduce power supply ripple.
- 2212A-6 Preferred replacement transistors
- 2212A-7 Serials prefixed 748—& below. Modification to eliminate oscillation
- 2212A-8 Serials prefixed 804—& below. Modification to prevent lock-up near zero.
- 2212A-9 Manual correction.
- 2212A-10 A3 board date code below 1132-6. Frequency stability at low line voltages.

2311A/2312A/2310C SUBSYSTEMS

- ▶ 2311A-3 2311A subsystems software refinements
- ▶ 12723A-1 Miniverter service kit.

2401B INTEGRATING DIGITAL VOLTMETER

- 2401B/C-2 Serials above 444-01536. Change resistor value to prevent an occasional hangup of DY-2010 systems

2401C INTEGRATING DIGITAL VOLTMETER

- 2401B/C-2 Serials below 526-00221. Change resistor value to prevent an occasional hangup of 2010 systems.
- 2401C-3 Serials prefixed below 605—. Modification to prevent changes in the display during reset.
- 2401C-4 Serials prefixed below 739—. Add resistor to assure adequate print command when driving the 2116A Computer.
- 2401C-5 Serials prefixed 735—& below. Preferred replacement line filter
- 2401C-6 Serials prefixed 739—& below. Modification that prevents oscillation in +12V power supply (causing ±2 noise count)
- 2401C-7 Oscillating power supplies
- 2401C-8 Model 2401C-M31, serials 751-02187 & below. Modification to prevent auto-range failure at high ambient temperature.
- 2401C-9 Serials 811-02568 & below. Recommended transistor replacement.
- 2401C-10 Serials 1020A02897 & below. Recommended replacement of transistor A44Q5
- 2401A/B/C-11 Instrument storage precaution.

2402A INTEGRATING DIGITAL VOLTMETER

- 2402A-3 Chopper Assembly part number change
- 2402A-4 Field installation of Option 11.
- 2402A-5 Instrument storage precaution.
- 2402A-6 Buffer amplifier failure and overload recovery time

2410A AC/OHMS CONVERTER

- 2410A-2 Serials 750-01216 & below. Preferred replacement for K23.

2410B AC/OHMS CONVERTER

- 2410B-1 Serials 750-01216 & below. Preferred replacement for K23.

2470A DATA AMPLIFIER

- 2470A-1 Serials prefixed 644—& below. Modification to reduce zero drift.
- 2470A-2 Serials prefixed below 732—. Modification to prevent oscillation at low temperature
- 2470A-3 Oscillation at turn-on and low ambient temperatures.
- 2470A-4 Modification to speed up overload recovery.
- 2470A-6 Modification to reduce power supply ripple

- 2470A-7 Manual correction for Preampifier internal zeroing setup

2509A DIGITAL CLOCK

- 2509A-1 Serials prefixed 433—& below. Modification to correct Time Error circuit failure.

2545A TAPE PUNCH COUPLER

- 2545A-3A Serials prefixed 405—& below. Remove capacitor to eliminate intermittent extra characters (zeros).
- 2545A-4 Serials 405-00092 & below. Modifying early 2545's for compatibility with 2401B integrating digital voltmeter.

2545C TAPE PUNCH COUPLER

- 2545C-1 Lubrication instructions for the BRPE-11 Tape Punch
- 2545C-2 Illustrated parts listing for CEC 500 Series Drive Unit.

2546C MAG. TAPE RECORDER SET

- 2546-1 Procedure for reading 200 BPI tape recordings, character by character.

2547A COUPLER

- 2547A-1 A12 revision code E-747-6. Modification to improve reliability.
- 2547A-2 A16 revision codes E-746-6 and below. Erroneous character recordings.
- 2547A-3 Incorrect data transfer 2570/2575A Coupler Controllers
- ▶ 2570A-2/2575A-2 Replacement of Photon coupled diodes

2590B FREQUENCY CONVERTER

- 2590B-1A Serials prefixed below 710—. Modification to reduce 30 MHz signal at Audio Output Jack

2901A INPUT SCANNER

- 2901A-1 Serials below 534-00298. Modification to prevent accidental channel skipping due to noise.

2901B INPUT SCANNER

- 2901B-1 Serials below 534-00298. Modification to prevent accidental channel skipping due to noise.

2911B SCANNER CONTROL

- 2911B-1 Serials prefixed below 437—. Modification to assure properly timed start.
- 2911B-2B Serials prefixed below 509—. Modification to prevent random channel skipping
- 2911B-3 Serials 630-00243 & below. Modification to permit remote starting and resetting when operating with 2515A scanner.

2911C SYSTEM PROGRAMMER

- 2911C-1 Modification to eliminate faulty skip code.

2922A HIGH VOLTAGE MODULE

- 2922A-1 Serials 822-00148 & below. Modification to provide increased reed holding current.

2930A LOW LEVEL MULTIPLEXER

- 2930A-1 Running time indicators
- 2930A-2 Serial prefix below 1010A. Modification of the Encode and Flag Control Board, A20
- ▶ 2930A-3 All serials. Replacement of Photon coupled diodes on A19

- M-47 Power Main wiring for cabinet models.

2991 CABINET

- M-47 Power Main wiring for cabinet models

2992Z—3444A

2992Z CABINET

M-47 Power Main wiring for cabinet models

3200B VHF OSCILLATOR

3200B-3 Serials prefixed 626— & below. Modification to eliminate tuning "creep".

3205A FM SIGNAL GENERATOR

3205A-1 Serials prefixed 953— . Modification to improve modular meter accuracy at 5 Hz

3300A FUNCTION GENERATOR

3300A-1 Power line fuse change

3300A-2 Finger test of transistor temperature forwards of burn-out on A2

3300A-3 Procedure for extending permissible range of external frequency control

3300A-4A Serials 809-03725 & below. Preferred replacement parts.

3300A-8 Modification required when operating with 3305A plugin.

3302A PHASE LOCK PLUG-IN

3302A-1 Serials 540-05909 & below. Modification to prevent free-running in single or multiple cyclic operation.

3302A-2 Modification to prevent shorting between inner and outer chassis.

3302A-3 Serials prefixed 540 & below. Modifications to eliminate spurious oscillation in phase lock operation.

3302A-4 Serials 650-01000 & below. Modification to prevent oscillation in free-run mode.

3310A FUNCTION GENERATOR

3310A-1A Serials 0947A02850 & below. Modification to prevent damage to Q1 and Q2

3310A-2 Serials M7-07850 & below. Minimum output Specifications

3310A-3 Serials 947-01450 & below. Recommended Replacements.

3330A/B AUTOMATIC SYNTHESIZER

▶ 3330A/B-2 3330A serial 3145A00105 & below. 3330B serial 1144A00160 & below. Phase detector modification

3400A RMS VOLTMETER

3400A-2B Recommended component replacement

3400A-4 How to check thermocouples.

3406A SAMPLING VOLTMETER

3406A-1A Recommended replacements.

3406A-7 Recommended replacement of A303.

3406A-8 Serials 625-01000 & below. Support collar to prevent probe tip bending

▶ 3406A-9 A303 replacement.

3410A AC MICROVOLTMETER

3410A-1 Serials 719-00172 & below. Modification to improve reliability of the output circuit.

3410A-2 Recommended component replacements

3410A-3B Serials 735-00975 & below. Various modifications to improve performance.

3410A-4 Serials 728-00250 & below. Modification to improve balance of phase-locked amplifier

3410A-5 Field installation of Option H10.

3420A/B DC DIFFERENTIAL VOLTMETER

3420A-1/3420B-2 Serials 620-00175 & below (3420A), Serials 621-00200 & below (3420B). Preferred replacement for Input Polarity switch S4

3420A/3420B-4 Serials 954-00416 & above (3420A); Serials 952-00601 & above (3420B). Recommended replacement of sensitivity switch shafts.

3431A PANEL METER

3431A-1 Serials 1103A00400 and below. Fuse replacements

3431A-2 Serials 1103A00250 and below. Correcting an assembly error

▶ 3431A-3 Serials 1103A00280 and below. Improved power supply turn-on at low temperatures.

3439A DIGITAL VOLTMETER

3439A-1A Serials 751-02125 & below. Preferred replacement comparator diodes.

3439A-2 Serials 640-01450 & below. Preferred replacement for A9Q7 and A9Q8.

3439A-3 Serials 751-02050 & below. Recommended replacement of A3Q8.

3440A DIGITAL VOLTMETER

3440A-3A Modification to add isolated recorder output

3440A-6 Serials 415-00925 & below. Modification to convert Print Command Output from AC to DC coupled

3440A-7 Serials prefixed 439, 435, 421, 415, 347, 314. Modification required when replacing A3Q15.

3440A-8 Serials—03475 & below. Modification to improve accuracy of voltage reading around 10 volts at elevated temperature

3440A-9D Serials prefixed 637 & below. Preferred transistor replacements.

3440A-10 C Modification to convert 1-2-2-4 to 1-2-4-8 BCD code.

3440A-13 Serials 606-05875 & below. Preferred replacements for D56 and D57.

3440A-15A Serials 749-10725 & below. Recommended Replacements for comparator diodes.

3440A-16 Serials 637-08335 & below. Preferred replacement for A9Q7 and A9Q8.

3440A-17 Serials 749-10425 & below. Recommended replacement for A3Q11

3442A AUTOMATIC RANGE SELECTOR

3442A-1A/3443A-1A Serials below 440-01141. Preferred reed relay replacement.

3442A-2 Serials 440-03190 & below. Preferred replacement for A108 for greater reliability.

3443A HIGH-GAIN AUTO RANGE UNIT

3442A-1A/3443A-1A Serials below 444-00526. Preferred reed relay replacement

3443A-2 Serials 444-03425 & below. Modifications to avoid zero offset and false auto-ranging.

3443A-3 Serials 444-03725 & below. Modification to eliminate component failures while auto-ranging with high input voltages.

3444A DC MULTI-FUNCTION UNIT

3444A-1 Serials 536-00656 & below. Capacitive compensation when replacing A3Q3

3444A-2 Serials 543-01750 & below. Preferred replacement for A1R18.

3444A-3 Serials 644-00750 & below. Preferred replacement for A2Q2 to improve reliability.

3445A AC—DC RANGE UNIT

- 3445A-1A Serials 512-00550 & below. Preferred replacements for A3Q8, A3R17 and P6.
- 3445A-4 Serials 707-02025 & below. Modification to reduce printout inaccuracies.
- 3445A-5 Calibration procedures for 10 and 100 V AC ranges.
- 3445A-6A Add CAUTION decal saying "DISCONNECT 3440A SHORTING BAR WHEN MEASURING AC LINE VOLTAGE."
- 3445A-7/3446A-2 Serials 602-01475 & below. Recommended replacement of A4Q8.

3446A REMOTE UNIT

- 3446A-1 Serials 713-00225 & below. Modification to improve performance.
- 3445A-7/3446A-2 Serials 603-00130 & below. Recommended replacement of A4Q8.

3450A DIGITAL MULTI—FUNCTION METER

- 3450A-1 Serials 916-00550 & below. Modification to increase charging time and reduce current spikes.
- 3450A-2 Serials 935-01000 & below. Procedure for handling Print Command hold-off problems.
- 3450A-3 Procedure for troubleshooting AC Converter photocells.
- 3450A-4 Low level logic conversion.
- 3450A-5 Serials 916-00800 & below. Recommended replacement for A13Q13.
- 3450A-7A Modification to stabilize Data Counter Oscillator.
- 3450A-8 Serials 946-01200 & below. Modification for improved performance.
- 3450A-9 Replacement parts.
- 3450A-10 Serials 959-01700 & below. Recommended replacement kits for A56 and A57 circuit boards.
- 3450A-11 Trouble shooting information.

3460A DIGITAL VOLTMETER

- 3460A-1 Modification to permit AC and OHMS measurements with the 2410B-M22 AC/OHMS Converter.
- 3460A-3 Serials 507-00260 & below. Recommended transistor replacement.
- 3459A-1/3460A-4 Serials 507-00370 & below. Preferred replacement for A17Q4.
- 3460A-6 Procedure for balancing matched assemblies A4 and A5.
- 3459A-3A/3459A-7A Serials 630-00725 & below. Replacement of capacitors A2C5 and A2C10.
- 3459A-4/3460A-8 Serials 630-00675 & below. Preferred replacements for A4Q1, A18Q6.
- 3459A-6/3460A-10 The Digital-to-Analog Resistor Assembly is available on an exchange basis.
- 3459A-7/3460A-11/3460B-2 Serials 706-00925 & below. Modification to avoid premature triggering of Reading Period Flip-Flop.
- 3459A-8/3460A-12/3460B-3 Serials 706-00925 & below. Preferred replacement for A18C3.
- 3459A-9/3460A-13/3460B-4 Serials 706-00935 & below. Modification to avoid oscillation on A1Q5 output.
- 3459A-10/3460A-15/3460B-5 Serials 706-00965 & below. Preferred replacement for A2Q8 and A2Q9.
- H04-3460A-1 Serials 706-01080 & below. Compatibility modifications for 5050A/9 and 2547A.
- H04-3460A-14 Serials 706-00935 & below. Recommended replacement for A17CR7.

3460B-8 All serials. Recommended replacement for A19A1Q1

3460B DIGITAL VOLTMETER

- 3460B-1 Modification to permit use with 3461A for measuring AC voltage and resistance.
- 3459A-7/3460A-11/3460B-2 Serials 709-00175 & below. Modification to avoid premature triggering of Reading Period Flip-Flop.
- 3459A-8/3460A-12/3460B-3 Serials 709-00250 & below. Preferred replacement for A18C3.
- 3459A-9/3460A-13/3460B-4 Serials 709-00250 & below. Modification to avoid oscillation on A1Q5 output.
- 3459A-10/3460A-15/3460B-5 Serials 709-00325 & below. Preferred replacement for A2Q8 and A2Q9.
- 3460B-6 Serials 709-00250 & below. Modification to prevent 3460B switching transients from damaging the model 3461A.
- 3460B-7 Serials 813-00600 & below. Modification required for operation with 5050A.
- 3460B-8 Serials 0977A01325 & below. Recommended replacement for A19A1Q1.
- 3461A AC/OHMS CONVERTER, DC PREAMPLIFIER
- 3461A-1 Serials 803-00225 & below. Preferred replacement for A32Q2 and A32Q3.
- 3461A-2 Modification to convert to new, more reliable connector.

3462A DIGITAL VOLTMETER

- 3462A-1 Serials 947-00160 & below. Modification of the A19 reference Power Supply to prevent possible damage to the D-to-A reads on the A21 board due to the discharging of A19C2.
- 3462A-2 Serials 924-00145 & below except 913-00120, -00129, -00132, -00141, & -00143. Modification to eliminate thermal offset voltages in D-to-A converter section.

3469A MULTIMETER

- 3469A-1 Serials 1104A00250 & below. Fuse replacement.
- 3469A-2 Serials 1104A00250 & below. Interchanged Capacitors A9C3 and A9C10.
- 3469A-3 Improved Ohms protection.

3480A DIGITAL VOLTMETER

- 3480A/B-1 Installation of 3485A Scanner

3484A MULTIFUNCTION UNIT

- 3484A-1 Improved Ohms assembly protection

3520A MAGNETIC TAPE TRANSPORT

- 3520/21A/B-1 Secondary capstan assembly replacement instructions.
- 3520A/3521A-1 Procedure for 60 Hz to 50 Hz field conversion.
- 3524A/25A-1 Secondary capstan assembly replacement instructions.
- 3526A/27A-1 Secondary capstan assembly replacement instructions.
- 3681A-1A 3520A Serials 722-00675 & below. Modification to operate with 3681A Tape Drive.

3520B MAGNETIC TAPE TRANSPORT

- 3520/21A/B-1 Secondary capstan assembly replacement instructions.
- 3524A/25A-1 Secondary capstan assembly replacement instructions.

3521A—3702A

3526A/27A-1 Secondary capstan assembly replacement instructions.

3681A-1A 3520B Serials 724-00125 & below Modification to operate with 3681A Tape Servo.

3521A MAGNETIC TAPE TRANSPORT

3520/21A&B-1 Secondary capstan assembly replacement instructions

3520A/3521A-1 Procedure for 60 Hz to 50 Hz field conversion.

3524A/25A-1 Secondary capstan assembly replacement instructions

3526A/27A-1 Secondary capstan assembly replacement instructions

3681A-1A 3521A Serials 722-00675 & below Modification to operate with 3681A Tape Servo

3521B MAGNETIC TAPE TRANSPORT

3520/21A&B-1 Secondary capstan assembly replacement instructions

3524A/25A-1 Secondary capstan assembly replacement instructions

3526A/27A-1 Secondary capstan assembly replacement instructions

3681A-1A 3521B Serials 724-00125 & below. Modification to operate with 3681A Tape Servo

3524A/25A MAGNETIC TAPE TRANSPORTS

3524A/25A-1 Secondary capstan assembly replacement instructions

3524/25/26/27A-1 Alignment of tape take-up arm.

3524/3525/3526/3527-2 Serials 818 & below. Modification to assure the proper time delay of K-5 start relay

3520/21A&B-1 Secondary capstan assembly replacement instructions

3526A/27A-1 Secondary capstan assembly replacement instructions

3681A-1A 3525A Serials 713-00150 & below Modification to operate with 3681A Tape Servo.

3526A/27A MAGNETIC TAPE TRANSPORTS

3526A/27A-1 Secondary capstan assembly replacement instructions

3524/25/26/27A-1 Alignment of tape take-up arm.

3524/3525/3526/3527-2 Serials 818 & below. Modification to assure the proper time delay of K-5 start relay.

3520/21A&B-1 Secondary capstan assembly replacement instructions

3524A/25A-1 Secondary capstan assembly replacement instructions

3681A-1A 3526A Serials 713-00160 & below Modification to operate with 3681A Tape Servo.

3535A FM RECORD AMPLIFIER

3535A-1A Preferred replacement for A1R11

3538A FM REPRODUCE AMPLIFIER

3538A-1 Modification required when head assembly is replaced.

3541A/44A WIDE BAND FM RECORD/REPRODUCE AMPLIFIERS

3541A/3544A-1 Technical specifications of new wideband FM electronics for 3950 & 3955 analog tape systems

3555B TRANSMISSION AND NOISE MEASURING SET

3555B-1 Recommended replacement for A3Q22.

3590A WAVE ANALYZER

3590A-1 Serials 825-00125 & below Modification to remove 1 28 MHz from X-axis outputs.

3590A/91A-2 Lamp replacement

3590A/91A-3 Modifications to improve BFO summing error; Serials 825 & 954. To provide Y-axis linear output damping. Serials 0977A00535 & below.

3591A PLUG-IN VOLTMETER

3590A/91A-2 Lamp replacement.

3590A/91A-3 Modifications to improve BFO summing error. Serials 833 and 956 To provide Y-axis linear output damping; Serials 1041A00245 & below

3701A TRANSMISSION GENERATOR

3701A-1 Preferred replacement for A6Q1

3701A-2 Preferred replacement for A9Q5, A9Q6, A9Q10, A11Q14, A11Q15

3701A-3 Serials below U805-00151. Modification to insure constant baseband signal at BB and Sweep Output

3701A-4 Serials below U805-00151 Modification to reduce sweep generator harmonics.

3701A-5 Serials prefixed below U830-. Modification to protect against line-borne transients.

3701A-6 Modification to eliminate ALC instability

3701A-7/3702A-1/3703A-2 Installation of Options 05 and 06 (For TV sub-carrier phase and gain measurements.)

3701A-8 Serials below U942-00661. Improved performance potentiometers.

3701A-9/3702A-14 Serials below U962-00741 Field installation of ventilating fans.

3701A-10 Serials below U974-00801 Recommended replacement

38-1A-10 Serials below U974-00801. Recommended replacement for Power Supply rectifier diodes CR2 through CR13

3701A-11 Serials below U962-00771 Modification to improve the I.F. output flatness.

3702A DEMODULATOR DISPLAY

3702A-1 Serials U740-00101 thru U740-00109. Modification for protection of the channel switching circuitry.

3702A-2 Preferred replacement for A2Q3

3702A-3 Serials below U750-00120 Modification to increase IF bandwidth.

3702A-4 Serials below U385-00151. Modification to increase return loss at the baseband input.

3702A-5/3703A-1 Serials below U805-00151 Modification to improve group delay measuring capability of Y2 channel

3702A-6 Serials below U808-00161. Modification to increase SPECTRUM WIDTH control range

3702A-7 Serials prefixed below U817. Modification to improve calibration accuracy of Y1 Gain Sensitivity

3702A-8 Serials prefixed below U830 Modification for protection against line-borne transients.

3702A-9 Serials below U830-00218. Modification to improve Market Display up to 100 Hz sweep

- 3702A-10A Serials prefixed below U825— Modification to allow direct-coupled RL measurement and to provide external counting of marker offset frequency
- 3702A-11 Verification of center marker frequency accuracy and demodulator performance.
- 3701A-7/3702A-12/3703A-2 Installation of Options 05 and 06 (For TV subcarrier phase and gain measurement.)
- 3702A-13 Serials below U942-00661. Simplified A3 wet up procedure.
- 3701A-9/3702A-14 Serials below U962-00741 Field installation of ventilating fans.
- 3702A-16 Serials below U983-00831 Modification to improve marker offset stability
- 3702A-17 Serials below U973-00801. Recommended replacement for Power Supply rectifier diodes CR2 through CR13

3703A GROUP DELAY DETECTOR

- 3702A-5/3703A-1 Modification to improve group delay measuring capability of Y2 channel.
- 3701A-7/3702A-12/3703A-2 Installation of Options 05 and 06 (For TB subcarrier phase and gain measurement.)
- 3703A-3 Serials below U825-00260 Recommended reed relay replacement.
- 3703A-4A Field conversion to H02 model.

3721A CORRELATOR

- 3721A-1 Serials prefixed 940—& above. Rebuild exchange program.
- 3721A-2 Serials U940-00101 thru U950-00140 Adjustment of Main store and clock frequency.
- 3721A-3 Serials U960-00141 & above. Adjustment of main store and clock frequency.
- 3721A-4 Serials prefixed U940 & above. Installation of computer interface — Option 020.
- 3721A-5 Serials prefixed U940 & above. Installation of delay offset — Option 01 — series.
- 3721A-6 Serials prefixed U960 & below Modification to improve pen lift control.

3722A NOISE GENERATOR

- 3722A-1A/H01-3722-3A Serials prefixed U850—& below Recommended transistor replacement
- H01-3722A-4 Serials prefixed 843—thru 943— Improved Inverter Assembly

3734A ELECTRONIC COUNTER

- 3734A-2 Modification to limit bandwidth

3735A ELECTRONIC COUNTER

- 3735A-1 Procedure for making a time interval measurement.

4260A UNIVERSAL BRIDGE

- 4260A-1 Procedure for making AC resistance measurements.
- 4260A-2 Illustrated parts identification.
- ▶ 4260A-3 All serials Range and function switch repair

4270A AUTOMATIC CAPACITANCE BRIDGE

- 4270A-1 Serials prefixed 1020J & below. Recommended replacement for A28R6 & A28R11
- 4270A-2 Recommended troubleshooting procedure
- 4270A-3 All serials. Description of service kit
- 4270A-4 Serials 1116100324 and below. Modification to correct nonsignificant readings at BCD output and display

- 4270A-5 All serials Relay replacement recommendations.

- ▶ 4270A-6A Serial 1214J00415 and below. Improved decimal and annunciator lamps.

4328A MILLIOHMETER

- 4328A-1 Serials 819-01190 & below. Improved probe cable.
- 4328A-2 Calibration procedure and possible needed correction.

4329A HIGH RESISTANCE METER

- 4329A-1 Serial prefix 1207 & below Service kit to eliminate capacitors containing PCB

4342A Q METER

- 4342A-1 Maintenance procedures.

4470A TRANSISTOR NOISE ANALYZER

- 4470A-1 Serials prefixed 851—, 852—, 909—, and 910— Modification to reduce low frequency noise.
- 4470A-2 Serials 944 & below. Modification to reduce excess noise at 1 MHz
- 4470A-5 Serials 944 & below. Modification to suppress parasitic oscillations at 10 Hz or 30 Hz
- 4470A-6 Serials 944 & below. Modification to stabilize performance at 100 Hz.
- 4470A-7/4470B-1 Serial prefix 10241 & below. Modification to reduce excessive internal noise.
- 4470A-8 Serial prefix 851 to 1106. Modification and calibration procedure.

4470B TRANSISTOR NOISE ANALYZER

- 4470A-7/4470B-1 Serial prefix 10341 & below. Modification to reduce excessive internal noise

4800A VECTOR IMPEDANCE METER

- 4800A-2 Serials prefixed 805—& below. Modification kit for the replacement of thermistor A17R14
- 4800A-3 Modification to increase POWER ON indicator lifetime
- 4800A-4 Serials prefixed 805—& below. Modification to eliminate erratic operation due to power supply loading.

4801A DIRECT MEASUREMENT PLOC-IN

- 4801A-1 Serials prefixed 640—& below Preferred replacement for Q3 and L6.
- 4801A-2 Serials 802-00569 & below Modification to prevent meter oscillation
- 4801A-3 Troubleshooting hint (protective diodes)
- 4801A-4 Serials prefixed 802—& below. Magnetic shield for K1

4815A VECTOR IMPEDANCE METER

- 4815A-2 Circuit changes when replacing transistors and prevention of meter oscillation.
- 4815A-3 Serials prefixed 740—& below Modification to improve ALC bandwidth control.
- 4815A-4A Serial prefix 840—& below Preferred replacement diode A2CR3.
- 4815A-5 Preferred transistor replacement
- ▶ 4815A-6 Impedance and phase accuracy check fixture change

4904A CABLE FAULT LOCATOR

- 4904A-1 Serials 850-01150 & below. Modification kit to convert aerial/buried switch 152 from slide to toggle switch

4910B OPEN FAULT LOCATOR

- 4910B-1 Modification kit to reduce AC interface on open fault measurements

5050A—5275A

5050A DIGITAL RECORDER

- 5050A-1A Serial prefix 744 & below. Modification to provide storage capacity.
- 5050A-2A Serial prefix 752 & above. Modification to provide storage capacity.
- 5050A-3 Installation of motor control.

5055A DIGITAL RECORDER

- 5055A-1 Modification to increase immunity to electrical noise.

5050B DIGITAL RECORDER

- 5050B-1 Installation of digital clock and motor control.
- 5050A-3 Installation of motor control

5060A CESIUM BEAM FREQUENCY STANDARD

- 5060A-4 Recommended cesium beam tube replacement procedure.

5061A CESIUM BEAM FREQUENCY STANDARD

- 5061A-1 Serials 728-00250 & below. Modification to improve operation of Decade Divider IC4
- 5061A-2 Serials 924 & below. Preferred replacement parts that increase reliability.

5065 FREQUENCY STANDARD

- 5065A-1 Serials below 956-00256. Power line safety modifications

5090B STANDARD FREQUENCY RECEIVER

- 5090B-1 Serials prefixed below U958-. Modification for improved high temperature performance

5110A FREQUENCY SYNTHESIZER

- 5110A/B-1A Installation of options 02, 03, and 04

5110B FREQUENCY SYNTHESIZER

- 5110A/B-1A Installation of options 02, 03, and 04

5216A ELECTRONIC COUNTER

- 5216A-1 Serials 948A03126 to 1040A03875. Modification to increase gax lamp life

5221A ELECTRONIC COUNTER

- 5221A/5221A-1 Modification to reduce amplifier bandwidth
- 5221A/5221A-2A All serials except those with options 03, 103, and 203. Modification to improve stability of time base in the presence of power line noise.
- 5221A/5221A-3A All serials 1 MHz Crystal Time Base (option 003) Installation procedure for the 5221A and the 5221A

5221B ELECTRONIC COUNTER

- 5221B/5221B-1 Modification to insure accurate frequency measurements below 100 KHz.
- 5221B/5221B-2 Serial prefix 0980A & below. Modification for compatibility with the 5055A Digital Recorder.

5233L ELECTRONIC COUNTER

- 5233L-1 Serials prefixed 544- & below. Recommended transistor replacement

5240A DIGITAL FREQUENCY METER

- 5240A-1 Modification to improve phase lock characteristics

5242L ELECTRONIC COUNTER

- 5242L/5244L-1 Serials prefixed 316- & below. Inhibit signal modification to improve compatibility with 562A Digital Recorder

5243L ELECTRONIC COUNTER

- 5243L-1B Serials prefixed 328- & below. Modification to operate with 5264A or 5265A.
- 5243L/5245L-2 Serials prefixed 328- & below. Inhibit signal modification to improve compatibility with Model 562A.
- 5243L-4 Preferred replacement for A2502

5244L ELECTRONIC COUNTER

- 5242L/5244L-1 Serials prefixed 328- & below. Inhibit signal modification to improve compatibility with 562A Digital Recorder.
- 5244L/5245L-4 Serials prefixed 544- & below. New fan and housing reduce noise level
- 5244L/5245L-6 Serials prefixed 544- & below. Preferred replacement for A1709.

5245L ELECTRONIC COUNTER

- 5243L-1 Serials prefixed 335- & below. Modification to operate with 5264A or 5265A.
- 5243L/5245L-2 Serials prefixed 335- & below. Inhibit signal modification to improve compatibility with Model 562A
- 5244L/5245L-4 Serials prefixed 544- & below. New fan and housing reduce noise level.
- 5244L/5245L-6 Serials prefixed 544- & below. Preferred replacement for A1709.
- 5245L-5 Recommended transistor replacement
- 5245L-7 Serials prefixed 648- & below. Preferred replacement for A25Q2

5245M ELECTRONIC COUNTER

- 5245M-1/5248M-1 Serials below 1124A01411. Modification to prevent erratic gating.

5248M ELECTRONIC COUNTER

- 5245M-1/5248M-1 Serials below 1124A00836. Modification to prevent erratic gating.

5252A PRESCALER PLUG-IN

- 5252A-2 Serials prefixed 532- & below. Preferred replacements.

5253B FREQUENCY CONVERTER

- 5253B-1 Serials prefixed 513- & below. Illustrated parts identification.

5254A FREQUENCY CONVERTER

- 5254A-1 Modification to prevent oscillation in A5 after replacing AS012
- 5254A-2 Mixer diode replacement procedure

5255A FREQUENCY CONVERTER

- 5255A-1 Serials 640-00200 & below. Modification for improved reliability and performance.

5260A FREQUENCY DIVIDER

- 5260A-1 Serial prefix 836A thru 1052A. Modification to improve phase lock characteristics

5265A DIGITAL VOLTMETER PLUG-IN

- 5265A-1 Preferred replacement for C1
- 5265A-2 Replacement of CR1 and CR3

5275A TIME INTERVAL COUNTER

- 5275A-1 Serials 402-00315 & below. Modification to reduce transients caused by manual reset

5321A ELECTRONIC COUNTER

- 5321A/5321A-1 Modification to reduce amplifier bandwidth.
 5321A/5321A-2 All serials except those with options 03, 103, and 203. Modification to improve stability of time base in the presence of power line noise.

5321B ELECTRONIC COUNTER

- 5321B/5321B-1 Modification to insure accurate frequency measurements below 100 KHz.
 5321B/5321B-2 Serial prefix 0980A & below. Modification for compatibility with the 5055A Digital Recorder

5323A FREQUENCY COUNTER

- 5323A-1/5323A/B-1 Serial prefix 1144A & below. Recommended replacement for crystal oscillator assembly

5325A/B ELECTRONIC COUNTER

- 5323-1/5325A/B-1 Serial prefix 1112A & below. Recommended replacement for crystal oscillator assembly.

- 5325A/B-2 Service tip on A9 counter display board.

5326/27 SERIES ELECTRONIC COUNTERS

- 5326/5327-2A 5327A serial prefix 1120A & below, 5327B serial prefix 1140A and below, 5327C serial prefix 1144A & below. Installation procedure for 550MHz input protection modification.

- 5326/5327-3 All serials. Service tip to reduce noise on signal inputs and marker outputs from neon trigger lamps.

5360A COMPUTING COUNTER

- 5360A-2 Serials prefixed 974 & below. Modification to improve digital display tube reliability

- 5360A-3 Serials prefixed 940 & below. Modification to prevent current limit

- 5360A-4 Serial prefix 1128A & below. +5V SCR desensitizing.

- 5360A-5 Serial 1136A00900 & below. New and improved: 82 assembly

5365A INPUT MODULE

- 5365A-1/B Serials prefixed 904 thru 936. Modification for remote selection of Channel A/B.

5381 TEST SET

- 5381-2/5731-1 Recommended zener diode replacement.

5401A/B MULTICHANNEL ANALYZERS

- 5401A/B-1A Serials prefixed 036 & above. Modification to provide signal averaging capability

- 5381-2/5731-1 Recommended zener diode replacement

5406B MULTICHANNEL ANALYZER

- 5406B-1 Modification to improve signal resolution

5450 FOURIER ANALYZER

- 5450A-1/5451A-1/5452A-1 Preventive maintenance and calibration procedures

5475A KEYBOARD

- 5475-1 Lubrication and adjustment for keyboard assembly.

5480A SIGNAL ANALYZER

- 5480A-1A Serials below 928-09176. Improved A2A12 Time Base board.

- 5480A-2 All serials. Improved A3A9 Address Address board

- 5480A-3 All serials. Service tips for plotter interface problems

5525B LASER

- 5525B-1 5505A serial 1136A00131 & below. Modification to prevent laser tube damage when replacing laser tube

- 5525B-2 05055-60512 Board replacement

5505A LASER DISPLAY

- 5526A-1 Modification to prevent laser tube damage when using 5505A display serial 1136A00131 & below with 5500C Laser Head.

5551A POWER SUPPLY

- 5551A-2 Serials prefixed 554- & below. Preferred replacement for A1Q1

5636H-BAND TEST SET

- 5636-1 Recommended replacement procedure for fan motor.
 5636-2 Recommended procedure for conversion from 115VAC to 230 VAC operation

5731 TEST SET

- 5381-2/5731-1 Recommended zener diode replacement.

6110A STB POWER SUPPLY

- 6110A-1/6516A-1 Serials 00512 and below. Modification to improve 50Hz operation

6113A STB POWER SUPPLY

- 6113A-1 Serials 00245 and below. Modification to prevent high frequency oscillation

6129B DIGITAL VOLTAGE SOURCE

- 6129B-1 All serials. Improved A2 buffer reliability

6130A DIGITAL VOLTAGE SOURCE

- 6130A-3 All serials. Improved A2 buffer reliability.

6130B DIGITAL VOLTAGE SOURCE

- 6130B-1/6130B-1/6933A-1 Modification to correct erratic operation at low line voltages.

- 6130B-2/6131B-1/6933B-2 Serials 480 & below. Modification to improve temperature coefficient and power supply reliability.

- 6130B-3/6121B-2/6933B-3 Serials 509 & below. Modification of gate pulse generator for only one initial state.

- 6130A-2/6130B-4/6131B-1/6933A-2/6933B-4 Modification to provide easier "Positive Zero" adjustment.

- 6130B-5 All serials. Improved A2 buffer reliability.

6131B DIGITAL VOLTAGE SOURCE

- 6130B-2/6131B-1/6933B-3 Serials 125 & below. Modification to improve temperature coefficient and power supply reliability.

- 6130B-3/6131B-2/6933B-3 Serials 178 & below. Modification of gate pulse generator for only one initial state

- 6130A-2/6130B-4/6131B-3/6933A-2/6933B-4 Modification to provide easier "Positive Zero" adjustment.

- 6131B-4 All serials. Improved A2 buffer reliability.

6181B CCB CONSTANT CURRENT POWER SUPPLY

- 6181B-1 Serials 461 & below. Modification to improve reliability

6186B CONSTANT CURRENT SUPPLY

- 6186B-1 Serials 00149 & below. Modification to improve reliability.

- 6186B-2 Serials 1022A/0208 & below. Modification to improve operation of voltage limit light.

6206B—6433B

6186B-3 Serials 00370 & below Modification to improve zener reliability.

6186B-4 Modification to improve reliability.

6206B DC POWER SUPPLY

6206B-1 Serials 02176 & below Modification to improve reliability.

6256B DC POWER SUPPLY, LVR

6256B-2/6264B-2/6267B-2/6274B-1 Serials 00251 thru 00431. Modification to improve 208/230 volt reliability.

6256B-3/6264B-3/6267B-3/6274B-2 Serials 00471 & below. Modification to improve preregulator reliability and general updating.

6259B DC POWER SUPPLY, LVR

6259B-1 Serials 00170 & below. Modification to reduce noise & spikes from output terminals.

6259B-2 Serials below 00271. Modification to improve preregulator reliability and general updating.

6260B DC POWER SUPPLY

6260B-1 Serials below 00286. Modification to improve preregulator reliability and general updating.

6261B DC POWER SUPPLY

6261B-1 Serials below 00150 Modification to improve preregulator reliability and general updating.

6263B DC POWER SUPPLY, LVR

6263B-1/6265B-1/6266B-1/6271B-2 Serials 00220 & below. Modification to improve Voltmeter accuracy.

6263B-3/6265B-3/6266B-3/6271B-4. Serials below 00497. Modification to improve preregulator reliability and prevent fuse blowing.

6264B DC POWER SUPPLY, LVR

6264B-2/6264B-2/6267B-2/6274B-1 Serials 00471 thru 00700. Modification to improve 208/230 volt reliability.

6264B-3/6264B-3/6267B-3/6274B-2 Serials 00471 thru 00715. Modification to improve preregulator reliability and prevent fuse blowing.

6265B DC POWER SUPPLY, LVR

6265B-1/6265B-1/6266B-1/6271B-2 Serials 00190 & below. Modification to improve Voltmeter accuracy.

6265B-3/6265B-3/6266B-3/6271B-4 Serials below 00481. Modification to improve preregulator reliability and prevent fuse blowing.

6266B DC POWER SUPPLY, LVR

6266B-1/6265B-1/6266B-1/6271B-2 Serials 00200 & below. Modification to improve Voltmeter accuracy.

6266B-3/6265B-3/6266B-3/6271B-4 Serials below 00551. Modification to improve preregulator reliability and prevent fuse blowing.

6267B DC POWER SUPPLY, LVR

6267B-2/6264B-2/6257B-2/6274B-1 Serials 00541 thru 00780. Modification to improve 208/230 volt reliability.

6267B-3/6264B-3/6267B-3/6274B-2 Serials 00301 thru 00890. Modification to improve preregulator reliability and prevent fuse blowing.

6268B DC POWER SUPPLY

6268B-1 Serials below 00361. Modification to improve preregulator reliability and general updating.

6271B DC POWER SUPPLY, LVR

6263B-1/6265B-1/6266B-1/6271B-2 Serials 00190 & below. Modification to improve Voltmeter accuracy.

6263B-3/6265B-3/6266B-3/6271B-4 Serials below 00296. Modification to improve preregulator reliability and prevent fuse blowing.

6274A DC POWER SUPPLY, LVR

6274A-1 Serials 01200 & below. Modification to prevent false crowbar action.

6274A-2 Serials below 6L1470. Modification to improve loop gain stability.

6274B DC POWER SUPPLY, LVR

6256B-2/6264B-2/6267B-2/6274B-1 Serials 00101 thru 00150. Modification to improve 108/230 volt reliability.

6256B-3/6264B-3/6267B-3/6274B-2 Serials 00240 & below. Modification to improve preregulator reliability and prevent fuse blowing.

6282A MPB-5 POWER SUPPLIES

6282A-1/6285A-1/6286A-1 Serials 8B1507 & below. Modification to correct erratic low-line SCR failures.

6282A-2 Serials below 01902. Replacement part for SCR preregulator.

6285A MPB-5 POWER SUPPLIES

6282A-1/6285A-1/6286A-1 Serials 7M0462 & below. Modification to correct erratic low-line SCR failures.

6286A MPB-5 POWER SUPPLIES

6282A-1/6285A-1/6286A-1 Serials 8A0622 & below. Modification to correct erratic low-line SCR failures.

6286A-2 Serials below 01261. Replacement part for SCR preregulator.

6290A MPB-5 POWER SUPPLIES

6290A-1/6291A-1/6296A-1 Serials 8A1516 & below. Modification to correct erratic low-line SCR failures.

6291A MPB-5 POWER SUPPLIES

6290A-1/6291A-1/6296A-1 Serials 7M1161 & below. Modification to correct erratic low-line SCR failures.

6296A MPB-5 POWER SUPPLIES

6290A-1/6291A-1/6296A-1 Serials 7M0613 & below. Modification to correct erratic low-line SCR failures.

6296B DC POWER SUPPLY

6296B-1 Serials below 00256. Modification to improve preregulator reliability and general updating.

6296B-2 Serials below 00430. Modification to improve crowbar operation and general reliability.

6427B SCR-1P POWER SUPPLY

6427B-1/6433B-1/6438B-1/6443B-1 Serials 00490 & below. Modification to reduce SCR failures under line transient conditions.

6428B SCR-1P POWER SUPPLY

6428B-1/6434B-1/6439B-1/6448B-1 Serials below 01103. Modification to reduce SCR failures under line transient conditions.

6433B SCR-1P POWER SUPPLY

6427B-1/6433B-1/6438B-1/6443B-1 Serials 01310 & below. Modification to reduce SCR failures under line transient conditions.

6434B SCR—1P POWER SUPPLY

6428B-1/6434B-1/6439B-1/6448B-1 Series below 00451 Modification to reduce SCR failures under line transient conditions.

6438B SCR—1P POWER SUPPLY

6427B-1/6433B-1/6438B-1/6443B-1 Series 00740 & below Modification to reduce SCR failures under line transient conditions.

6439B SCR—1P POWER SUPPLY

6428B-1/6434B-1/6439B-1/6448B-1 Series below 00631. Modification to reduce SCR failures under line transient conditions.

6443B SCR—1P POWER SUPPLY

6427B-1/6433B-1/6438B-1/6443B-1 Series 00820 & below. Modification to reduce SCR failures under line transient conditions.

6448B SCR—1P POWER SUPPLY

6428B-1/6434B-1/6439B-1/6448B-1 Series below 00402. Modification to reduce SCR failures under line transient conditions.

6463A TO 6483B INDUSTRIAL SUPPLIES

SCR10-1 How to service a 10KW supply

SCR10-2 Units produced before August 1969. Maintenance information to increase fan reliability

SCR10-3 Units produced before June 1969 380 or 460 V SCR modifications. AC line current balance.

SCR10-5 Units produced before December 1968. AC line current balance

6515A HIGH VOLTAGE POWER SUPPLY

6515A-1 Corrected schematic.

6516A HIGH VOLTAGE POWER SUPPLY

6110A-1/6516A-1 Series 810 & below. Modification to improve 50 Hz Operation.

6521A HVR POWER SUPPLY

6521A-1 Series 5J0320 & below. Preferred replacement SCR's

6521A-2/6522A-2/6525A-2 Series 7G0440 & below. Modification to eliminate fuse blowing.

6521A-3/6522A-3/6525A-3 Series 440 & below. Modification to improve reliability

6521A-4/6522A-4/6525A-4 Series 00590 & below. Modification to allow line power to cycle rapidly.

6521A-5 Modifications to improve reliability and general updating.

6522A POWER SUPPLY

6522A-1 Series 5J0369 & below. Preferred replacement SCR's.

6521A-2/6522A-2/6525A-2 Series 7H0540 & below. Modification to eliminate fuse blowing.

6521A-3/6522A-3/6525A-3 Series 509 & below. Modification to improve reliability

6521A-4/6522A-4/6525A-4 Series 658 & below. Modification to allow line power to cycle rapidly.

6522A-5 Modification to improve reliability and general updating

6525A POWER SUPPLY

6521A-1 Series 5J1271 & below. Preferred replacement SCR's.

6521A-2/6522A-2/6525A-2 Series 7F1494 & below. Modification to eliminate fuse blowing.

6521A-3/6522A-3/6525A-3 Series 1471 & below. Modification to improve reliability.

6521A-4/6522A-4/6525A-4 Series 1741 & below. Modification to allow line power to cycle rapidly.

6525A-5 Modification to improve reliability and general updating.

6917B OVERVOLTAGE PROTECTOR

6917B-1 Series 00202 & above. Modification to improve 208- and 230-volt operation.

6920A/B METER CALIBRATORS

6920A/B-3 Modifications for updating 6920A to 6920B equivalent.

6920A/B-4 All serials Calibration and service tips

6933A D/A CONVERTER

6933A-3 All serials Modification to improve A2 buffer reliability

6933B D/A CONVERTER

6130B-2/6131B-1/6933B-2 Series 00160 & below. Modification to improve temperature coefficient and power supply reliability.

6130B-3/6131B-2/6933B-3 Series 00180 & below. Modification of gate pulse generator for only one initial state.

6130A-2/6120B-4/6131B-3/6933A-2/6933B-4 Modification to provide easier "Positive Zero" adjustment.

6933B-5 All serials. Modification to improve A2 buffer reliability

6945A TV MONITOR

6945A-2/6946A-2/6947A-1 Series below 00236. Preferred transistor replacement.

6945A-3/6946A-3 Series 00463 & below. Recommended replacement procedure for high voltage transformer T201.

► 6945A-4 Q521 Modification and quad box replacement

6946A TV MONITOR

6945A-2/6946A-2/6947A-1 Series below 00225. Preferred transistor replacement.

6945A-3/6946A-3 Recommended replacement procedure for high voltage transformer T201

6947A TV MONITOR

6945A-2/6946A-2/6947A-1 Series below 00146. Preferred transistor replacement.

6947A-3 Series 00355 & below. Modification to improve stability of the high voltage supply.

6947A-4 Series prefixed 960- Modification to improve the Sync circuit.

6947A-5 Recommended replacement of A1Q14.

6947A-6 Series below 00556. Modification required when replacing A2Q6.

7000A X-Y RECORDER

7000A-4 Modification to eliminate zero shift when changing ranges.

► 7000A-5B/7001A-1B Serial prefix 713 thru 730. Modification for improved performance of the variable range control.

7000-6A/7001A-2A Series prefixed 722- and 726- Preferred replacement for CR301.

7001A X-Y RECORDER

7001A-1 Series prefixed 641 thru 933. Modification to correct zero offset error.

► 7000A-5B/7001A-1B Serial prefix 713 thru 730. Modification for improved performance of the variable range control.

7004A—8003A

7000A-6A/7001A-2A Serial prefix 722- & 726-. Preferred replacement for CR301

7004A X-Y RECORDER

7004A-5 Operating cautions.

7004A-6A Serials prefixed below 919 Modification for improved reliability.

7004B-1A Serials prefixed below 1020A Modification for improved reliability.

7004B-3 Installation procedure for incremental chart advance compatibility kit.

7004B-4 Serial prefix 1108A & below Improved power transistors

7004B X-Y RECORDER

7004B-1A Serials prefixed below 1020A Modification for improved reliability

7004B-2 Serials prefixed below 1045A Correct use of the response switch

7004B-3 Installation procedure for incremental chart advance compatibility kit

7005A X-Y RECORDER

7005A-1 Serials prefixed below 726- Modification to prevent X-Y interaction due to motor brush arcing

7005A-2 Preferred replacement for Q109 and Q209

7005B X-Y RECORDER

7005B-1/7035B-1 Serials 1044A01501 thru 1044A01525. Modification procedure to correct a miswire in the power receptacles.

7034A X-Y RECORDER

7034A-1 Serials prefixed below 1013A Recommended replacement for AR101 and AR201

7034A-2 Serials prefixed below 1014. Modification to correct zero control for option -001 (metric)

7034A-3 Serials prefixed below 1046A Correct use of the response switch

7034A-4 Serial prefix 1106A & below. Improved power transistors.

7034A-5 Serial prefix 1204A & below. Modification to eliminate cable chafing.

7035A X-Y RECORDER

7035A-1A Procedure for replacement of Y-axis trailing cable.

7035A-2A Recommended replacement of X-axis servo motor

7035A-3A Serials below 643-0085B Recommended replacement of Y-axis servo motor.

7035A-4 Serials 106f & below. Recommended switch replacements.

7035A-5 Serials prefixed 643- & below Recommended pot replacements.

7035A-6 Serials prefixed below 626- Replacing Y-axis pen scale.

7035A-7 Serials prefixed below 626- Replacing Pen Arm Assembly.

7035A-8 Preferred replacement for Q107 and Q207.

▶ 7035A-9/7035B-1 All serials. Replacement of X wiper

7035B X-Y RECORDER

7005B-1/7035B-1 Serials 1040A04599 thru 1049A04717, 1049A04722, 1049A04728 thru 1049A04733, 1049A04737 thru 1049A04737, and 1049A04740 Modification procedure to correct a miswire in the power receptacles.

▶ 7035A-9/7035B-1 Serial prefix below 824 Replacement of X wiper

7040A X-Y RECORDER

7040A-1 Serial prefix 1143A & before Modification to eliminate erratic sweep start.

7040A-3/7041A-1 Serial prefix 1207A & before Modification to eliminate erratic Time Base Reset.

7041A X-Y RECORDER

7040A-3/7041A-1 Serial prefix 1204A & before Modification to eliminate erratic Time Base Reset

7100 SERIES STRIP CHART RECORDERS

7100-1/7101-1/7127-1/7128-1 Recommended replacement for limit switches.

7100-2/7101-2/7127-2/7128-2 Procedure for installing limit switches

7100-5/7101-5/7127-5/7128-5 Serial prefix below 1113A (7100), serial prefix below 1107A (7101); serial prefix below 1110A (7127); serial prefix below 1111A (7128). Modification to reduce servo gear wear.

7100-6/7101-6/7127-6/7128-6 Recommended pen lift relay replacement.

7123A/B STRIP CHART RECORDERS

7123A-1 Serial prefix 1042A. Transmission modification

7123A-2 Cleaning and lubricating balance potentiometer

7123A-3 Cleaning slider rod

7123A-5 Serial numbers 00746, 00747, 00749 thru 00775, 00857 thru 00866, 00912 thru 00921 and 00957 thru 00966. Option 150 chart drive modification.

▶ 7123A/B-6/7143A/B-2 Serial prefix below 1235A Improved ink writing kit

▶ 7123A/B-7/7143A/B-3 All serials. Disposable pen kits.

7127A and 7128A STRIP CHART RECORDERS

7127A-7/7128A-7 7127A serial prefix below 1148, 7128A serial prefix below 1150 Modification to improve transmission assembly.

7143A/B STRIP CHART RECORDERS

7123A-2 Cleaning and lubricating balance potentiometer.

7123A-3 Cleaning slider rod

▶ 7123A/B-6/7143A/B-2 Serial prefix below 1235A Improved ink writing kit

▶ 7123A/B-7/7143A/B-3 All serials. Disposable pen kits

7402 OSCILLOGRAPHIC RECORDER

▶ 7402A-1 All serials. Listing of ink pen part numbers

7562A LOG CONVERTER

7562A-2 Serials prefixed 844- & below Meter replacement kit

8002A PULSE GENERATOR

8002A-1 Serials G916-00680 & below Recommended transistor replacement.

8002A-2 Serials G948-00860 & below Recommended replacement for A1Q16.

8002A-3 +20 Volt Power Supply Failures Serials prefixed 1201A and 1206A (below 00594)

8003A PULSE GENERATOR

8003A-2 Serials G839-00789 & below Recommended replacements for AIR30 and AIR51

8004A PULSE GENERATOR

8004A-1 Serials C956-00370 & below. Modification to enable setting the pulse width to zero at low repetition rates.

8005A PULSE GENERATOR

8005A-1 Serials G918-00200 & below. Recommended transistor replacement.

8005A-2 Serials C950-00510 & below. Recommended replacement for A2Q16.

8006A WORD GENERATOR

8006A-1 Serials 1049G00270 and below. Also serials 00273, 00274, 00275, 00277, 00278, 00280, 00281, 00284, 00285, 00286. Correction of wiring error.

8012A PULSE GENERATOR

- ▶ 8012A-2 Serial prefix 1148A. Free-running rate in EXT.

8051A LOUDNESS ANALYZER

8051A-1 Recommended transistor replacement.

8051A-2 Explanation of Drift Specification as applied to Peak-Mode operation.

8051A-4 Serials G914-00215 & below. Modification to improve hold-peak circuit operation.

8054A SPECTRUM ANALYZER

8054A-1 Serials G915-00150 & below. Modification to eliminate power switching transients.

8054A-2 Serials G828-00121 thru G915-00160. Modification to improve Low Impedance Reference Level Output.

8402B CALIBRATOR

8402B-1 Serials prefixed below 739-. Calibration procedure.

8402B-2 Serials 739-00461 thru -00520. Modification to improve reliability.

8403A MODULATOR

8403A-1 Serials below 523-00276. Increasing PIN modulator bias range.

8403A-2 Serials below 629-00651. Preferred replacement for Q402 positive spike transistor.

8403A-3 Serials below 736-00865. Modification to avoid loss of width control due to premature triggering of the neg. spiker.

8403A-4 Serials below 736-00873. Modification to improve general pulse output and reduce minimum pulse width.

8403A-5 Serials below 736-00876. Preferred replacement for T401 for improved high frequency performance.

8403A-6 Serials below 736-01451. Preferred replacements for C401 and C405.

8405A VECTOR VOLTMETER

8405A-1C Performanc check procedure

8405A-3 CAUTION - More than 2 VAC peak or more than 50 VDC burns out the probe with or without the blocking capacitor.

8407A NETWORK ANALYZER

8407A-2A/8412A-2A Serials 972-00335 & below. Recommended IC replacements.

8407A-3 Serials 983-00445 & below. Recommended power supply modifications.

8407A-4 All serials. Phase locked oscillator replacement procedure and 8407A alignment procedure.

8410A NETWORK ANALYZER

8410A-1 Serials 750-00280 & below. Modification to improve AGC and phase lock.

8410A-2/8414A-4 Serials 806-00680 & below. New top covers which allow better ventilation.

8410A-3 Serials 806-00750 & below. Modification of DC Power Supply for improved reliability.

8410A-4 AGC Monitor adjustment.

8410A-5 Serials prefixed 987 & above. Realignment procedure for compatibility with 8413A phase-gain indicators.

8411A HARMONIC FREQUENCY CONVERTER

8411A-1 Serials prefixed 850- & below. Modification to reduce VTO feedthrough.

8412A PHASE-MAGNITUDE DISPLAY

8412A-4 Correction of specification for phase accuracy vs. display amplitude.

8407A-2A/8412A-2A Serials 976-00445 & below. Recommended IC replacements.

8414A POLAR DISPLAY

8414A-2 Serial 749-00215. Modification for improved grounding.

8410A-2/8414A-4 Serials 833-00540 & below. New top covers which allow better ventilation.

8433A TRACKING GENERATOR/COUNTER

8443A-1 Serials prefixed 955- & below. Modification to eliminate 50 MHz spurious responses.

8443A-2 Serials 964-00245 & below. Modification to increase A6 high frequency decade reliability.

8443A-3 Serials 964-00219 & below, excepting serials 964-00179, -00185, -00186, -00193, -00201, -00203, -00205, -00206, -00212, -00214, -00215, and -00218. Installation procedure for cooling fan.

- ▶ 8443A-4 Serial prefix 1145A & below. Restored signal operation.

8443A/B-1 Serials 1049A00440 & below. Modification to improve -12V supply stability.

8443B TRACKING GENERATOR/COUNTER

8443A/B-1 Serials 0973A00120 & below. Modification to improve -12V supply stability.

8444A TRACKING GENERATOR

8444A-1 Serial prefix 1147A & below. Improved power supply stability.

8477A CALIBRATOR

8477A-1 Updated performance tests and calibration procedure for 8477A. Manual part number 08477-90002

8478B THERMISTOR MOUNT

8478B-1 Serials 02383 & above. Thermistor assembly replacement kit

8543A AUTOMATIC NETWORK ANALYZER

8543A-4 All serials H27 Special Board exchange.

8543A-5 All serials. System specifications.

8543A-6 Serials 6561144A00655 & below. Ready signal error

8551A SPECTRUM ANALYZER, RF SECTION

8551A-5 Modification for addition of vernier fine tuning.

8551A-6A Modification to add Preslector Drive Output for use with the 8441A Preselector

8551A-8 Recommended replacement for R6.

8551B—8554L

- 8551A/B-1 Recommended replacement for A9A3U1.
8551A/B-2 Procedure for measuring 8551A/B sensitivity.
8551A/B-3 Modification to improve swept frequency linearity
8551A/B-4 Preferred replacement for A13V1 and required modifications.
8551A/B-6 Changing ASV1 may necessitate changing IF ampl. tuning slug.
8551A/B-7 Preferred replacement diodes in RF section for greater reliability.
8551A/B-8 Modification to reduce FM.
9551A/B-9 Procedure for measuring relative conversion loss
8551A/B-11 Serials 618-00510 & below. Improved replacement for A3 coax mixer
8551A/B-12 Replacement of C7 and C8
8551A/B-13A Standby operation.
8551A/B-14 Modification to improve 180 MHz oscillator stability
8551A/B-15 Modification may be required when BWO is replaced. See also 8551A/B-8.
8551A/B-16 Recommended replacement for A18CR1 and A18CR2.
8551A/B-17 Recommended fan motor replacement.
8551A/B-18 Recommended replacement for resistors A14R1 and A14R7.

8551B SPECTRUM ANALYZER, RF SECTION

- 8551B-1 Recommended replacement for R6
8551B-2 Serials 823-02211 thru 825-02535 Recommended transistor replacement.
8551B-3 Serials 933-03310 & below. Recommended replacement for A3R1.
8551B-4 Serials 905 thru 933. Modification to improve reliability by adding surge protection to A13Q4B
8551A/B-1 Recommended replacement for A9A3U1.
8551A/B-2 Procedure for measuring 8551A/B sensitivity.
8551A/B-3 Serials 625-00935 & below. Modification to improve swept frequency linearity.
8551A/B-4 Serials below 727-01411. Preferred replacement for A13V1 and required modification
8551A/B-6 Changing ASV1 may necessitate changing IF ampl tuning slug.
8551A/B-7 Preferred replacement diodes for greater reliability
8551A/B-8 Serials below 731-01586. Modification to reduce FM
8551A/B-9 Procedure for measuring relative conversion loss.
8551A/B-11 Serials 618-00510 & below. Improved replacement for A3 coax mixer.
8551A/B-12 Serials below 720-01261. Replacement of C7 and C8
8551A/B-13A Standby operation.
8551A/B-14 Serials 823-02211 & below. Modification to improve 180 MHz oscillator stability.
8551A/B-15 Serials prefixed below 823- Modification may be required when BWO is replaced. Serial prefix 731 & below. See also 8551A/B-8.
8551A/B-16 Serials 813-02085 & below. Recommended replacement for A18CR1 and A18CR2
8551A/B-17 Serials prefixed 933- & below. Recommended fan motor replacement.
8551A/B-18 Serials 842 & below. Recommended replacement for resistors A14R1 and A14R7.

8552A SPECTRUM ANALYZER, IF SECTION

- 8552A-1 Serials below 905-00565. Modification to eliminate trace foldback.
8552A-2A Serials 1110A3294 & below. Recommended replacement for A7Q2 and A7Q9.
8552A-3A Serials prefixed 905- & below. Modification for reduced spurious sidebands.
▶ 8552A-4A Serials 945-01889 & below. Modification for use with Tracking Generator.
8552A-5 Serials prefixed 945- & below. Modification to allow operation with 600 ohm earphones.
8552A-6 Serials 991-02944 & below. Preferred replacement for A6U1 and A6U2
8552A-7 Serials 1101A03094 & below. Improved Log/Ln switching operation
8552A-8 Serials 1110A03095 & below. Preferred replacement for A7Q10 and A7Q19
8552A-9 Serials 991-02994 & below. Modification for compatibility with 8556A
8552A-10 Serials 945-01890 through 1144A03694. Tracking generator restored signal operation.

8552B SPECTRUM ANALYZER, IF SECTION

- 8552B-1 Serials 977-00260 & below. Preferred replacement for ASU1, ASU2, A6U1, A6U2, and A12U1.
8552B-2 Serials 1050A00435 & below. Modification for improved log/in switching operation
8552B-3 Serials 1050A00385 & below. Preferred replacement for A7Q10 and A7Q19.
8552B-4 Serials 977-00310 and below. 8556A compatibility modification
8552B-5 Serials 1121A00810 & below. Adding stability to the 3kHz bandwidth
8552B-6 Serials prefixed 1107A & below. Improved amplitude stability for 2dB Log and 10 dB Log Operation.
8552B-7 Serials prefixed 1209A & below. Tracking generator restored signal operation

8553B SPECTRUM ANALYZER, TUNING SECTION

- 8553B-1 Serial prefix 1144A & below. Modification for Tracking Generator restored signal operation

8553L SPECTRUM ANALYZER, RF SECTION

- 8553L-1 Serials prefixed below 838. Preferred replacement diodes.
8553L-2 Procedure for replacement of input mixer diode
8553L-3A Serials 933-01035 & below. Recommended transistor replacements.
8553L-4A Modification for use with Tracking Generator
8553L-5 All serials. Improved fine tuning control.
8553L-6 Serial prefix 841 & below. Modification to increase input voltage rating

8554L SPECTRUM ANALYZER, RF SECTION

- 8554L-2A Serials 823-00170 & below. Modification for improved Tuning Stabilizer operation
8554L-3 Serials prefixed 925- & below. Modification for improved Second Local Oscillator operation
8554L-4 Serials prefixed 950 & below. Modification to improve fine tune control resolution
8554L-5 Serials 1101A0335 & below. Preferred replacement for A4U1, ASU1, and A6U1.

8554L-6 Serial prefix 1101A & below. Modification to provide front panel first and second I.O. outputs.

8556A SPECTRUM ANALYZER, TUNING SECTION

8556A-1 Serial prefix 1104A & below Improved zero adjustment range

8556A-2 Serial prefix 1124A & below. Preferred replacement for A8Q1.

8601A GENERATOR/SWEEPER

8601A-1 Serials below 839-00381 Recommended replacement for Series Regulator Q3.

8601A-2 Serials below 838-00181. Improve manual trigger operation in slow Sweep Improve Retrace on line Sync mode.

8601A-3 Serials below 838-00181 Reduction of spurious signals

▶ 8601A-5/8600A-1 Serial 1144A-03160 & below Sweep Inhibit modification kit.

▶ 8601A-6 Serials 0979A02215 & below Recommended replacement for A9E1 summing amplifier

▶ 8601A-7 Serials 1144A02985 & below Recommended replacement for A5A1Q1 and A5A1Q3.

▶ 8601A-8 Serials 954-01131 thru 1144A02845. Modification to increase sweep rate

▶ 8601A-9 Serials 954-01131 thru 0969A02355 Recommended replacement for A9C11

8605A SWEEP OSCILLATOR

8605A-1 Improved operational amplifiers for A2 and A3 boards.

8605A-2 Recommended replacement for line filter capacitor C1.

KS 20626 (8605Z) SWEEP OSCILLATOR

KS-20626-1 Improved operational amplifiers for A2 and A3 boards

KS-20626-2 Recommended replacement for line filter capacitor C1

8614A SIGNAL GENERATOR

8614A-1 Serials below 411-00376. Reduction of residual FM

8614A-3/8616A-2 Serials prefixed 434 thru 511 - Modification to extend external pf range

8614A-4A/8616A-3A Serials below 548-00951 Improved ALC Low Pass Filter.

8614A-5A Illustrated parts identification.

8614A-6/8614B-1/8616A-4/8616B-1 Serials below 745-01901 Recommended switch replacements.

8614A-7/8614B-2/8616A-5/8616B-2 Serials below 748-01851. Installation of fuse and zener diode to increase reliability

8614A-8A/8616A-6B Serials below 749-02001. Modification to protect klystron filaments.

8614A-9/8614B-3/8616A-7/8616B-3 Serials below 749-02151 Modification for reduced power supply ripple and residual FM

8614A-10/8616A-8 Serials below 815-02601. Modification to reduce transient spikes at the External Pulse Input.

8614A-11/8614B-5/8616A-9/8616B-5 Replacement procedures for the RF probe assembly.

8614A-12A/8614B-6A/8616A-10A/8616B-6A. A100 high voltage board assembly - correct replacement board numbers and their instrument.

8614A-13/8616A-11 Serials 411-00400 & below. Modification to increase reliability of ALC board frequency adjust pots, R614, R615, R620 & R621.

8614A-14/8616A-12 Serials 749-02001 thru 953-02975. Modification to prevent klystron heater-cathode short.

8614A-15/8614B-7/8616A-13/8616B-7 All serials Procedure for replacing cavity wipers and center conductor.

8614B SIGNAL GENERATOR

8614B-4/8616B-4 Serials below 910-00451 Recommended transistor replacement.

8614A-6/8614B-1/8616A-4/8616B-1 Serials below 748-00281 Recommended switch replacements.

8614A-7/8614B-2/8616A-5/8616B-2 Serials below 748-00291. Installation of fuse and zener diode to increase reliability.

8614A-9/8614B-3/8616A-7/8616B-3 Serials below 748-00341. Modification for reduced power supply ripple and residual FM.

8614A-11/8614B-5/8616A-9/8616B-5 Replacement procedures for the RF probe assembly

8614A-12A/8614B-6A/8616A-10A/8616B-6A A100 high voltage board assembly - correct replacement board numbers and their instruments

8614A-15/8614B-7/8616A-13/8616B-7 All serials Procedure for replacing cavity wipers and center conductors.

8616A SIGNAL GENERATOR

8614A-3/8616A-2 Serials below 511-00381 Modification to extend pf range

8614A-4A/8616A-3A Serials below 548-00581 Improved ALC Low Pass Filter

8614A-6/8614B-1/8616A-4/8616B-1 Serials below 744-01256 Recommended switch replacements

8614A-7/8614B-2/8616A-5/8616B-2 Serials below 748-01231 Installation of fuse and zener diode to increase reliability.

8614A-8B/8616A-6B Serials below 749-01281. Modification to protect klystron filaments.

8614A-9/8614B-3/8616A-7/8616B-3 Serials below 749-01356. Modification for reduced power supply ripple and residual FM

8614A-10/8616A-8 Serials below 815-01681. Modification to reduce transient spikes at the External Pulse Input.

8614A-11/8614B-5/8616A-9/8616B-5 Replacement procedures for the RF probe assembly.

8614A-12A/8614B-6A/8616A-10A/8616B-6A A100 high voltage board assembly - correct replacement board numbers and their instrument

8614A-13/8616A-11 Serials 411-00120 & below. Modification to increase reliability of ALC board frequency adjust pots, R614, R615, R620 & R621

8614A-14/8616A-12 Serials 749-01281 thru 951-01930 Modification to prevent klystron heater-cathode shorts.

8614A-15/8614B-7/8616A-13/8616B-7 All serials Procedure for replacing cavity wipers and center conductor.

8616B SIGNAL GENERATOR

8614A-6/8614B-1/8616A-4/8616B-1 Serials below 803-00276. Recommended switch replacements.

8614A-7/8614B-2/8616A-5/8616B-2 Serials below 748-00266 Installation of fuse and zener diode to increase reliability.

8614A-9/8614B-3/8616A-7/8616B-3 Serials below 748-00316 Modification for reduced power supply ripple and residual FM.

8614B-4/8616B-4 Serials below 910-00376. Recommended transistor replacement.

8614A-11/8614B-5/8616A-9/8616B-5 Replacement procedures for the RF probe assembly.

8614A-12A/8614B-6A/8616A-10A/8616B-6A A100 high voltage board assembly. Correct replacement board numbers and their instrument.

8614A-15/8614B-7/8616A-13/8616B-7 All serials Procedure for replacing cavity wipers and center conductor.

8620A/B—8707A

8620A/B SERIES SWEEP OSCILLATORS

- 8620A-1/8620B-1 8620A serials 1135A00325 & below. 8620B serials 1135A00160 & below. Modification to add a fan protector circuit transient filter.
- 8620A-2 Serial prefix 1120A & below. Modification to reduce residual FM.
- 8620A-3 All serials. Installation procedure for remote frequency programming (opt 001).

8640A/B SIGNAL GENERATOR

- ▶ 8640A-1/8640B-1. 8640A serial & below 1245A00105, 8640B serial below 1246A00157. Reduction of RFI leakage.
- ▶ 8640A-2/8640B-2. 8640A serial prefix 1225A & below, 8640B serial prefix 1229A & below. Improved FM metering accuracy.
- ▶ 8640B-3 Serial prefix 1229A & below. Elimination of frequency shift in expand X100 mode.
- ▶ 8640A-3/8640B-4. 8640A serial prefix 1225A & below, 8640B serial prefix 1229A & below. Improved audio output and internal modulation drive levels.
- ▶ 8640A-4/8640B-5. 8640A serial prefix 1245A & below, 8640B serial prefix 1246A & below. Replacement of FM shaping board.

8660A SYNTHESIZER

- 8660A-1 All serials. Installation of option 009.
- ▶ 8660A-2A Serial prefix 1219A & below. High frequency adjustment improvement.
- 8660A-3 Serials below 1141A00131. Power supply improvements.
- 8660A-4 Serials below 1201A00171. Noise reduction in reference section.
- ▶ 8660A-5A Serials below 1201A00161. Increase 500 MHz output level.
- ▶ 8660A-6 Serials 1219A00230 & below. Increase power supply adjustment range.
- ▶ 8660A-7 Serials 1219A00250 & below. Increase high frequency section adjustment range.
- ▶ 8660A-8 Serials 1219A00240 & below. New fan installation.
- ▶ 8660A-9 Serials 1219A00260 & below. Increase reference section noise filtering.
- ▶ 8660A-10 Serial prefix 1239A & below. Improved 100 KHz filtering.
- ▶ 8660A-11 Serial prefix 1242A & below. Winchester connector improvement.
- ▶ 8660A-12 Serial prefix 1241A & below. 50 MHz OSC suppression.

8660B SYNTHESIZER

- ▶ 8660B-1 Serials 1242A00180 & below. Modification to improve +4V filtering.
- ▶ 8660B-2 serials prefix 1228A & below. Increased D/A ramp output for operation with ext scan input of 8552A/B.
- ▶ 8660B-3 Serial prefix 1240A & below. Improved +4V, -10V and +20V filtering.
- ▶ 8660B-4 Serial prefix 1240A & below. Improved 100KHz filtering.
- ▶ 8660B-5 Serial 1240A00180 & below. Modification to correct intermittent read-out.
- ▶ 8660B-6 Serials prefix 1245A & below. Modification to Winchester connector to reduce susceptibility to pin damage.
- ▶ 8660B-7 Serial prefix 1241A & below. 50MHz oscillation suppression to reduce false lock.

8690A-2A 8690 SERIES SWEEP OSCILLATORS

- 8690A-2A Serials below 732-01261. Modification to improve time and temperature stability of Reciprocal Amplifier.

8690A-3 All serials. Preferred replacement for A1Q2.

8690A-4 All serials. Preferred replacement for S4 thru S8

8690A-5 Serials below 732-0131. Modification to reduce fan noise

8690A-6 Serials below 747-01711. Modifications to permit operation with 8706A and 8707A

8690A-7 Serials below 641-00261. Modification to permit operation with RF Units with serial prefix 724 and above

8690A-8 Serials prefixed 803—only. Recommended replacement for pen lift relay A9K1.

8690A-9 Serials below 717-00911. Improved power supply reliability and square wave symmetry.

8690A-10/8690B-1 Serials 803-02061 thru 818-02430. Procedure for the installation of a missing connection

8690A-11/8690B-2 All serials. Recommended tube replacement.

8690A-12 Replacement of capacitor containing PCB.

8690B-3/8698B-1/8699B-1 Tightening of voltage to tolerances.

8690B-4 Serials below 921-00801. Recommended replacement for A14Q3 and A3R63

8690B-5 Serial numbers below 1050A02191. Modification to improve line Sync triggering.

8690B-6 Serial prefix 1124A & below. Modification to improve reliability.

8690B-7 Replacement of capacitors containing PCB.

8690B-U-3 Serials with a "U" prefix. Tightening of voltage tolerances.

8691A-1 Installation of Shunt Tube Modulator.

8691-4A-1/8695-7A-1 Serials prefixed 715- thru 835—. Modification for improved reliability and added BWO protection.

8691-4A/B-2/8695-7A-2 Serials below 835-01406 (8691-4A/B); Serials below 835-00481 (8695-7A). Modification to reduce residual AM.

8691-4A-7/8695-7A-6 Serials below 916-002256 (8691-4A); Serials below 916-00616 (8695-7A). Modification to reduce residual FM.

8691-4A-8/8695-7A-7/8691-5B-6. BWO replacement procedure 8692-4A/B-1 Installation of Shunt Tube Modulator.

▶ 8692-4A-8/8695-7A-7 Grounding Varian BWO to eliminate possible shock hazard

8693-7A-1 Installation of Shunt Tube Modulator

▶ 8693B-1 Installation of Shunt Tube Modulator

8698B-1 Serials 1142A00910 & below. Recommended replacement for AS A1Q1 & AS A1Q3.

8699B-2 Serials below 919-00331. Recommended pot replacements

8699B-3 Serials below 1105A01416. Transient, suppression filter to protect Yig Oscillator

8706A CONTROL UNIT

8706A-1 Serials below 803-00181. Preferred replacement for A2Q7 for improved reliability.

8706A-2/8707A-5 Serials below 903-00341. Modification to reduce residual AM.

8706A-3 Serials below 903-00401. Recommended replacement for A2R20 and A2R22.

8707A RF UNIT HOLDER

8707A-1 Serials below 815-00231. Addition of a clamp diode to increase reliability

8707A-2 Serials below 822-00261. Recommended time delay relay replacements

8707A-3 Installation of magnetic shield for improved relay operation.

8707A-4 Serials below 802-00230. Modification for improved reliability of Unity Gain Follower circuit.

8706A-2A/8707A-5A 8706A Serials below 903-00341. 8707A serials below 903-00301. Modification to improve residual FM with 8698B and 8699B RT units installed.

8707A-6 Serials below 921-00401. Modification to improve power level regulation.

8707A-7 Serials 0947A00705 & below. Modifications to improve reliability of the unity gain follower circuit.

8708A SYNCHRONIZER

8708A-1 Serials below 707-00276. Change A21Q1 Preferred replacements for A21Q3, A21Q4, and A21Q6.

8708A-2 Serials below 806-00526. Modification to increase pulse balance range.

8708A-3 Serials below 806-00676. Recommended transistor replacements.

8717A TRANSISTOR BIAS SUPPLY

8717A-1 Installation of Option 001.

8717A-2 Serials below 917-00111. Power transistor insulators.

8717A-3 Serials below 917-00121. Modification for improved reliability.

8717A-4 Serials below 927-00141. Installation of power transistor collector covers for improved safety.

8717A-5 Serials below 927-00141. Modifications to replace A2 and A9 boards.

8740A TRANSMISSION TEST UNIT

▶ 8740A-1 All serials. Resonance reduction at RF input connector.

8743A REFLECTION TRANSMISSION TEST UNIT

8743A-1A RF troubleshooting information and coax switch procedure.

8743A-2 Serials 968-00360 & below. Recommended replacement for A3Q3 and A3Q4.

8745A S-PARAMETER TEST SET

8745A-1 Replacement of A3Q11, 12, 13, and 14.

8821A MEDIUM GAIN AMPLIFIER

8821A-1 Serials 00122 & below. Modification of amplifier circuit to eliminate oscillations.

8821A-2A Serials 00146 & below. Warning about fuse replacement.

8875A DIFFERENTIAL AMPLIFIER

8875-1 Recommended replacement for A29101 and A29102.

9100A/B CALCULATOR

9100A/9100B-1A Power Supply replacement procedure.

9100A/9100B-2A Recommended repair procedure for Power Supplies.

9100A/9100B-3A CRT failures.

9100A/9100B-4A Modification to the deflection boards so that more than one 9150A Display can be operated from the same calculator.

9100A/9100B-5 Serials 945-03400 thru 945-03546 (9100A), Serials 938-09700 thru 938-01419 (9100B). Modification to eliminate possibility of short-circuit by cable clamp.

9100A/9100B-6 All serials. Modification for 9150A horizontal deflection board.

9101A EXTENDED MEMORY

9101A-1 Serials 0980A00101 thru 0980A00214. Modification to insure compatibility of the 9101A in the 9100B system.

9100A-2 All serials. Procedures for proper sequence of turning power on and off.

9101A-3 Serials 0980A00582 thru 0980A00775. Modified A11 P.C. Assembly.

9120 CALCULATOR PRINTER

9120A-1A Serials 942-03000 & below. Recommended replacement of Paper Advance pushbutton.

9120A-2 Serials 942-01000 & below. Modification to prevent lockup.

9120A-3 Serials 942-01479 & below. Recommended replacement of ASC1.

9120A-4 Securing cam replacement to correct failures.

9160A MARKED CARD READER

9160A-1A Serials prefixed 929 & 941. Recommended replacement for A1 control Board Assembly and Skip 77 Decode modification.

9160A-2 Procedure to insure proper data entry into the 9100 system via the 1960A.

9300N/P CARTRIDGE DRIVE DISK

9300N/P-1 Recommended Service Tools.

9300N/P-2 Recommended Spare Parts.

9300N/P-3 Replacement of Sector Transducer. Serial numbers 505 - 562.

9300N/P-4s Servo Motor Oscillations - all serial numbers.

9300N/P-5 Control I/O board head selection timing problem. Date codes prior to K1144-6.

9300N/P-6 Bottom cover kit - all serial numbers.

9300N/P-7B Calibration Potentiometers - All serial numbers.

9300N/P-8 All serials. Cartridge receiver misalignment.

9862A CALCULATOR PLOTTER

▶ 9862A-1 Production changes.

9865A CASSETTE MEMORY

▶ 9865A-1 Serials 1205A00101 thru 1205A00175. Memory clearing during power off.

10004A OSCILLOSCOPE PROBE

10004A-1 Improved replacement probe cable.

10005A OSCILLOSCOPE PROBE

10005A-1 Improved replacement probe cable.

10006A OSCILLOSCOPE PROBE

10006A-1 Improved replacement probe cable.

10012A OSCILLOSCOPE PROBE

10012A-1 Improved replacement probe cable.

10407A PLUG-IN EXTENDER

10407A-1 Modification to improve performance and eliminate oscillation of Model 180/181 Oscilloscope.

10479A TILT TABLE

10479A-1 Add two Tilt Limit Bars to prevent overturning.

10529A LOGIC COMPARATOR

▶ 10529A-2 All serials clip cover replacement.

10536A—17503A

10536A PLUG-IN ADAPTER

10536A-1 Serials prefixed 200- & below Modification to correct PI error default.

10626A DIRECT MEMORY INCREMENT COMPUTER ACCESSORY

10626A-1 Serials prefixed 956 & below. Modification for DMI-DMA compatibility.

10626A-2 Serial prefix 956 & below. DMI-DMA compatibility

11589A BIAS NETWORK

11589A-1 Nameplate correction

11592A SERVICE KIT

11592A-1 Modification.

11592A-2 Service kit interconnector cables.

11661A EXTENSION MODULE FOR 8660A, B.

▶ 11661A-1 Serial 1216A00250 & below Modification to increase search threshold adjustment range

▶ 11661A-2 Serial prefix 1248A & below Modification to Winchester connector to reduce susceptibility to pin damage.

12533A/12534A/12550A DIGITAL VOLTMETER-PROGRAMMER INTERFACE

12533A-1/12534A-1/12550A-2/12567A-1 Date code G-702 & below. Modification for decreased susceptibility to environmental noise.

12564A HIGH SPEED ANALOG INPUT

12564A-1 Modification to improve reliability of Sign Bit

12567A DIGITAL VOLTMETER-PROGRAMMER INTERFACE

12533A-1/12534A-1/12550A-1/12567A-1 Date code G-702-6 & below Modification for decreased susceptibility to environmental noise

12575A TAPE WINDER

12575A-1 Procedure to avoid electric motor interference.

12595A INTERFACE CARD

12595A-1 Serials prefixed 901-, 905-, and 908- Information on PON signal

12595A-2 Modifications to the I/O Control Card to provide hardware conformity.

12620A I/O BREADBOARD

12620A-1A All 5080-5950 boards with date code A-812. Replacement to prevent damage to computer power supplies

12661A DIGITAL VOLTAGE SOURCE INTERFACE

12661A-2 Date code A-902-6 & below Modification to prevent the possibility of random outputs.

12800A 8-BIT DUPLEX REGISTER CARD

12800A-1 Date codes below 1039-6 Modification to prevent erroneous character punch.

13181A MAGNETIC TAPE INTERFACE

13181A-1 Serials prefixed 1025A. Modification to eliminate the possibility of tape unit select errors.

13181A-2 Fifteen foot interface cable

13181A-3 Serials prefixed 1042A & below. Modification to prevent read errors when operating with DMA.

13181A-4 Proper interface cable connection.

15524A/15525A/15526A COUPLING LINES

15524A-1/15525A-1/15526A-1 Serials below U830-00300. Faulty accessory cables.

16008A RESISTIVITY CELL

16008A-1 Illustrated parts identification

17005A INCREMENTAL CHART ADVANCE

17005A-1 Serials prefixed below 1048A. Recommended replacement for capacitor C503

17005A-2 Serial prefix 835 to 1116A. Modification to improve incremental advance.

17005A-3 Operation with point plotting system

17106A/17107A INPUT FILTERS

17106A-1/17107A-1 Calibration procedure and parts list

17172A TIME BASE MODULE

17172A-1 Serial prefix 924 & below. Modification to eliminate noisy sweep

17173A NULL DETECTOR MODULE

17173A-1 Serial prefixed 1011A. Modification to correct defect in the printed circuit board of the output card

17173A-2 Serial prefix 1011A. Modification to eliminate output board failures.

▶ 17173A-3 Serial prefix 1011A and 1121A. Fuse valve change.

17175A ACTIVE FILTER MODULE

17175A-1 Serial prefix 818. Modification to decrease temperature drift.

17176A SCANNER MODULE

▶ 17176A-1 Serial prefix 1011A & 1043A Fuse value change.

17500A INPUT MODULE

17500A-1 Serials prefixed below 833-. Modification to provide for increased reliability and power rating of the chopper circuit.

17501A INPUT MODULE

17501A-1/17503A-1 Serial prefix below 647 Recommended chopper replacement.

17501A-2/17503A-2 Serials prefixed below 717-. Modification to permit operation with 7100B and 7128A Electric Writing Recorders.

17501A-3 Serials prefixed below 828-. Modification to provide for increased reliability and power rating of the chopper circuit.

17502A INPUT MODULE

17502A-1 Serials prefixed below 828-. Modification to provide for increased reliability and power rating of the chopper circuit.

17502A-2 Serial prefix 908 & below Modification for operation with 17505A or 17506A.

17503A INPUT MODULE

17501A-1/17503A-1 Serials prefixed below 647-. Recommended chopper replacement.

17501A-2/17503A-2 Serials prefixed below 717-. Modification to permit operation with 7100B & 7128 Electric Writing Recorders.

17503A-3 Serials prefixed below 834-. Modification to provide for increased reliability and power rating of the chopper circuit.

17504A INPUT MODULE

17504A-1 Serials 00381 & below Modification to increase the reliability of the chopper circuit.

60066B SLOT POWER SUPPLY

60066B-1/60126B-1 Serials 00150 & below. Modification to correct fuse size.

60125B SLOT POWER SUPPLY

60125B-1 Serials 00350 & below Modification to improve crowbar reliability.

60126B SLOT POWER SUPPLY

60066B-1/60126B-1 Serials 00130 & below Modification to correct fuse size

85001A CASSETTE I/O UNIT

85001A-1 Recommended preventive maintenance

86220A PLUG IN

- ▶ 86220A-1 All serials. Installing opt 002 in 86220A option 004.
- ▶ 86220A-2 All serials. Installing opt 002 in 86220A.

86320/86330 MODULES

86320A-1/86330A-1 Serial prefix below 1125A. Modification to increase the dynamic range of power level control for the 86320A

86330A-2 Serials below 1109A00221 Modification to reduce residual FM.

86330A-3/86331A-1 Serial prefix 1125A & below. FM board replacement to eliminate spurious AM caused by ALC oscillations.

86350A OSCILLATOR MODULES

- ▶ 86350A-1 Serial prefix 1125A & below. Modification kit to add steel cover and heat sink.

86601A RF SECTION FOR 8660A, B

- ▶ 86601A-1 Serial 1214A00200 & below Meter replacement kit.
- ▶ 86601A-2A Serial 1249A00320 & below. Meter replacement kit (opt 001).
- ▶ 86601A-3 Serials 1201A00170 to 1214A00230. Modification to add pulse modulation capability.
- ▶ 86601A-4 Serial 1223A00240 & below Power amp improvement.
- ▶ 86601A-5 Serial prefix 1223A & below. Modification to Winchester connector to reduce susceptibility to pin damage

86602A RF SECTION FOR 8660A, B

- ▶ 86602A-1A Serials 1245A00170 & below Meter replacement kit.
- ▶ 86602A-2 Serial prefix 1243A & below. Modification to Winchester connector to reduce susceptibility to pin damage.
- ▶ 86602A-3 Serial prefix 1240A & below. Modification to reduce oscillation in ALC amplifier.
- ▶ 86602A-4 Serial prefix 1239A & below. Modification to improve AM performance

86631B AUXILIARY SECTION FOR 8660A, B

- ▶ 86631B-1 Serial prefix 1223A & below Modification to Winchester connector to reduce susceptibility to pin damage.

86632A AM/FM SECTION 8660A, B

- ▶ 86632A-1A Serial prefix 1238A & below Meter replacement kit.
- ▶ 86632A-2 Serial prefix 1214A & below Modification to improve FM-Cal stability.
- ▶ 86632A-3 Serial prefix 1236A & below. Modification to Winchester connector to reduce susceptibility to pin damage



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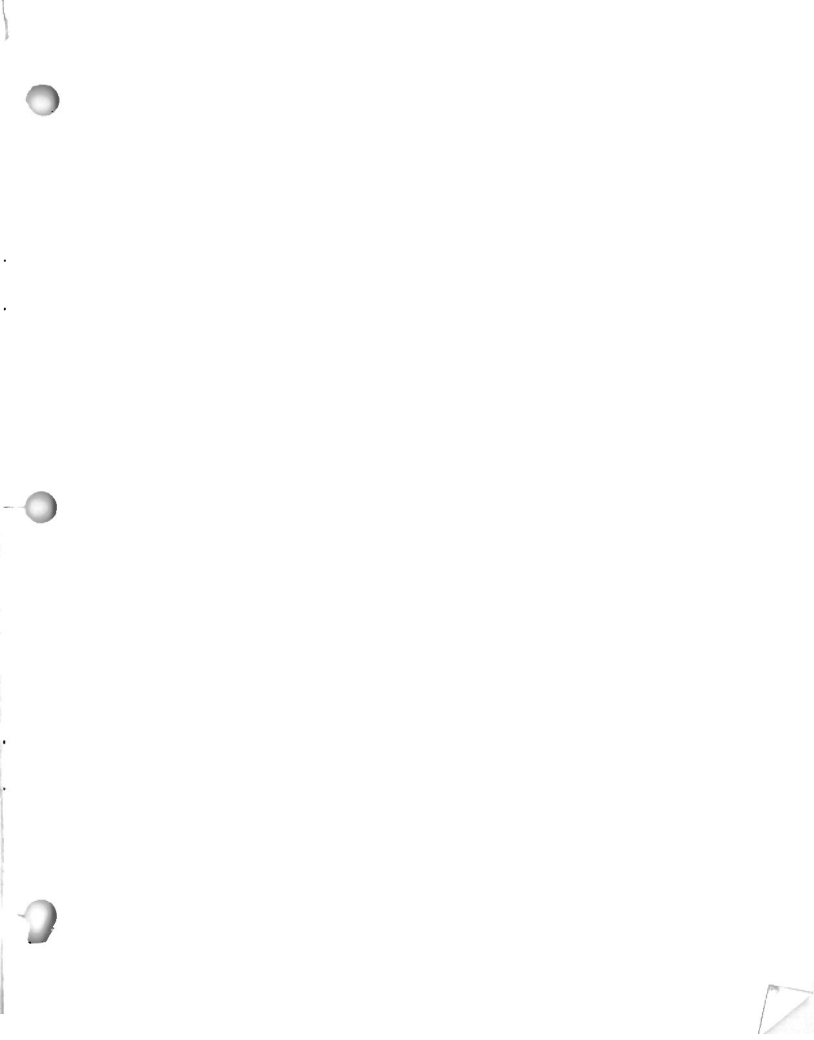
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