

HP Archive

This vintage Hewlett Packard document was preserved
and distributed by

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

Please visit us on the web !

On-line curator: Glenn Robb

This document is for FREE distribution only!

Bench Briefs

VOLUME 8 NO. 3

MAY, JUNE, JULY 1968



PROFESSOR WITTS
HP PRODUCT TRAINING NEWS

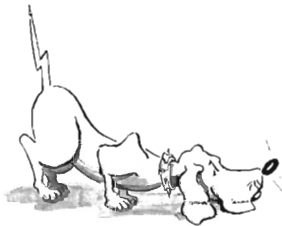
1968 Customer Seminar Schedule

Seminars are held at the Hewlett-Packard Company, 1501 Page Mill Road, Palo Alto, California.

Reservations can be made through your local HP Field Representative or Sales Office.

| | | | |
|------------------|--|-------------------|---|
| July 22 - 26 | Microwave Measurement Techniques | Aug. 26 - 30 | Voltage Measurements & Calibration Techniques |
| July 29 - Aug. 2 | Signal Generators & Sweep Oscillator Calibration & Maintenance | Sept. 2 | LABOR DAY (Holiday) |
| Aug. 5 - 9 | Spectrum Analyzer Maintenance & Techniques of Use | Sept. 9 - 13 | Solid State Power Supplies & Transistor Circuit Maintenance |
| Aug. 12 - 16 | Data Acquisition System Maintenance | Sept. 16 - 20 | Microwave Measurement Techniques |
| Aug. 19 - 23 | Digital Voltmeter Maintenance | Sept. 30 - Oct. 4 | Oscilloscope Maintenance (Low & High Frequency) |
| | | Oct. 7 - 11 | Sampling Oscilloscope Maintenance |
| | | Oct. 14 - 18 | Basic Microwave Repair & Calibration Techniques |
| | | Oct. 15 - 16 | Digital Tape Units (held at Mountain View Division) |
| | | Oct. 21 - 25 | Frequency and Time Standards |
| | | Oct. 28 - Nov. 1 | Patient Monitoring System Maintenance |
| | | Nov. 18 - 22 | Data Acquisition System Maintenance |
| | | Nov. 28 | THANKSGIVING DAY (Holiday) |
| | | Dec. 2 - 6 | Microwave Measurement Techniques |
| | | Dec. 9 - 13 | Electronic Counter Maintenance |
| | | Dec. 25 | CHRISTMAS DAY (Holiday) |

HP Palo Alto area maps, airport bus schedules, seminar enrollment forms and course outlines are available on request.



MISSING INSTRUMENTS
LOST, STRAYED, OR STOLEN

From:

Cook Electric Company
2700 N. Southport Avenue
Chicago, Illinois 60614
Raymond J. Rose, Chief Guard

HP 461A Amplifier
Serial 418-00177, USN 1907

HP 721A Power Supply
Serial unknown, USN 2067

HP 466A Amplifier
Serial 044-00832, TAG 8001

Kay Electric Attenuator
0-41 db, 20-0, USN 1665

Kay Electric Attenuator
70-0, USN 1950

Tektronix 454 Oscilloscope
Serial B091256, 18564

Simpson 260 Multimeter
TAG-EE 8221

Radar Power Supply
Serial unknown

Test Oscilloscope OS-34/USY-32
Serial 1748

Test Oscilloscope-TS-34A-AP
Serial 3496

From:

Genisco Technology Corp.
9367 William Street
Rosemont, Illinois 60018
Mr. Fred A. Parker
HP 201C, Oscillator
Serial 351-04912

From:

Hewlett-Packard Eastern Sales Region
1060 North Kings Highway
Cherry Hill, New Jersey 08034
Mr. Tom Richey
HP 5253B, Frequency Converter Plug-in
Serial 716-11267

HP 5245L, Electronic Counter
Serial 716-14908

Harrison 6217A Bench Power Supply
Serial 700432

From:

Hewlett-Packard Company
Building 5U
1501 Page Mill Road
Palo Alto, California 94304
HP 180A Oscilloscope
Serial 709-01229



LIBRARY CORNER

Here is a tip from Ron Accell, Gates Radio Company, Quincy, Illinois.

A free price list is available from The Government Printing Office describing books and pamphlets available on electronics, radar, and communications.

Write to: Superintendent of Documents
Government Printing Office
Washington D.C. 20402

Ask for List 82, "Radio and Electricity".

SERVICE NOTES



Here are the latest Service Notes... all designed to insure top-notch performance from your HP family instruments. Service Note topics typically include items such as modifications, new or special calibration techniques, and special repair procedures. If you would like to receive a complimentary copy of any note, circle the appropriate number of each under the SERVICE NOTE ORDER FORM.

M-42 DIGITAL TAPE UNITS
List of special tool requirements.

M-43 DIGITAL TAPE UNITS
Replacement and adjustment of head gate for Models 2020, 3029, and 3030.

115BR FREQUENCY DIVIDER AND DIGITAL CLOCK
115BR-2 All serials. Alignment of clock motor.

H20-115BR FREQUENCY DIVIDER AND DIGITAL CLOCK
H20-115BR-1 Modifications for increased output tick stability and alignment of output circuits.

130C OSCILLOSCOPE
130C-6A All serials. Preferred replacement for Q421, Q441, Q461.

132A DUAL BEAM OSCILLOSCOPE
132A-2 All serials. Preferred replacement for Q621, Q641, Q661, Q681.

140A OSCILLOSCOPE
140A-12 Serials prefixed 748- and below. HVPS modification for increased Q601 reliability.

141A STORAGE OSCILLOSCOPE
141A-14B Serials prefixed 815- and below. Modification for improved long-term storage.

141A STORAGE OSCILLOSCOPE
141A-15 Serials prefixed 820- and below. Improved beam finder operation.

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

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

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

191A TV WAVEFORM OSCILLOSCOPE
191A/193A-1 Serials 716-00835 and below. Modification to prevent high frequency roll-off problems.

193A TV WAVEFORM OSCILLOSCOPE
193A/193A-1 Serials 716-00835 and below. Modification to prevent high frequency roll-off problems.

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- and below. Preferred replacement of transistors for Q11 and Q41.

202H FM SIGNAL GENERATOR
202H-6A All serials. Modification to improve ceramic stator mount reliability.

202J TELEMETRY SIGNAL GENERATOR
202J-4A All serials. Modification to improve ceramic stator mount reliability.

204B OSCILLATOR POWER SUPPLY KITS
204B-1C Instructions for installing a battery-pack. AC power supply or rechargeable batteries.

214A PULSE GENERATOR
214A-6 All serials. Conversion kit to change standard 50/60 cycle fan to 50/60/400 cycle.

216A PULSE GENERATOR
216A-2 Serials below 820-00546. HP part no. 1850-00999. Substituting Texas Instruments 2N964 for Motorola 2N964.

312A WAVE ANALYZER
312A-3 Serials prefixed 706- and below. Recommended replacement for A9Q3, A9Q4, A9Q5, A9Q6.

| | | | |
|-------------|---|--------------|---|
| <u>333A</u> | <u>DISTORTION ANALYZER</u> 333A/334A-5 Serials 624-00800 and below. Modification to reduce zero offset on the 300v range to below 6%. | <u>614A</u> | <u>SIGNAL GENERATOR</u> 614A-4 All serials. Recommended fuse change to meet new current rating. |
| <u>334A</u> | <u>DISTORTION ANALYZER</u> 333A/334A-5 Serials 625-00825 and below. Modification to reduce zero offset on the 300v range to below 6%. | <u>618C</u> | <u>SIGNAL GENERATOR</u> 618C-1A/620B-1A Serials below 740-00701. Preferred replacement for R523 for improved ΔF operation. |
| <u>340B</u> | <u>NOISE FIGURE METER</u> 340B/342A-4 All serials. Adjustment of the noise figure meter to protect against burnout. | <u>620B</u> | <u>SIGNAL GENERATOR</u> 618C-1A/620B-1A Serials below 740-00601. Preferred replacement for R523 for improved ΔF operation. |
| <u>342A</u> | <u>NOISE FIGURE METER</u> 340A/342A-4 All serials. Adjustment of the noise figure meter to protect against burnout. | <u>690A</u> | <u>SWEEP OSCILLATORS</u> 690A/B-6 All serials. Procedure for adding a blanking output. |
| <u>410C</u> | <u>ELECTRONIC VOLTMETER</u> 410C-10 Procedure for replacing the range and function switches. | <u>690B</u> | <u>SWEEP OSCILLATORS</u> 690A/B-6 All serials. Procedure for adding a blanking output. |
| <u>412A</u> | <u>VACUUM TUBE VOLTMETER</u> 412A-13/413A-3 All serials. The modulator cable assembly (412A-16A) is now available separately. 412AR-4/413AR-2 All serials. The modulator cable assembly (412A-15F) is now available separately. | <u>738A</u> | <u>VOLTMETER CALIBRATOR</u> 738AR-1 All serials. Procedure for incorporating Model 738BR characteristics. 738AR-3/738BR-1 All serials. Recommended replacement for L1. |
| <u>413A</u> | <u>DC NULL VOLTMETER</u> 412A-13/413A-3 All serials. The modulator cable assembly (412A-16A) is now available separately. 412AR-4/413AR-2 All serials. The modulator cable assembly (412A-16F) is now available separately. | <u>738B</u> | <u>VOLTMETER CALIBRATOR</u> 738AR-3/738BR-1 All serials. Preferred replacement for L1. |
| <u>414A</u> | <u>AUTOVOLTMETER</u> 414A-6 Serials 430-00825 and below. Preferred replacement for A4 power supply and control board to provide greater reliability. | <u>774D</u> | <u>TYPE N CONNECTORS</u> 774D-1 Explanation of differences between various kinds of Type N connectors. |
| <u>425A</u> | <u>DC MICRO VOLT-AMMETER</u> 425A-6 All serials. Modulators are now available in two sub-assemblies for greater reordering convenience. | <u>780-6</u> | <u>VISO SCOPE</u> 780-6-2 Option 01 all serials. Preferred replacement for Q603, 613, 614, 617, 618, 622, 625, 626. |
| <u>478A</u> | <u>THERMISTOR MOUNT</u> 478A-1B All serials. Procedure for checking and replacing the thermistor assembly. | <u>805A</u> | <u>SLOTTED LINE</u> 805A-3 Procedure for replacing end connectors stock numbers 8C-95B and 8C-95C. |
| <u>493A</u> | <u>TWT AMPLIFIER</u> 493A-1 Serials below 304-00226. Kit to improve TWT cooling. | <u>1407A</u> | <u>DIFFERENTIAL AMPLIFIER</u> 1407A-3 Serials 704-00275 and below. Modification to prevent Q1 and Q2 burnout due to turn-on transients. |
| <u>495A</u> | <u>TWT AMPLIFIER</u> 495A-1 Serials below 746-01056. Kit to improve TWT cooling. | <u>1421A</u> | <u>TIME BASE AND DELAY GENERATOR</u> 1421A-4 Serials prefixed below 803-. Modification to prevent burnout of CR305, 306, 311 and/or 312 when integrator output is accidentally grounded. |
| <u>612A</u> | <u>SIGNAL GENERATOR</u> 612A-9 Serials Below 712-05783. Preferred replacement for CR21 for improved precision. | <u>1423A</u> | <u>TIME BASE</u> 1423A-1 Serials 709-00350 and below. Modification to prevent burnout of CR305, 306, 311, 312 when integrator output is accidentally grounded. 1423A-2 Serials 709-00350 and below. Recommended replacement for A204. |

| | | | |
|--------------|---|--------------|---|
| <u>1424A</u> | <u>SAMPLING TIME BASE</u> 1424A-1 Serials prefixed 801-00225 and below. Diode holders that permit solderless replacement of A2 CR1 and A2 CR2. 1424A-3 Serials 803-00270 and below. Preferred replacement of A4 board for improved linearity. | <u>3701A</u> | <u>TRANSMISSION GENERATOR</u> 3701A-1 All serials. Preferred replacement for A6Q1 for improved IF amplifier input. 3701A-2 All serials. Preferred replacement for A9Q5, A9Q6, A9Q10, A11Q14, A11Q15. 3701A-3 Serials below D805-00151. Modification to insure constant baseband signal. |
| <u>1425A</u> | <u>SAMPLING TIME BASE AND DELAY GENERATOR</u> 1425A-4 Serials prefixed 748-00675 and below. Tunnel diode holders are now available. | <u>3702A</u> | <u>DEMODULATOR DISPLAY</u> 3702A-1 Serials U740-00101 thru U740-00109. Modification for the protection of the channel switching circuitry. 3702A-2 All serials. Preferred replacement for A2Q3 for improved IF amplifier input. 3702A-3 Serials below U750-00120. Modification for an increase in bandwidth of the IF response channel. 3702A-4 Serials below U805-00151. Modification for an improvement in return loss at the baseband input. 3702A-5/3703A-1 Serials below U805-00151. Modification to insure maximum group delay measuring capability. |
| <u>1804A</u> | <u>FOUR CHANNEL VERTICAL AMPLIFIER</u> 1804A-1 Modification to permit using 1820A, serial 624-00150 and below, or 1821A, serial 630-00500 and below, in 1804A. | | |
| <u>2115A</u> | <u>COMPUTER</u> 2115A-1 Modification of 4K memory to 8K memory. | | |
| <u>2753A</u> | <u>HIGH SPEED TAPE PUNCH</u> 2753A-2 All serials. Cross reference of replaceable parts Tally Corporation/Hewlett-Packard | | |
| <u>3030</u> | <u>DIGITAL MAGNETIC TAPE UNIT</u> 3030-8 All serials below 330. Modification to improve stop characteristic. 3030-9 All serials below 384. Modification to decrease vacuum backpressure. | <u>3703A</u> | <u>GROUP DELAY DETECTOR</u> 3702A-5/3703A-1 All serials. Modification to insure maximum group delay measuring capability. |
| <u>3430A</u> | <u>DIGITAL VOLTMETER</u> 3430A-1B Modifications, replacement parts, and procedures for improved performance. | <u>3950</u> | <u>ANALOG TAPE SYSTEM</u> 3950-2/3955-2 Recommended test equipment, service tools and accessories. |
| <u>3442A</u> | <u>AUTOMATIC RANGE SELECTOR</u> 3442A-2 Serials 440-03190 and below. Preferred replacement for A1Q8 for greater reliability. | <u>3955</u> | <u>ANALOG TAPE SYSTEM</u> 3950-2/3955-2 Recommended test equipment, service tools, and accessories. |
| <u>3443A</u> | <u>HIGH GAIN AUTO RANGE UNIT</u> 3443A-3 Serials 444-03725 and below. Modification to eliminate component failures while auto-ranging with high input voltages. | <u>4800A</u> | <u>VECTOR IMPEDANCE METER</u> 4800A-2 Serials prefixed 805- and below. Modification kit for the replacement of thermistor A17R14. |
| <u>3444A</u> | <u>DC MULTI-FUNCTION UNIT</u> 3444A-3 Serials 644-03750 and below. Preferred replacement for Aq2Q to improve reliability. | <u>4801A</u> | <u>DIRECT MEASUREMENT PLUG-IN</u> 4801A-2 Serials 802-00569 and below. Modification to prevent meter oscillation. |
| <u>3460B</u> | <u>DIGITAL VOLTMETER</u> 3460B-7 Serials 813-00600 and below. Modification to permit reliable operation with 5050A. | <u>4815A</u> | <u>VECTOR IMPEDANCE METER</u> 4815A-2 All serials. Circuit changes when replacing transistors and prevention of meter oscillation 4815A-3 Serials prefixed 749- and below. Modification to improve ALC bandwidth control. |
| <u>3461A</u> | <u>AC/OHMS CONVERTER, DC PREAMPLIFIER</u> 3461A-1 Serials 803-00225 and below. Preferred replacement for A32Q2 and A32Q3 for greater reliability. | <u>5050A</u> | <u>DIGITAL RECORDER</u> 5050A-2 Modification to provide storage capacity. |
| <u>3535A</u> | <u>FM RECORD AMPLIFIER</u> 3535A-1 Change of wattage rating of resistor A1R11 for greater reliability. | <u>5110A</u> | <u>FREQUENCY SYNTHESIZER</u> 5110A/B-1 Installation of option 02 thru 04 |

| | | | |
|--------------|---|---------------|---|
| <u>5110B</u> | <u>FREQUENCY SYNTHESIZER</u> 5110A/B-1 Instructions for installation of option 02 thru 04. | <u>8616A</u> | <u>SIGNAL GENERATOR</u> 8614A-7/8614B-2/8616A-5/8616B-2 Serials below 748-01231. Installation of fuse and zener diode for increased reliability. 8614A-8/8616A-6 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. |
| <u>5265A</u> | <u>DIGITAL VOLTMETER PLUG-IN</u> 5265A-2 Replacement of CR3A&B and CR1A&B. | | |
| <u>8403A</u> | <u>MODULATOR</u> 8403A-5 Serials below 736-00876. Preferred replacement for T401 for improved high frequency performance. | | |
| <u>8414A</u> | <u>POLAR DISPLAY</u> 8414A-2 Serials 749-00215. Modification for improved grounding. 8414A-3 Serials 729-00150 and below. Replacement of transistors for improved reliability. | <u>8616B</u> | <u>SIGNAL GENERATOR</u> 8614A-7/8614B-2/8616A-5/8616B-2 Serials below 748-00266. Installation of fuse and zener diode for increased reliability. 8614A-9/8614B-3/8616A-7/8616B-3 Serials below 748-00316. Modification for reduced power supply ripple and residual FM. |
| <u>8614A</u> | <u>SIGNAL GENERATOR</u> 8614A-7/8614B-2/8616A-5/8616B-2 Serials below 748-01851. Installation of fuse and zener diode to increase reliability. 8614A-8/8616A-6 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. | <u>8690A</u> | <u>SWEEP OSCILLATOR</u> 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. |
| | | <u>8706A</u> | <u>CONTROL UNIT</u> 8706A-1 Serials below 803-00181 Preferred replacement for A2Q7 for improved reliability. |
| <u>8614B</u> | <u>SIGNAL GENERATOR</u> 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 | <u>8707A</u> | <u>R.F. UNIT HOLDER</u> 8707A-1 Serials below 815-00231. Addition of a clamp diode to increase reliability. |
| | | <u>10407A</u> | <u>PLUG-IN EXTENDER</u> 10407A-1 Modification to improve performance and eliminate oscillation on Model 180/181 Oscilloscope. |

 Cut Along Dotted Line

SERVICE NOTE ORDER FORM...Here is a list of the latest Service Notes to help insure a maximum usage from your HP family instruments. To obtain a copy, simply circle the Service Note number you wish. Cut along dotted line, enclose this portion of Bench Briefs in an envelope, and send it to your nearest HP Field Office or to us at HP Customer Service. In Western Europe, send order to: Hewlett-Packard S.A., 54 route des Acacias, Geneva, Switzerland.

Do you have a friend who would enjoy receiving Bench Briefs? If so, please give us his name and address.

Name _____ Address _____

| | | | | | |
|-------------|-----------------|-----------------|----------|-----------------|------------------|
| M-42 | 202H-6A | 495A-1 | 1424A-3 | 3701A-2 | 8414A-2 |
| M-43 | 202J-4A | 612A-9 | 1425A-4 | 3701A-3 | 8414A-3 |
| 115BR-2 | 204B-1C | 614A-4 | 1804A-1 | 3702A-1 | 8614A-7/8614B-2/ |
| H20-115BR-1 | 214A-6 | 618C-1A/620B-1A | 2115A-1 | 3702A-2 | 8616A-3/8616B-2 |
| 130C-6A | 216A-2 | 690AB-6 | 2753A-2 | 3702A-3 | 8614A-8/8616A-6 |
| 132A-2 | 312A-3 | 738AR-1 | 3030-8 | 3702A-4 | 8614A-9/8614B-3/ |
| 140A-12 | 333A/334A-5 | 738AR-3/738BR-1 | 3030-9 | 3702A-5/3703A-1 | 8616A-7/8616B-3 |
| 141A-14B | 340B/342A-4 | 774D-1 | 3430A-1B | 3950-2/3955-2 | 8690A-8 |
| 141A-15 | 410C-10 | 780 6 2 | 3442A-2 | 4800A-2 | 8706A-1 |
| 180/AR-3 | 412A-13/413A-3 | 805A-3 | 3443A-3 | 4801A-2 | 8707A-1 |
| 181A-1 | 412AR-4/413AR-2 | 1407A-3 | 3444A-3 | 4815A-2 | 10407A-1 |
| 181A/AR-2 | 414A-6 | 1421A-4 | 3460B-7 | 5050A-2 | |
| 191A/193A-1 | 425A-6 | 1423A-1 | 3461A-1 | 5110A/B-1 | |
| 197A-1 | 478A-1B | 1423A-2 | 3535A-1 | 5265A-2 | |
| 197A-2 | 493A-1 | 1424A-1 | 3701A-1 | 8403A-5 | |

HEWLETT-PACKARD
CUSTOMER SERVICE CENTER
333 Logue Avenue
Mountain View, California 94040



Box 23015-92123

GENE CANCELARS 669UF-H
HARLAN LABS
7917 SALBOA AVENUE
SAN DIEGO, CALIF. 92123

RETURN REQUESTED