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bench briefs

YOUR PRIVATE LINE TO HEWLETT-PACKARD'S CUSTOMER SERVICE DEPT.

June-July 1984

Vol. 5 No. 2

MODEL 478A THERMISTOR MOUNTS

More Good News on the 478A!!

In the February-March edition of Bench Briefs we announced that you could now balance your 478A (serials above 7662, or any mount returned to the factory for repair after March 15) if it had been unbalanced from an accidental overload... But, alas, gone is the thermistor which has been blasted to destruction - it must be replaced. If the latter is your predicament, you'll be happy to know you can now replace the thermistor assembly yourself.

Replacement thermistor assemblies are available in kit form under stock number 00478-900. The kit includes thermistor and etched circuit assemblies which have been pretested for VSWR and efficiency. Service Note 478A-1 gives further information. If you wish a copy, circle 478A-1 under SERVICENOTE ANNEX.

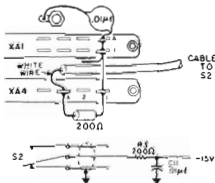
MODEL 5275A TIME INTERVAL COUNTER

Serials 402-00315 and Below

Have you observed a mysterious 1 or 2 count in the 1 μ sec readout column of your 5275A after manual reset? It may happen in units with serials below 402-00315... If it does, here's the easy cure.

Simply add a capacitor and resistor to connectors XA1, XA4 as illustrated below. Also, move the white wire (connects from XA4 to S2) from pin 1 of XA4 to pin 3. The capacitor used is stock no. 0150-0093 (ceramic, .01 μ f, +80%, -20%, 100V dew); the resistor is stock no. 0683-2015 (composition, 200 Ω , +5%, 1/4 watt).

Illustrated also is a schematic diagram for this modification. Remember to change your Operating and Service Manual to show the new configuration.



The above information is available as a Service Note. If you want a copy for your file, circle 5275A-1 under SERVICE NOTE ANNEX.



PROFESSOR WATTS - SCHOOL FOR SERVICE TECHS
-ND JENTS

MODEL 1415A TIME DOMAIN REFLECTOMETER

Here is a change for you to note in your copy of the 1415A Operating and Service Manual. Before you make the vertical calibration check described in figure 3-3, attach a 50 ohm load or short length of 50 ohm cable to the 1415A SIGNAL OUT. Also, first connect this 50 ohm load or cable before making the STEP CALIBRATE ADJUSTMENT as outlined in paragraph 5-28.

MODELS 160B/170A OSCILLOSCOPES

Serials Below 237-00786

For improved power supply regulation at high ambient temperatures in the scopes listed above, make the following easy modification. Add a 0.1 μ f, 50 volt ceramic capacitor (C413) from the base to the emitter of Q408, no adjustments are necessary as a result of the circuit change. The stock number for this capacitor is 0150-0084.

MODEL 1781A or 1781B OSCILLOSCOPE SWEEP DELAY GENERATORS

Here is a change to the adjustment procedure in your 1781A or B Operating and Service Manual. When making PRESET adjustments, your manual instructs, "Adjust PRESET (R60) to give a reading 1.5 volts more positive than maximum negative reading." Instead, change 1.5 volts to read 2.5 volts. If you adjust PRESET using this higher voltage it will insure better stability by eliminating any chance that the 1781A or 1781B will double trigger.

MODEL 690 SERIES SWEEP OSCILLATORS

Serials Below 410-00186

You can improve power meter leveling in your 690 series Sweep Oscillators. Simply change R43 on the ALC board to a metal film 3K ohm, $\pm 5\%$, 1/2 watt resistor. $\frac{1}{2}$ stock no. 0758-0035; no adjustments are necessary.

MODEL 726AR POWER SUPPLY

Serials Below 410-00401

An improved transistor type is available for replacement of Q21 in the above instruments. The replacement type, $\frac{1}{2}$ stock no. 1850-0081, (type 2N1362) has a higher BV_{CO} (collector to emitter breakdown voltage rating) than the original, $\frac{1}{2}$ stock no. 1850-0015 (type 2N375).

Replacement is recommended only if Q21 fails.

NEWS FROM HARRISON LABORATORIES

(DIVISION OF $\frac{1}{2}$)

We've some better replacement transistor types to recommend for four H-Labs Power Supplies as listed below. The use of these transistors over those originally installed will result in increased reliability. Power Supplies with serials above those listed already use the recommended types. There's no need to change to a recommended type unless there is a transistor failure.

Instrument	Reference Designator	Recommended Replacement Type
6224A S/N below 401	Q12	2N2152, 2N2152* 2N2156 or 2N2156A
6226A S/N below 503	Q12	2N2154, 2N2154* 2N2158 or 2N2158A
6266A S/N below 182	Q13 & 14	B1203*, 2N1137A, 2N459A, or 2N1547
6366A S/N below 131	Q10 & 11	B1203*, 2N1137A, 2N459A, or 2N1547

*Of the recommended types, these are preferred.

X-Y RECORDER NEWS FROM F. L. MOSELEY

($\frac{1}{2}$ AFFILIATE)

You may want to modify your Moseley Recorder - read on!

Traditionally, recording paper has been held in position on the flat platen of an X-Y recorder by vacuum or other mechanical means, this system means you must have motors, fans, pumps, or clips - also the relatively high maintenance that any mechanical system requires. Now you can, if you have one of the Moseley Recorders listed below, modify your instrument and rid yourself of all these mechanical parts. With the modification kit installed, all sizes of paper, equal to or smaller than the platen, are held down by electro-static attraction. The holddown system is quiet and virtually maintenance free.

Moseley's trademark for the electric holddown system is AUTOGRIP. Kits are now available for the following instruments: 2D, 2DR, 2D-2, 2DR-2, 2D-2A, 2DR-2A, 2D-2M, 2DR-2M, 2D-2AM, 2DR-2AM, 2D-3, 2DR-3, 2D-3M, 2DR-3M, 2FR, 2FRA, 135, 135A, 135M, 135AM, 136, and 136A. Kit price is \$125. To insure that you receive the proper kit, we'll need to know the model and serial number of your recorder, and if a Q3 or Q4 roll chart accessory is being used. For ordering the kit or for additional information, contact your nearest $\frac{1}{2}$ sales office.



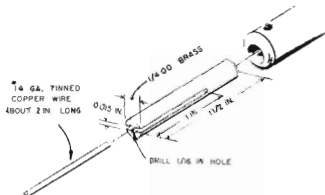
NEW SERVICE TOOLS!

More new service tools available...one for you do-it-yourselfers, another offered by the manufacturer.

BIG IRON, LITTLE TIP.

Did you know you can make a versatile low temperature soldering iron out of your full size iron? Maybe you've already thought of this one...look at the illustration below. If you obtain an extra plug-in tip for your iron, drill it down the center, then cut it part way down with a hack saw - plug in a length of 10, 12, or 14 size wire - you have your low temperature iron. Think of the versatility! With this configuration, you have the perfect heat for most etched circuit work, you can vary the tip heat by selection of wire size and/or lengthening the tip. Tips are cheap and expendable - lengthen or bend them to suit your needs.

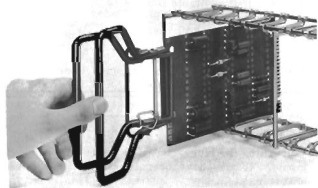
The illustration below shows a suggested plan for a typical 60 watt iron (before modification) with a standard 1/4 inch outside diameter soldering tip. Vary the measurements to suit your needs.



THE BEST CIRCUIT BOARD PULLER WE'VE TRIED.

This is one of those tools that, after using, you wonder how you got along without. E. H. Titchener & Co. of Binghamton, N. Y. has developed the mate

to the plug-in circuit board, WIRE-GRIP, an ideal circuit board puller. A particularly excellent performer where circuit boards are nested closely, vinyl-covered (shock-resistant) WIRE-GRIP carefully but firmly grips only 1/8 inch of the circuit board - well away from delicate components.



The pullers are available in two sizes - one with a 1-1/2 inch jaw (\$6.95 each) for the other (illustrated) with a 2-7/8 inch jaw (\$5.95 for quantities 1-250). For further information contact:

E. H. Titchener & Co.
1 Titchener Place
Binghamton, N.Y., 13902

A BETTER ADDRESS FOR "SOLDAPULL"

The February-March edition of Bench Briefs carried an article concerning a solder remover, "Soldapull". Many of you have written us saying you were unable to contact the manufacturer with the address we supplied (no zip code number).

If you wish to try again, we have been assured that the zip code number will do the trick. Here's the full address - be sure to include the zip code.

Edsyn Company
P. O. Box 868
Arleta, California, 91332
Telephone: Area Code No. 213-36-9-4880

SERVICE NOTES...SERVICE NOTES...

We're loaded with Service Note information this issue! Fact is, we've so many Service Notes to offer you they won't fit in the usual space - SERVICE NOTE ANNEX.

----- Cut Along Dotted Line -----
SERVICE NOTE ANNEX. . . Here is a list of the latest Service Notes to help insure a maximum usage from your 1/2 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 field office or to us at 1/2 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. (Please Print)

Name _____	Address _____	
140A-1		187A-4A
180B-6		310A-2
405AR-10		415D-1
684C-1	SEE TEXT	478A-1
1782A-1		5243L-1
M-36		5275A-1
130C-1		Service Note Index

Instead, we'll describe each - as we usually do - in the following text, you may then, under SERVICE NOTE ANNEX, circle the appropriate Service Note number of those you wish to receive.

M-36 For increased reliability, breakdown diode, 1/2 stock no. 1902-0043, has been replaced by other 1/2 stock numbers, the replacement depending upon the 1/2 instrument you may have. The change affects the 1/2 Models 103AR, 104AR, 215A, 721A. This Service Note describes the affected circuit reference in each instrument and recommends the proper replacement diode.

310A-2 Improve the short circuit protection of your 1/2 Model 310A Wave Analyzer with the modification described in this Service Note. If your 310A has a serial number of 415-00561 or above, the change has already been incorporated.

405AR-10 Described in this Service Note is the 1/2 stock no. 0950-0091 neon and photoconductive switch assembly and its installation. This part is a direct replacement for the photoconductive switch assembly presently in your 1/2 Model 405AR/BR/CR Digital Voltmeters with serials below 402-02801. The new switch assembly will provide increased reliability.

684C-1 For your 1/2 Model 684C (serials 100-00181 and below) and 1/2 Model 687C (serials 110-00113 and below) Electronic Sweep Oscillators, described in this Service Note are wiring changes for improved leveling and power output at the low frequency end of the band.

1782A-1 This Service Note describes a modification for your 1/2 Model 1782A Display Scanner, serials below 413-00476. The results of the simple modifier are improvements in the external scan rate and range of the external horizontal level adjustment.

415D-1 For your 1/2 Model 415D SWR Meter with serials below 406-01001, here is a Service Note describing how you may modify your instrument for variable meter damping.

5243L-1 This Service Note concerns your 1/2 Models 5243L (serials prefixed 328 and below) and 5245L (serials prefixed 335 and below) Electronic Counters. Described in this Note is a kit you may install which allows the 1/2 Model 5264A Preset or the 1/2 Model 5265A Digital Voltmeter to operate in the 5243L and 5245L.

140A-1 Here is a Service Note describing a modification for your $\frac{5}{8}$ Model 140A Oscilloscope, serials prefixed 326. The modification makes it possible for you to interchange high frequency plug-ins, such as the $\frac{5}{8}$ Model 1402A Dual Trace amplifier, in your 140A and still maintain the same frequency response.

160B-6 The Intensity limit adjustment in your $\frac{5}{8}$ Model 160B Oscilloscope, regardless of serial number, may be insulated to prevent electrical shock. This Service Note describes the procedure.

130C-1 This Service Note describes $\frac{5}{8}$ modification kit 00130-89501 for your $\frac{5}{8}$ Model 130C Oscilloscope. With this kit installed in your 130C, the instrument is equivalent to the 130C with option 06. That is, the vertical, horizontal, and sync inputs are available at the rear of the instrument as well as the front panel.

187A-4A This Service Note applies to your $\frac{5}{8}$ Model 187A Dual Trace Amplifier, regardless of serial number, and your $\frac{5}{8}$ Model 187B Dual Trace Amplifier with serials below 325-01469. The modification described in this Service Note installed in your 187A or B will pay dividends in the form of increased reliability, improved resolution, and greater ease of operation of the VERTICAL POSITION controls, involved primarily in the modification is the installation of a new ten-turn potentiometer.

MISSING INSTRUMENTS

Jerrold Electronics Corporation of Norwalk, California, reports the following $\frac{5}{8}$ instruments stolen approximately the first part of June.

$\frac{5}{8}$ Model X752D Waveguide Directional Coupler, $\frac{5}{8}$ serial number 9827 and Jerrold serial number 11240.

$\frac{5}{8}$ Model P202B Waveguide to Waveguide Adapter, Jerrold serial number 11234.

If you have any information concerning these missing instruments, please contact:

Jerrold Electronics Corp.
12340 E. Firestone Blvd.
Norwalk, California
Phone: Area Code 213-868-4784



bench briefs

HEWLETT-PACKARD COMPANY

395 Page Mill Road • Palo Alto, California 94306

IT'S SERVICE NOTE INDEX TIME AGAIN.

The semi-yearly Service Note Index is available to you for the asking. This index is a summary of 169 Service Notes most all of which have been, at some time, advertised in Bench Briefs. Also available is a handy order blank for those of you who wish to order Service Notes you may have missed. If you wish a copy of the Service Note Index (includes order blank) circle Service Note Index under SERVICE NOTE ANNEX.



IS THAT WHAT WE SAID??

The April-May edition of Bench Briefs carried an article concerning the black-coated tubes used in some instruments. It may have been implied that the tubes are no longer used in any instrument. This is not the case. The coated tubes are still used in some instruments but, as reported, are no longer needed in the $\frac{5}{8}$ Models 1406A, 130C, 120A, 122A.

Also, we indicated the proper replacement for the coated tubes once used for V2, V3 in the $\frac{5}{8}$ Model 410B High Frequency VTVM was $\frac{5}{8}$ stock number 5080-0425. While this tube will work in the 410B, $\frac{5}{8}$ stock number 5080-0661 is the preferred tube type - the type we recommend - for the best performance from your 410B.