

TO:

FROM:

INSTRUMENTS: -hp- Model 8690A Sweep Oscillator  
Serials Below 636-00211

SUBJECT: Diode Change

Diode A3R7 on the Reciprocal Amplifier Assembly -hp- Part 08690-6013, should be changed under warranty in all -hp- Model 8690A Sweep Oscillators, Serials below 636-00211, passing through your shop.

Change A3CR7 to -hp- Part 1901-0356. The new Diode is a low leakage type type. It prevents anode voltage changes when different R.F. units are used in the -hp- 8690A.

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TO: All Service Departments

FROM: HP Microwave Division

INSTRUMENTS: HP 8690A Sweep Oscillator Serials, See Text

SUBJECT: 1. Power Supplies  
2. Intermittent Sweep  
3. Intermittent ALC  
4. Unleveled Light Operation

Here is a rundown of recent troubles and their cures in the -hp- 8690A Sweep Oscillators.

#### 1. POWER SUPPLIES

- a. Power supply fuses, serials below 615-00111. The fuses in the +275V and -300V supplies were changed to .25 amp at S/N 615-00111. To prevent the fuses from blowing at Turn On in earlier instruments, add R21 a 10 ohm  $\pm 10\%$ , 1W resistor, -hp- 0690-1001, in series with C7A, and R22 a 100 ohm  $\pm 10\%$ , 1W resistor, -hp- 0690-1011, in series with C8B. If .5 amp fuses are left in supplies the series regulators can short before the fuses open.
- b. Shorted series regulators +275V or -300V supplies, serials below 643-00311. Most probable cause is shorted insulator under series regulator transistors. Use double anodized insulator, -hp- part number 0340-0162 for replacements. Use two insulators each for A6Q1 and A6Q2, one insulator each for A6Q3 and A6Q4.

When two insulators are used, cut the tab off one. Put the cut insulator closest to the transistor. Face the insulators so the cut tab is toward the fuse mounting block and the uncut tab is away. Use Dow-Corning Silicone grease on insulators to improve cooling.

- c. 10 MHz oscillation in +275V supply, serials below 641-00261. 100 ohm  $\pm 10\%$ , 1/4 watt composition resistors, -hp- 0684-1011, have been added in series with the base leads of A6Q1 and A6Q2 to suppress oscillations in the +275V supply.

- d. Oscillations in -6.3V supply, serials below 643-00311. Recommended replacement for A14Q8 is -hp- part number 1854-0003. The original transistor can cause the -6.3V supply to oscillate.
- e. +275V regulation at low line, serials below 641-00261. Change A5R12 to a 5.6M  $\pm 10\%$ , 1/2 watt, composition resistor, -hp- part number 0687-5651, to improve regulation of +275V supply at low line voltage.

#### 2. INTERMITTENT SWEEP

There is the possibility of Pin 7 shorting to Pin 6 on the Ramp Generator A10V1 in 8690A serials below 653-0311. The foil going to Pin 6 on A10V1 passes directly beneath Pin 7. In some instruments the tube socket is mounted too low. This makes it possible for Pin 7 on the tube to touch the foil connected to Pin 6 when the tube is all the way down in the socket. This can be fixed by placing a small piece of Mylar tape over the foil beneath Pin 7. Current production instruments have had the foil on the circuit board re-routed to prevent the possibility of shorting.

#### 3. INTERMITTENT ALC

In 8690A's serials below 636-00261 changing plug-ins can cause loss of leveling. This is caused by a failure of P12 in the plug-in and J12 in the mainframe to line up properly. There are two things that can be done to fix this problem. First, looking at the plug-in from the front, loosen the two screws holding the 32 pin plug P12. Move the plug to the left as far as it will go and tighten screws. If this doesn't fix the trouble the jack,

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J12, in the mainframe will have to be taken out and the mounting holes enlarged to provide for lateral movement of J12. J12 is riveted so loosening it can be quite a job and probably should be done only at a service center.

#### 4. UNLEVELED LIGHT OPERATION

The operation of the unlevelled light has not been reliable in 8690A's serials below 643-00311. When the ALC push button is out, the lamp does not always light.

Two changes have been made to correct this. A 100ohm  $\pm 10\%$ , 1/4 watt resistor, -hp- part number 0684-1011 should be added between ALC switch S4, and terminal 31 on the RF unit. Mount the resistor on S4 by moving the white shielded wire from the second terminal from the front of the 8690A to third terminal. Do Not Move The White-Green Wire. Then connect the resistor between the second and third terminal on S4.

Also, A1Q5 in the plug-in should be changed to an 1851-0017.

**INSTRUMENTS:** HP Model 8690A - Sweep Oscillators  
Serials Below Prefix 641-00261

**SUBJECT:** Oscillations in + 275 Volt Supply

The following modifications should be made under warranty.

Some 8690A's have had 10 MHz oscillations in the + 275 volt power supply. The problem is caused by parasitic oscillations in A6Q1 and A6Q2. The fix is to add a 100 ohm  $\pm 10\%$ , 1/4 watt resistor, HP Part Number 0684-1011, in series with the base of each transistor.

To do this you have to modify the A6 regulator board assembly, HP Part Number 08690-6024 as shown in Figure 1. The board can be modified without disassembling.

The 100 ohm resistors are connected between PIN 12 on A6 and the base of A6Q1 and between PIN 15 and the base of A6Q2.

The conductor between the PINs and the bases of the transistor can be opened by drilling through the foil. Also, two mounting holes must be drilled for each resistor.

All the drilling can be done from the soldered side of the board. Note that the resistors are mounted on the other side of the board as close to PINs 12 and 15 as possible.

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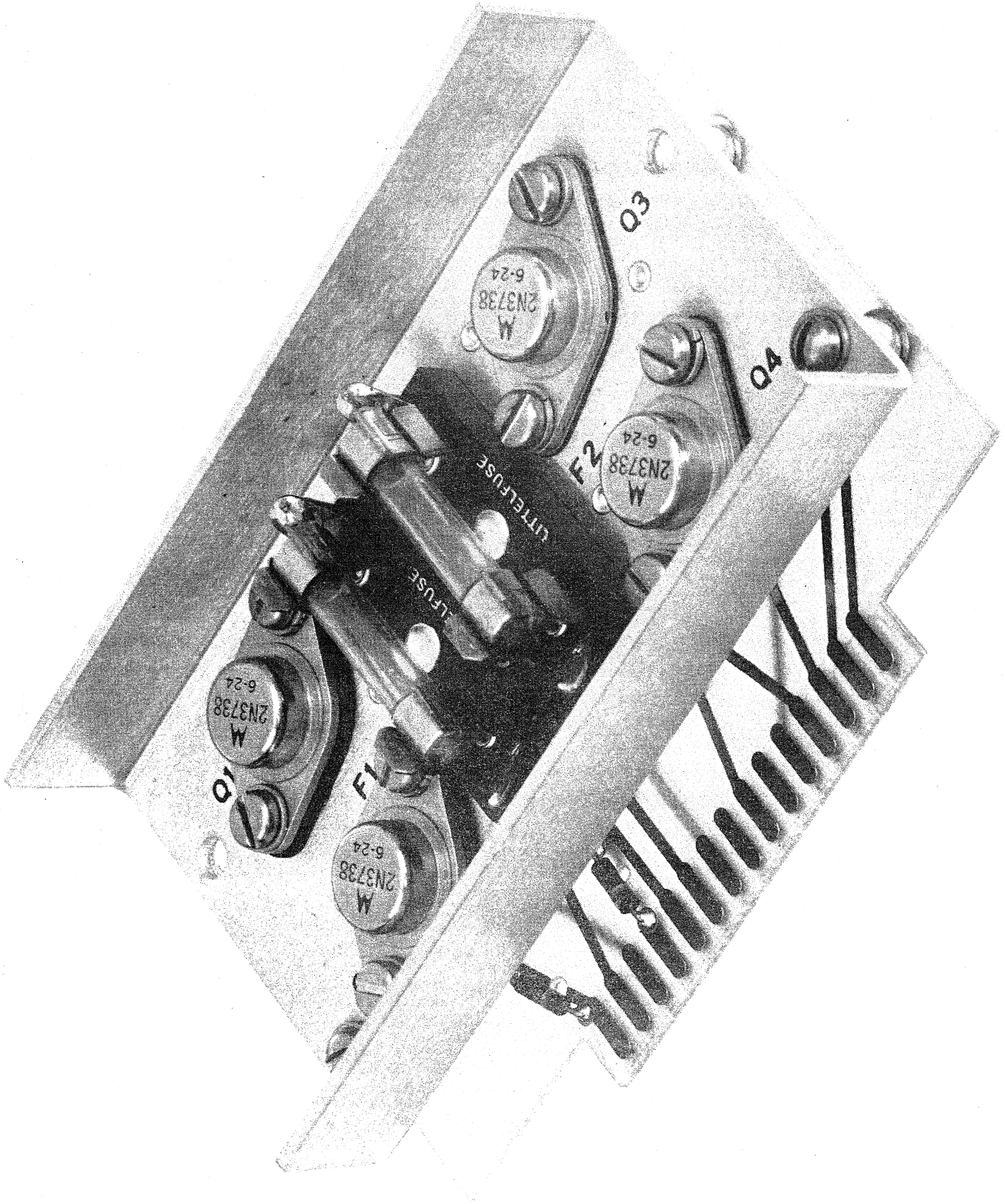


Figure 1. A6 Assembly After Modification

TO: All Service Departments

FROM: -hp- Microwave Division

INSTRUMENTS: 8690A Sweep Oscillator  
All Serials

SUBJECT: R. F. Unit Grounding Spring  
-hp- Part Number 1460-0729

There have been a few cases recently where the grounding spring for the R. F. Units broke. These springs, -hp- Part Number 1460-0729, are very important and should always be replaced if they break.

The spring insures that the frame of the R. F. Unit is grounded until all plug contacts are disconnected when removing the R. F. Unit from the 8690A.

If the spring were not present and power were on, it would be possible to get a severe electrical shock if all the contacts on the plug do not disconnect at the same time.

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TO: All Service Departments

FROM: HP Microwave Division

INSTRUMENTS: HP Model 8690A Sweep Oscillators  
Serials Below 711-00711

SUBJECT: + 275 Volt Power Supply Oscillations

Production Memo 8690A-2-67 advised adding 100 ohm resistors in series with the base leads of transistors A6Q1 and A6Q2 to suppress + 275V power supply oscillations. It is also necessary to change A5C3 to a  $.01\mu\text{F} \pm 20\%$ , 1000 vdcw, fixed ceramic capacitor, Part Number 0150-0012, and A5R11 to a 100 ohm  $\pm 10\%$ , 1/4 watt, fixed composition resistor, HP Part Number 0684-1011. Check the power supply calibration after changing these parts.

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TO: All Service Departments  
FROM: HP Microwave Division  
INSTRUMENTS: HP Model 8690A Sweep Oscillators  
Serials Below 636-00211  
SUBJECT: Diode Change

Change diode A3CR7 to HP Part Number 1901-0356, in all 8690A Sweep Oscillators, serials below 636-00211, passing through your shop.

The new diode has lower reverse bias leakage current and will prevent the anode voltage from changing when the 8690A is used with different R. F. Units.

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TO: All Service Departments

FROM: HP Microwave Division

INSTRUMENTS: HP Model 8690A Sweep Oscillator  
Serials Below 646-00511

SUBJECT: 1. Improved Line Sync  
2. Improved Marker Operation

1. Line sync at low line voltage and 50 Hz line frequency can be improved by changing A9R6 to a 5.6K ohm  $\pm 10\%$ , 1/2 watt, fixed composition resistor.
2. Change A11R7 and A11R23 to 21.5K ohm  $\pm 1\%$ , 1/8 watt metalfilm resistors, HP Part Number 0757-0199, and A11R1 and A11R17 to 5.23K ohm  $\pm 1\%$ , 1/8 watt metalfilm resistors, HP Part Number 0698-0063. This improves the pulse shape at the collector of A11Q1 and A11Q5, getting rid of a second smaller marker after the real marker.

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TO:

FROM: -hp- Microwave Division

INSTRUMENTS: -hp- Model 8690A Sweep Oscillators  
Serials below 732-01261

SUBJECT: Improved Reciprocal Amplifier Stability

To improve Reciprocal Amplifier Stability in -hp- Model 8690A Sweep Oscillators, Serials below 732-01261, make the following changes in all effected 8690A Sweep Oscillators passing through your shop:

1. Change A3R17 to a resistor fixed composition, 220K ohm  $\pm$  10%, 1 watt, -hp- Part Number 0690-2241.
2. Change A3V5 to a Telefunken 12AX7, -hp- Part Number 1932-0065.

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TO: All Service Departments

FROM: HP Microwave Division

INSTRUMENTS: HP Model 8690A Sweep Oscillators,  
Serials below 641-00261

SUBJECT: Incompatibility with RF Units,  
Prefix 724- and above

A recent production change added jumper wires between pins 16 and 10, and pins 32 and 26 of plug P12 on the 8690 RF Units and J12 on the mainframe. It turns out that pins 10 and 26 have wires already on them in the 8690A Sweepers, serials below 641-00261. The wires were never used and were deleted from 8690A's serials 641-00261 and above. Any RF Unit with prefix 724- and above will not work in an 8690A serial below 641-00261. The indications are no control of sweep or CW operation with the START/CW control and no output on delta F or CW when the ALC button is depressed.

The fix is to modify the 8690A. Proceed as follows:

1. Disconnect power. Remove top cover and RF Unit, if installed.
2. Disconnect white-yellow-green wire from push-on connector on the top of mother board in the 8690A. Clip this wire off where it enters cable harness.
3. In cable harness below J12 locate white-brown-yellow wire. Cut out about one inch section of this wire between adjacent turns of cable harness.

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INSTRUMENTS: HP Model 8690A  
Sweep Oscillators,  
All Serials

SUBJECT: Tuning Voltage and Frequency  
Accuracy Change.

The accuracy limits for the 3 to 73 volt tuning ramp have been changed to  $\pm 400$  mV. The freq. marker accuracy is now  $\pm 1\%$  of full scale for all R. F. units.

H01-8693B	$\pm 45$ MHz
8694B	$\pm 40$ MHz
H01-8694B	$\pm 50$ MHz
H02-8694B	$\pm 40$ MHz

The freq. accuracy for B F.F. units is now as follows:

8692B	$\pm 20$ MHz
H01-8692B	$\pm 25$ MHz
8693B	$\pm 40$ MHz

Residual FM is now specified for CW operation in start/stop, F, or marker sweep. The limits are the same as they were.

Residual FM will be higher when Ext. FM pushbutton is depressed.

