

# WELLS GARDNER MONITOR FOR BLITZ SERVICE BULLETIN

KIT # S01J0000-000F HORIZONTAL OUTPUT UPDATE

Problem:

Some of the U5000 monitors used for Blitz have shut down after various lengths of time in operation. The horizontal output transistor (Q704) fails and sometimes R728, R760, Q703, and Q708 also fail. The plastic board holder has ribs to support the board and one of these ribs touches the solder connection at the collector leg of Q705. If this connection is fractured, the horizontal frequency changes and causes the high voltage to increase, which may cause one or more of the above components to fail. Follow the steps below when repairing a U5000 monitor with a Philips picture tube that has this problem.

## **WARNING: DISCONNECT THE AC POWER TO THE MONITOR BEFORE DOING THE FOLLOWING WORK!**

Solution: See picture of main pc board on page 2 for part locations.

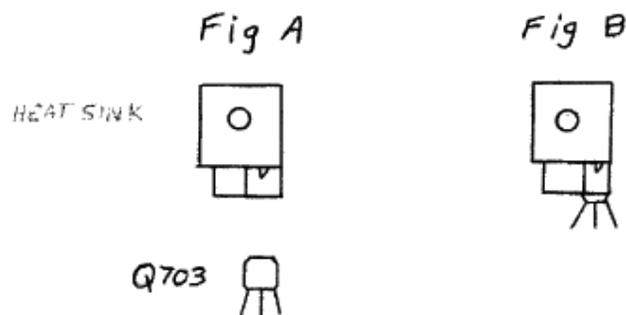
1. Replace Q704 (H.O.T.).
2. Replace Q708 (start-up circuit).
3. Replace R728.
4. Replace R760 (470 ohm failsafe type).
5. Remove Q703 from main board.
6. Install the clip-on heat sink on Q703, (included in kit). See figures A and B below.
7. Install Q703 with heat sink into main board.
8. Remove all solder from the Q705 collector lead. Then apply new solder to the connection.
9. Trim rib of plastic board holder that touches Q705 collector lead solder connection.

Kit Part Number: S01J0000-000F

Contents:

1. 086X0286-001 (Q704) 1Pc 25C 3696
2. 001X0776-002 (Sil-Pad) 1Pc (Q704)
3. 086X0185-001 (Q708, Q703) 2Pcs 25C 2482
4. 420X5102-324 (R728) 1Pc 1K 2W FLAMEPROOF (VALUE CHANGE)
5. 043X0509-006 (R760) 1Pc 100- $\Omega$  1W FLAMEPROOF (VALUE CHANGE)
6. 025X3477-003 (clip-on heat sink) 1Pc

For kits and information call Wells Gardner Electronics at 773 252-8220 service department.



069X2947-100

F80010 3/11/98

UPGRADE THESE PARTS TOO:

R 111 FROM 470  $\Omega$  1 WATT TO 470  $\Omega$  2WATT FLAMEPROOF

R 104 FROM 10K 7WATT TO 10K 10WATT

ADD A GROUND PLUG FROM THE BOARD TO THE CHASSIS PAN

Wells-Gardner U2000/U5000 Power Supply Upgrade Kit  
Service Kit # S04E0000-000F

## INSTALLATION INSTRUCTIONS

This kit includes the following items:

<u>Part Number</u>	<u>Description</u>
<u>Board Location</u>	
086X0334-001	MOSFET transistor, 6N60
Q101	
001X0772-001	SIL-PAD for above
Q101	
016X0208-001	Fuse, 3 amp, fast blow
F101	
066X0126-007	Diode, MUR490 or MUR480E
D107	
420X5479-323	Resistor, 0.47 ohm, 2 watt
R108	
069X2733-100	Installation instructions for this kit

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**WARNING: DISCONNECT THE AC POWER TO THE MONITOR BEFORE DOING THE FOLLOWING REWORK!**

### MOSFET Q101 Replacement

1. To replace the MOSFET (Q101), unscrew the fastening screw while holding the KEPS nut on the back of the heat sink. Also remove the mounting clip.
2. Unsolder Q101 from the bottom of the board. Remove and discard this MOSFET and the gray SIL-PAD that was between Q101 and the heat sink.
3. Take the replacement MOSFET from this kit and insert it's leads into the same holes in the board from which the original MOSFET was removed. **DO NOT SOLDER THE LEADS AT THIS POINT.**
4. Position the new SIL-PAD between the MOSFET and the heat sink. Place the mounting clip over the front of the MOSFET such that the holes in the mounting clip, MOSFET, SIL-PAD, and heat sink are all aligned with each other. Insert the mounting screw through the holes while holding the KEPS nut on the back side of the heat sink. Tighten the screw.
5. Solder the MOSFET leads on the bottom of the board.

### Diode D107 Replacement

6. Locate diode D107 beneath the large white resistor R104 in one corner of the board. **NOTE WHICH END OF D107 HAS THE SILVER BAND.** Replace D107 by unsoldering it's leads from the board. Install the replacement diode in the same location such that the end with the silver band is oriented the same as that of the original diode. Solder the leads of the replacement diode to the bottom of the board and cut off any excess leads.

### Resistor R108 Replacement

7. Locate R108 behind the heat sink on which Q101 is mounted. **NOTE THE DISTANCE THE RESISTOR IS MOUNTED ABOVE THE BOARD.** Unsolder it from the board. Insert the replacement resistor (blue body with yellow, violet, silver, and gold colored bands) in the same location. Insert the leads of the replacement far enough such that the replacement is the same distance above the board as the original resistor. Solder the leads to the bottom

Wells-Gardner U2000/U5000 Power Supply Upgrade Kit  
Service Kit # S04E0000-000F

of the board and cut off the excess.

Fuse F101 Replacement

8. F101 needs to be replaced only if the original one is blown. If so, carefully pry the blown fuse out of the fuse holder and discard. Snap the new fuse into the holder.

The upgrade is now complete.

# Wells-Gardner U-5000/U-2000 Vertical Sweep Upgrade Kit

Kit # S05F0000-000F

This Kit includes the following parts:

<u>Part Number</u> <u>Board Location</u>	<u>Description</u>
038A7593-000 Bottom pan	Terminal Strip & Resistor Assembly
(or) 038A7592-000 Bottom pan	Terminal Strip & Resistor Assembly
312X1205-206 Terminal strip	Screw, 6-32 x 3/8" long, PHP
020X1877-003 Terminal strip	Nut, KEPS, 6-32
069X2756-100 Bottom pan	Label, resolution select
086X0326-001 U601	IC, Vertical Deflection, TDA1771
066X0090-001 D302	Diode, RU2 or 1N4937
043X0486-002 R303	Resistor, 1.2 ohm, 2 watt, 5%
069X2759-100 066X0071-001 D603	Installation Instructions Diode, 1N4004
045X0560-504 C613	Capacitor, 100 uf @ 50 volt, radial

**WARNING: DISCONNECT THE AC POWER TO THE MONITOR, DISCHARGE THE CRT, AND REMOVE THE CHASSIS BEFORE DOING THE FOLLOWING WORK!**

## **TERMINAL STRIP INSTALLATION (U-5000 model only)**

1. Remove bare wire jumper "W108" from the main board. It is located along side C601 (in front of U601).
2. Insert the orange and brown leads of the terminal strip into the holes from which "W108" jumper was removed. The brown lead goes into the hole closest to the edge of the board. The orange lead goes into the hole farthest from the edge of the board. Solder these leads to the bottom of the board and cut off any excess. This assembly is not used on the model U-2000.

## **VERTICAL DEFLECTION IC U601 REPLACEMENT**

3. Unscrew the fastening screw while holding the KEPS nut on the back of the heat sink.
4. Unsolder U601 from the bottom of the board. Remove and discard this IC.
5. Take the replacement IC from this kit and insert it's leads into the same holes in

## Wells-Gardner U-5000/U-2000 Vertical Sweep Upgrade Kit

the board from which the original U601 was removed. Be sure to orient the IC such that it's markings are visible. **DO NOT SOLDER THE LEADS YET.**

6. Apply silicone heat sink grease compound on the heat sink and behind the IC. Position the IC such that it's mounting hole is aligned with the mounting hole of the heat sink. Insert the mounting screw through the hole while holding the KEPS nut on the back side of the heat sink. Tighten the screw. Solder the leads of U601 to the bottom of the board.

### **DIODE D302 REPLACEMENT**

7. Locate diode D302. It is behind resistor R823 which is close to the center of the rear edge of the main board. **NOTE WHICH END OF D302 HAS THE BAND (CATHODE).** Replace D302 by unsoldering it's leads from the board. Install the replacement diode in the same location such that the end with the cathode band is oriented the same as the original diode was (I.E. end with the cathode band closest to the rear edge of the board). Solder the leads of the replacement diode to the bottom of the board and cutoff any lead excess.

### **RESISTOR R303 REPLACEMENT**

8. Locate resistor R303 behind diode D302. The replacement for R303 may have a different physical appearance than the original one. Unsolder the original R303, insert it's replacement, and solder. Cut off any lead excess.

### **DIODE D603 REPLACEMENT**

9. Locate diode D603 behind IC U601. You will replace the existing diode with the 1N4004 diode provided in this kit. **NOTE WHICH END OF D603 HAS THE BAND (CATHODE).** Replace D603 by unsoldering it's leads from the board. Install the replacement diode in the same location such that the end with the cathode band is oriented the same as the original diode was. Solder the leads of the replacement diode to the bottom of the board and cut off any lead excess.

### **CAPACITOR C613 REPLACEMENT**

10. Locate electrolytic capacitor C613 next to diode D603. Replace this capacitor with the 100 uf @ 50 volt capacitor provided in this kit. Be sure to observe the capacitor polarity markings on the board and on the capacitor. **WARNING:** Inserting this capacitor with polarity backwards will cause it to explode immediately upon power up!

### **TERMINAL STRIP FASTENING (U-5000 model only)**

11. Using the provided screw and KEPS nut, mount the terminal strip to the bottom pan on the side where the vertical output device U601 is located. Use the mounting hole in the side of the bottom pan which is closest to the front of the monitor. Be sure to orient the terminal strip such that the end with the brown wire is toward the front of the monitor (CRT end) and the end with the orange and white wires is toward the rear. Also note that the mounting tab of the terminal strip should be on the inside of the bottom pan while the part with the resistor(s) is on the exterior of the bottom pan.

12. Connect the 2-position plug (at the end of the white wire of the terminal strip) to

## Wells-Gardner U-5000/U-2000 Vertical Sweep Upgrade Kit

TP205 located directly in front of vertical deflection IC U601. Connect it such that TP205 mates with the proper connector position for the respective horizontal frequency operation:

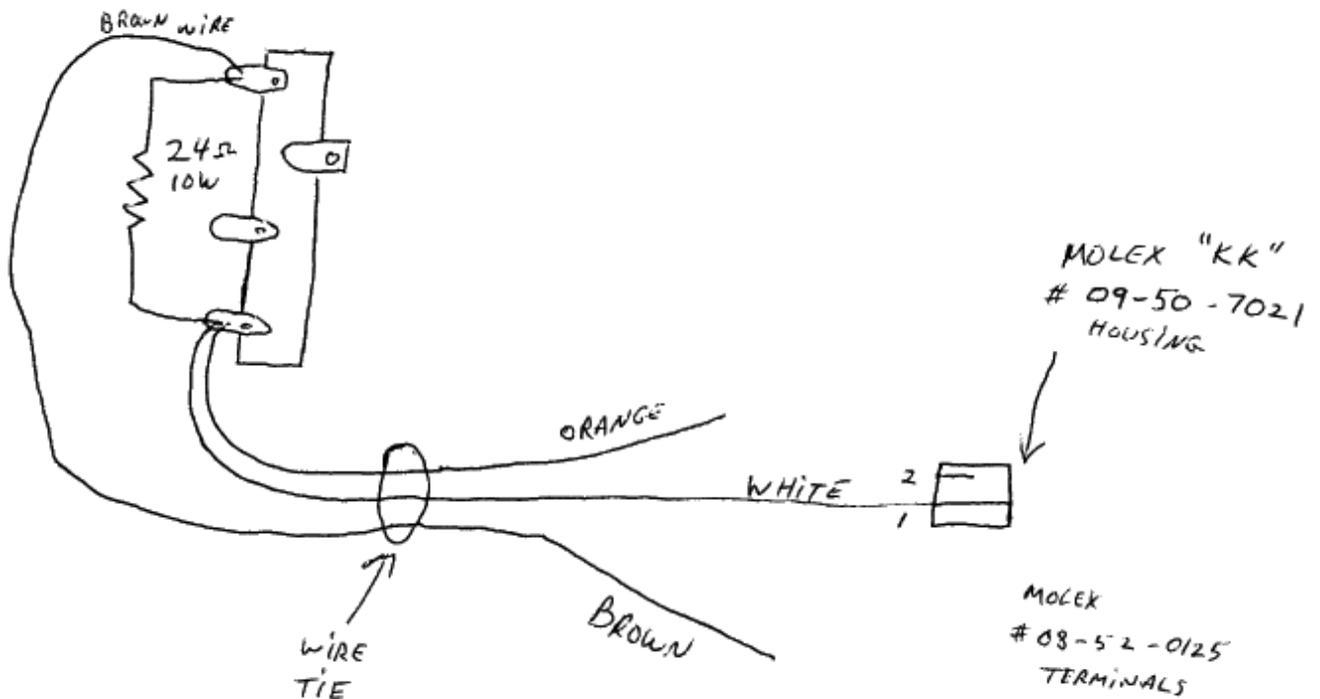
WITH TP205 CONNECTED to the white wire for 15 Khz (CGA or standard) operation.

WITHOUT TP205 CONNECTED to the white wire for 25 Khz (EGA or medium) operation.

13. Affix the resolution/frequency select label to the side of the bottom pan directly in front of TP205.

Be sure to double check all your work for proper part installation and orientation as well as soldering. You are finished with the update and may now reinstall the chassis and try out the monitor.

# S 05 F 0000 - 000 F VERTICAL SWEEP KIT



BROWN WIRE IS  $7\frac{1}{2}$ " LONG, 22 GAUGE STRANDED  
ORANGE WIRE IS  $4\frac{1}{2}$ " LONG, 22 GAUGE STRANDED  
WHITE WIRE IS  $6\frac{1}{2}$ " LONG, 22 GAUGE STRANDED