GTE SYLVANIA INCORPORATED
SERVICE Notebook

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Repair Audio Amp

by Pat McGee, FSDM, Cleveland, Ohio.

There are a few practical repair steps to take on direct coupled audio stages as those in Sylvania CR2743, RQ3747, and RQ3748 components. The repair approach on these output stages are as follows:

1. Note the complaint and take special note of channel and trouble description.
   a) DON'T TURN UNIT ON IF DEAD OR SHORTED CHANNEL IS NOTED.
2. Closely, visually inspect for overheat clues: resistors and other components.
   a) Note that flame proof emitter resistors do not change appearance when overheated, so, check them carefully.
3. Make comparison resistance checks from key points to ground, comparing readings on the defective channel and good channel.
4. Testing Methods.
   a) Every junction, diode, and transistor in the bad channel should be checked for short or open.
   b) One end of every diode can be unsoldered in a few minutes with a "solder-sucker" iron and F/B ratio test made. Transistor junctions can be checked, similarly, with the ohmmeter. After replacement of open or shorted components, again, take a few ohmmeter to ground, channel comparison checks.
5. Do not connect speakers.
   a) Connect voltmeter to the zero buss of the trouble channel and turn unit on.
      1) There should be zero voltage present.
   b) If the meter starts to swing + or -, quickly switch the unit off and locate the open or shorted element you missed.
   c) Connect speakers only when checks of all zero busses indicate proper repair by no voltage present.
      1) Meter will be deflected at instant of turn on and turn off, but, no voltage remains.
   d) All power supply voltages should be verified.
6. Other repair ideas:
   a) The output transistors on the RQ's can be checked by unsoldering the base wire (blue) on the P.C. board. This opens the circuitry enough for accurate testing.
   b) Diodes and resistors can be checked for opens and shorts with the "Wiggle" method. If the solder on one end of the part is thoroughly removed, this gives the wire room to be wiggled free of connection. It is useful if the ohmmeter lead is clipped to the free lead. With a little practice, you will soon see you can rely on this method and save a lot of time.

SUMMARY

Virtually any open or shorted component junction can cause massive failure. All components should be checked before power is applied.

$$ CAN'T BUY NONEXISTENT GOODS

Money is money. No more than that.

Were dimes dollars and dollars dimes, goods, services, and wages would go up or down proportionately. The amount and quality of goods produced would not increase simply because a dime had a dollar's worth, for wages would have to be pegged on the value of the dime. The same holds true if the dollar were worth a dime.

When more and more dollars are printed, more and more people will have dollars.

And that's fine.

But that has nothing to do with more and more goods and services.

Machines can print money. Only people, however, can produce more goods and services.

If the amount of goods and services remains the same and machines print more money, the cost of everything must go up. Just go out and buy a dress or a pair of pants today. The dollars are there and more people have them, but there has been no increase in the quantity of dresses and pants. Additionally, the increase in dollars has led to an increase in labor, material, wages, and so on.

Only one conclusion, then: Individual and collective wealth depends not on dimes and dollars but on increased goods and services. And you, as a producer, are responsible for how much will be added to your wealth.

Ours, too.

Notes From The Field

B10 CHASSIS. AGC OVERLOADING, VIDEO SMEAR, SYNC TROUBLE, WORSE ON HIGH BAND.
L216 open.

Ray Fetzer, Avondale TV Sales & Svce., Topeka, Kansas.

B101704 CHASSIS. VERTICAL OUTPUT TUBE HOT PLATES & R440 BURNS.
Flyback winding open 5 to 2.

Braun's Appliance, Palmyra, New York.

E01 CHASSIS. NO HORIZONTAL SYNC.
Q506 (20V Reg.) bad.

Harlan Lippincott, FSDM, Columbus, Ohio.

E04-2 CHASSIS. REMOTE RUNNING AT RANDOM; SET TURNING ITSELF OFF AT WILL.

R1046 (1/4W resistor) increases in value in remote receiver. Replace resistor.

Don Graef, Gilmar Electronics, Silver Spring, Maryland.

E06/E08 CHASSIS. THREE OR MORE VERTICAL COLOR BARS MOST NOTICED ON WEAK SIGNAL.
Red bars, caused by IC600, 15-39075-1.
Green bars, caused by XT600.

Gideon TV, Canonsburg, Pennsylvania; Matt Zaim, Sylvania Service Co., Cleveland, Ohio.

E08 CHASSIS. SHORT VERTICAL AND HORIZONTAL SCAN.
Capacitor C514 partially shorted.

Arfax TV, McLean, Virginia.

E08 CHASSIS. NO RASTER, H.V. TRIPLER SHORT FROM 2ND ANODE OUTPUT TO FOCUS TERMINAL. CRT SOCKET WAS SHORTED AT FOCUS LEAD DUE TO SHORTED TRIPLER.
So, if focus lead of socket is shorted, always check tripler as above for cause.

"Dash" Montali, Sylvania Service Co., Cleveland, Ohio.

D17 OR D18 OR D19 CHASSIS. REPEAT FAILURES OF VERTICAL OUTPUTS.
C318 (Mylar) shorted.

E1104 CHASSIS. HORIZONTAL SYNC PROBLEM, LOOKS LIKE AGC, AND AGC VERY CRITICAL TO ADJUST.
Q1222 on Band switch module leaky.

R63 & R64 CHASSIS. DEAD ON ONE CHANNEL - OUTPUTS NO GOOD.
C804 or (C904) shorted.

R63 & R64 CHASSIS. NO AM RADIO, METER PEGGED TO RIGHT FM SENSITIVITY VERY WEAK.
Q8 open emitter intermittently.

R63 & R64 CHASSIS. INTERMITTENT AM.
Q8 shorted.

Ken Hughes, Boyd Distributing Company, Denver, Colorado.

E03, 04, 05, 09, 10 AND 11 CHASSIS. LOSS OF VERTICAL SYNC.
C304 (.033) shorted.

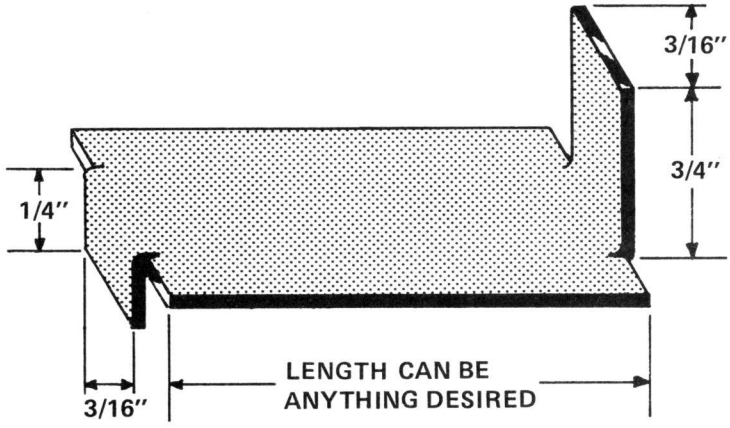
E03, 04, 05, 09, 10 AND 11 CHASSIS. LOSS OF HORIZONTAL SYNC.
C410 (10PFD) shorted.

Steve Dieth, Brogdon's TV, El Paso, Texas.

IC PULLER OUT OF SCRAP METAL

- Ray Norton.

The short end is used when there is insufficient clearance for the long end. Just slide either end under the chip and lift.



E0402 CHASSIS. WORKED FINE ON REMOTE AS LONG AS BUTTON OF TRANSMITTER HELD DOWN, BUT WOULD NOT AUTOMATICALLY ADVANCE TO NEXT CHANNEL. IT COULD STOP BETWEEN CHANNELS WITH NO LIGHTS ON.
Shorted Q1206 on Bandswitch Board - Q1210 could cause same problem.

James Watson, Spake & Watson, Inc., Butler, Indiana.

E08 CHASSIS. NO VIDEO - AUDIO OK - LOOKS LIKE AGC OVERLOADING, BUT CAN DETUNE TO SLICK RASTER.
Defective SC286 (diode) off base of AGC driver.

Jeff Rowland, Omega TV, Denver, Colorado.

E080203 CHASSIS. HORIZONTAL TEARING AND WEAVING AFFECTED BY CONTRAST & BRIGHTNESS SETTINGS.
SC924 leaking.

Gilbert Mitchell, Emporium, Pennsylvania.

BENCH TEST SPEAKER BURN OUT - BY DEFECTIVE DIRECT COUPLED AUDIO AMPLIFIERS.
Install a 1000MFD, 50V capacitor, Sylvania part number

41-22721-2, in series with the woofers, inside the cabinet; negative end to speaker. This protects them from high current burn outs by isolating them from DC to ground.

Bill Reed, Toledo Appliances, Inc., Toledo, Ohio.

A19 CHASSIS. VERTICAL FOLD IN CENTER.
SC302 leaky or shorted.

Campbell's TV, Calais, Maine.

D16 CHASSIS. RADIATION TO OTHER TV, BUT NOT ON ITS OWN.
Q308 creates barkhawsen.

John, Newbury TV, Fairhaven, Mass.

D19 CHASSIS. AFC SWITCH IN ON MAKES PIX PULL OR ROLL PLUS A.G.C. OVERLOAD.
C511, .47MFD x 100V ties to B+ on tuner should go to GND.

Roger, Jack's T.V.

A12 CHASSIS. VERTICAL SWEEP OK, BUT NO VERTICAL HOLD.
C310, .18MFD shorted.

A12 CHASSIS. VERTICAL SPEED VERY FAST AND/OR CENTER FOLD.
SC302 shorted.

A12 CHASSIS. NO VERTICAL SWEEP.
C312, .01MFD, 33V, 5% shorted.

A12 CHASSIS. NO VERTICAL SWEEP, Q312 VERY HOT, ALSO VERTICAL JITTER IF FULL HEIGHT IS USED.
SC306 open check 35V down into 20 volts range.

A12 CHASSIS. R330, 68 OHM, 1/2 WATT BURNING.
SC308 shorted.

A12 CHASSIS. R506 SMOKING - 470 OHM, 2 WATTS.
Q400, Q402 either one shorted, or both.

A16 CHASSIS. NOT ENOUGH VERTICAL HEIGHT OR LIN. R338, R340, 1.2 ohm, 1/2 Watt. Any increase in value as small as 1/2 ohm creates a problem.

B14 CHASSIS. VERTICAL SHRINKING AND OUT OF FREQUENCY.
C406, .001 shorted. The degree of short will control frequency or complete collapse.

B14 CHASSIS. WEAK PIX LOOKS LIKE TUNER TROUBLE.
Q60 keyed AGC open or shorted.

B14 CHASSIS. VERTICAL SWEEP TOP HALF ONLY. FROM CENTER DOWN, NO SWEEP.
T400 vertical output transformer shorted.

B14 CHASSIS. DEAD, NO FILAMENT, NO H. V.
SD101 diode rectifier shorted. Will burn out F100 fuse.

B15 CHASSIS. NO H. V.
Check tube V45 Hor. Osc. pin 7 should read neg. volts. If positive check C458, 200PF leaky.

E06 CHASSIS. WHITE HORIZONTAL LINE ACROSS TOP OF PIX.
Q302 top vertical output replacing cures problem.

Charles Boudreau, Choquette & Co., Inc., Providence, R. I.

E05 CHASSIS. RETRACE LINE ABOUT 1 1/2" WIDE JUST BELOW CENTER SCREEN JUST TO LEFT OF CENTER SCREEN.
Bottom vertical output.

E09 CHASSIS. ABOUT 1" VERTICAL DEFLECTION WITH NORM/SERV. SWITCH IN SERVICE POSITION.
Negative lead of C346 broken off at body of capacitor.

E10 CHASSIS. CIRCUIT BREAKER TRIPS EVEN WITH SET TURNED OFF.
SC524 shorts on IF panel.

Empire State Wholesalers, Inc., Latham, New York.

SERVICE NOTES.

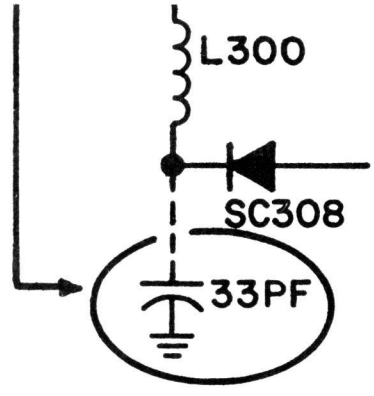
C452 in E08 Bulletin, page 39, is stocked under part number 45-33037-15, .68 at 200V.

E04-2 CHASSIS. SLOW TURN ON. VOLUME CREEPS DOWN.
Change capacitor C1096, 1MFD to 10MFD.

E08 CHASSIS. NO VERTICAL SCAN AFTER WARM-UP. (SCAN COLLAPSES TO 2" TOTAL.) NO VERTICAL SYNC AFTER WARM-UP. INTERMITTENT VERTICAL SCAN AFTER WARM-UP. EXCESSIVE VERTICAL OVERSCAN. DARK AREA AT TOP OF PICTURE.
Replace IC302, 15-39600-1. (CRT arc will cause IC to fail.) NOTE: If set is operated for a short period of time with insufficient scan (2" to 3"), the SCR will fire and shut down the horizontal circuit.

D19 CHASSIS. THE SET WILL RADIATE A NARROW VERTICAL BAND OF INTERFERENCE STARTING FROM THE LEFT SIDE OF THE CRT (FACING SET) TO THE RIGHT SIDE. (ON STRONG TO MEDIUM SIGNALS.)
Q308 Radiation.

1. Change Q308.
2. Add 10PF capacitor from base to ground of Q308.
3. Add ferrite bead (22-28072-2) on the base and emitter leads of Q308.
4. Add 33PF capacitor between junction of L300 and SC308 and ground.



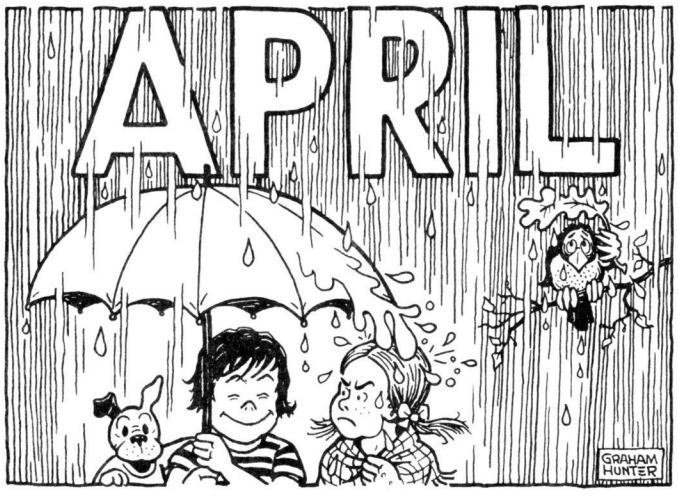
CORRECTIONS TO SERVICE LITERATURE:

Supplement 2 to B10-14/-17, pages 9 and 10; and, A22-1 Bulletin, pages 27 and 28 - "Fine Tune Sleeve", part number 51-31088-9 should be 54-31088-9.

A12-3,-4,-5 Bulletin, page 17, R314/R322/R326 - Vertical Hold/Height/Linearity, part number 37-33063-14 should be 37-33036-14.

Bulletin R73-3 - The part number for CB802 listed at the top of page 7, column 2, is incorrect. Please change the part number of CB802 to 29-34946-1 in your service manual.

Air suspension speaker, model AS3712W - Cabinet part number should be 10-34738-103.



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APRIL 30th 1975

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