

"SERVICE AWARDS"

CONGRATULATIONS ARE IN ORDER FOR TOM TIDWELL - SERVICE MANAGER FOR W. D. ALEXANDER COMPANY - ATLANTA, GEORGIA; ANDY STEEDMAN - SERVICE MANAGER FOR HUISH DISTRIBUTING - SALT LAKE CITY, UTAH; AND, FRED MILLER - SERVICE MANAGER FOR MITCHELL POWERS HARDWARE CO. - BRISTOL, TENNESSEE.

MR. C. J. BORLAUG, NATIONAL SERVICE MANAGER FOR G.T.E. SYLVANIA, MADE THE PRESENTATION AT THE RECENT LAS VEGAS SALES CONVENTION. THE AWARD WAS FOR OUTSTANDING PERFORMANCE IN CUSTOMER SERVICE DURING THE 1973 FISCAL YEAR.

PICTURED WITH EACH RECIPIENT IS THE FIELD SERVICE DISTRICT MANAGER FOR THAT AREA - DICK LAMEY, MIKE PANEK, AND SAM MILILLO, RESPECTIVELY.

THEIR CONTRIBUTIONS OF SERVICE SUPPORT TOWARD SALES HAS DONE MUCH TO ENHANCE SYLVANIA'S POSITION IN THE MARKET TODAY.



C. J. Borlaug, Tom Tidwell and Dick Lamey



C. J. Borlaug, Andy Steedman and Mike Panek



C. J. Borlaug, Fred Miller and Sam Milillo

AGAIN - CONGRATULATIONS FOR A JOB WELL DONE!

AVOID MISTAKES - ORDER PARTS BY PART NUMBERS

CIRCUIT FUNCTION AND SERVICE HINTS ON SYLVANIA'S 3 - FUNCTION REMOTE RECEIVER

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This is a follow-up to the article on "Servicing Sylvania's Remote Hand Transmitter", in Sylvania's Notebook, Volume 10, Issue 11, March 1974. This article is on Sylvania's Remote Receiver chassis.

Before we get into the Service Hints, just a brief description of the circuit's function. The Command frequencies transmitted by the Hand Transmitter, are received by the transducer (mike) and is coupled to 3 stages of broad band amplifiers, common to all command frequencies, (Q1052, Q1054 and Q1056), SC1052 and Q1058 are clippers. The signal is then clamped at about .5 VPP by diodes SC1053 and SC1054, and is then coupled to the tuned circuit of the Command frequency that is transmitted. Figure 1.

As an example: When the On/Volume Up frequency (37.25kHz) is transmitted, C1064 and L1052 will resonate to that frequency, driving Q1060 into saturation. Q1060 will conduct through SC1056, relay 1054 and R1082 (1.5K ohm) to +24 VDC. The contacts of the relay will close and C1074 (the memory capacitor) on gate of Q1066 will start charging. The + charge on C1074 causes a decrease in the impedance through the "N" channel of Q1066 (FET), permitting conduction through Q1066 (source to drain) of Q1066 to pin no. 6 of IC100 (sound IC). This electron conduction develops a forward bias on base of Q1068, (On/Off relay preamp), its col-

lector voltage decreases, turning on Q1070 (On/Off relay driver). The conduction of Q1070 will cause RL500 (power relay) to energize, closing contacts, applying power to the TV.

If the On/Volume Up signal continues to be transmitted, the low impedance path through the FET will pull pin no. 6 of the sound IC towards ground, turning it on, then we will have sound. (NOTE: Pin no. 6 will be referred to during the Service Hints). The longer the On/Volume Up signal is transmitted, the louder the sound becomes. When the sound is at the desired level, the button on the Hand Transmitter is released, relay 1054 de-energizes, the contacts open, C1074 will hold the charge on gate of Q1066, holding its conduction, and the sound will remain at the desired level. NOTE: The voltage on the gate of Q1066 cannot be measured accurately with a VTVM, since the impedance of the VTVM offers a discharge path for C1074 (memory capacitor).

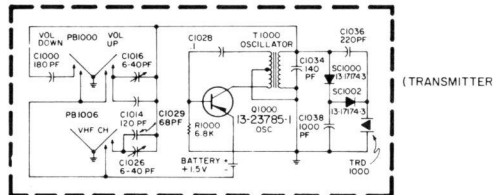
OFF/VOLUME DOWN FUNCTION:

When the Off/Volume Down frequency (35.75kHz) is transmitted, C1064 and L1054 will resonate, putting Q1062 (volume down driver) into saturation. It will conduct through SC1058 diode, relay 1054, and R1082 to +24 VDC, energizing the relay, closing the contacts, the C1074 (memory capacitor) sees a discharge path through closed relay contacts, SC1062 to

REMOTE RECEIVER AND TRANSMITTER SCHEMATIC DIAGRAM

NOTES

- 1 CAPACITORS ARE IN MFD UNLESS OTHERWISE SPECIFIED.
- 2 RESISTORS ARE 10% 1/2W UNLESS OTHERWISE SPECIFIED.
- 3 ALL VOLTAGES TAKEN WITH VTVM WITH NEGATIVE LEAD TO TIE PT. (RL)
- 4 ALL VOLTAGES MEASURED WITH NO SIGNAL APPLIED.
- 5 & 6 DO NOT ATTEMPT TO MEASURE DC VOLTAGE ON GATE OF TRANSISTOR Q1066 WITH VTVM.



FUNCTION	TRANSMITTER RESONANT FREQ	RECEIVER RESONANT FREQ
ON/VOL UP	37.25KHZ	37.25KHZ
OFF/VOL DOWN	35.75KHZ	35.75KHZ
CHANNEL (VHF)	40.25KHZ	40.25KHZ

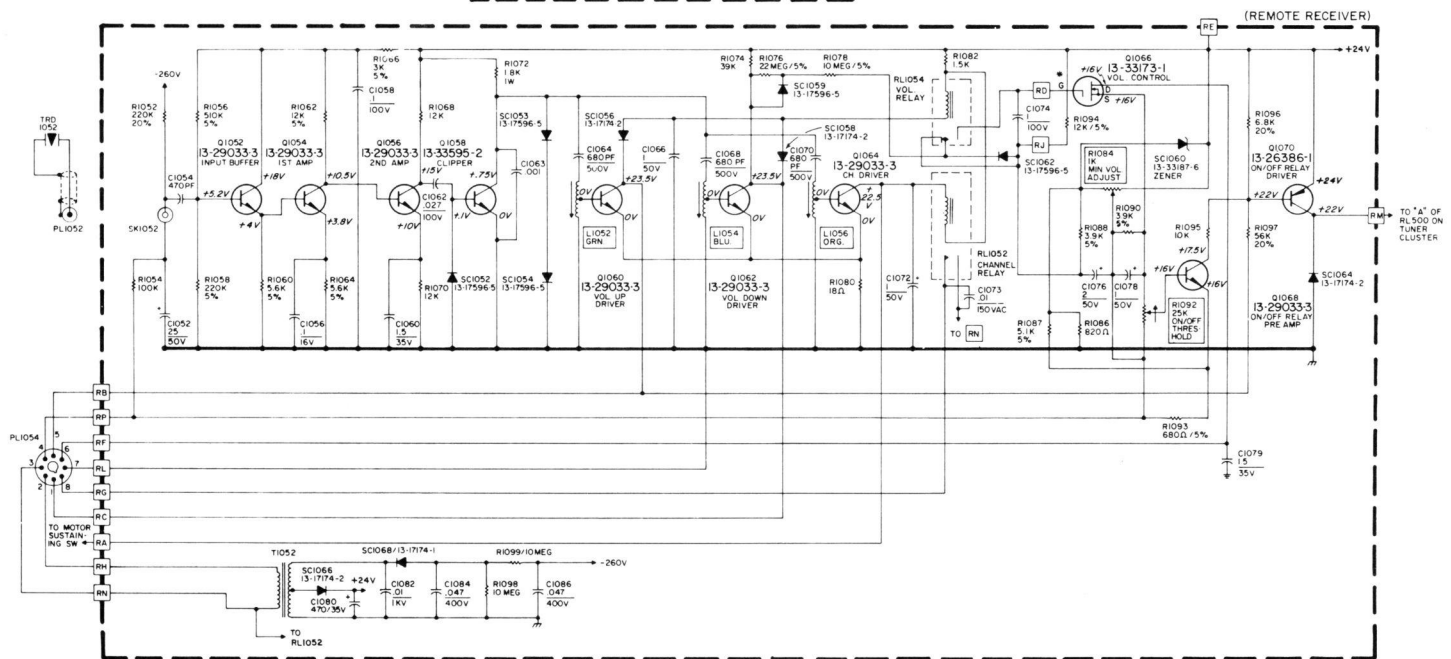


Figure: 1

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the opposite side of condenser. As the Off/Volume Down button is held down, this discharge continues, allowing the impedance of the "N" channel of Q1066 to increase, the electron flow through the channel decreases, and pin no. 6 of IC100 becomes more positive. This will cause the sound level to be reduced, if the button is held down after the minimum sound level is reached, the turn on bias at the base of Q1068 will be reduced until Q1068 ceases conduction, thereby removing the forward bias on Q1070, the power relay will de-energize, and power will be removed from the set.

CHANNEL SELECT FUNCTION:

CI070 and L1056 will resonate to the channel select command frequency (40.25kHz) causing Q1064 to saturate. Q1064 will conduct through relay 1052, R1082 to +24 VDC, RY1052 will be energized, its contacts will close, applying power to the VHF channel select motor.

SERVICE HINTS:

In servicing the above Remote Receiver Chassis, there are several test points accessible on the top side of the PC board. However, since the receiver is mounted on the rear of the tuner cluster assembly, it is somewhat difficult to check the bottom side of the PC board when it is powered and mounted to assembly.

One method of making the Remote chassis more convenient to service when powered by the TV chassis, is to use an eight conductor extension cable with octal connectors and straight through connections (ie: pin no. 1 of male plug connected to pin no. 1 of socket end). This cable is available at most supply houses and is commonly used as an extension for the deflection yoke on bench test monitors. Also you would need an extension for the two leads to the power relay (connections RA and RM). Then of course the transducer will have to be removed from cabinet and re-inserted into socket on the receiver chassis, if an extra one is not available.

However, a more versatile method and one that would permit you to service the remote receiver without the TV chassis, is to construct the unit shown in Figures 2 and 3. This unit has provision for powering the Remote Receiver and also indicators for Power On, Channel Select, and a meter to monitor the current through Q1066 (volume control FET). Consequently a chassis would not be needed to actually trouble shoot the Remote Receiver Chassis.

Tests and measurements referred to in this article were taken using the KH-100A, however, similar checks may be made using the 8 conductor extension cable.

SOME SYMPTOMS OF AN INOPERATIVE REMOTE RECEIVER - and Service Hints of locating the cause of problem. A possible defective Hand Transmitter has previously been eliminated.

1. UNABLE TO TURN TV ON WITH REMOTE TRANSMITTER - Manual turn on OK.

When set can be turned on with manual button, that indicates that the On/Volume Up circuitry toward and including the power relay is not at fault. Trouble has to be within the Command Signal path, including the transducer, broad band amplifiers, the tuned circuit, Q1060, and the -260 volt supply. Also a possible poor ground associated with the signal path may be the problem. Refer to the Signal measurement chart and Figure 1 to isolate problem.

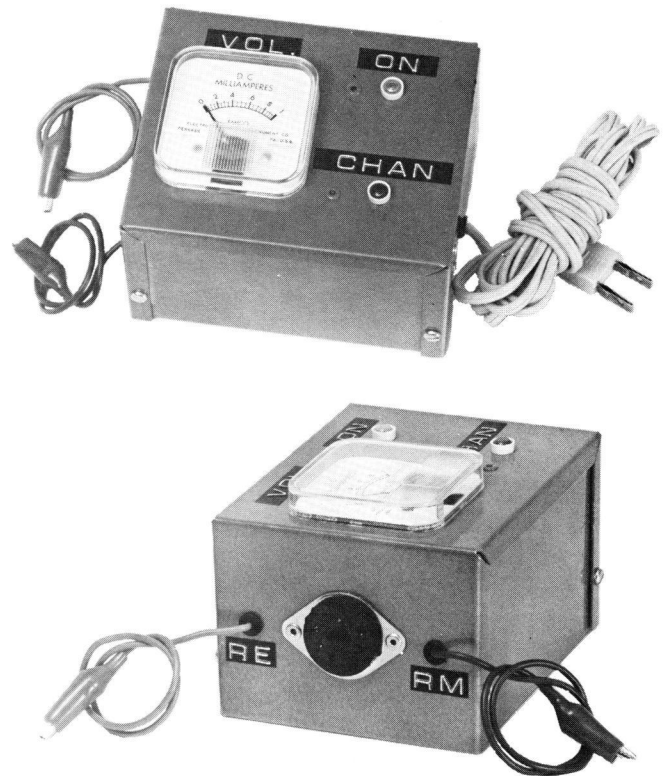


Figure 2

NOTE: This unit was built by Mr. Ken Hughes, a technician at Boyd Distributing Co., Denver, Colorado. Ken has been using a similar unit to service Sylvania Remotes, and prefers this method over the extension cable. In appreciation to Ken for sharing his ingenuity with us, we will refer to this adaptor as the KH-100A.

- 77MP-8 Amphenol Socket
- 2320 Emico Ammeter DC 1ma.
- 3C1D10-24 CDE Relay
- 2110A Industrial Devices Neon Indicator
- CU2105A Box Bud

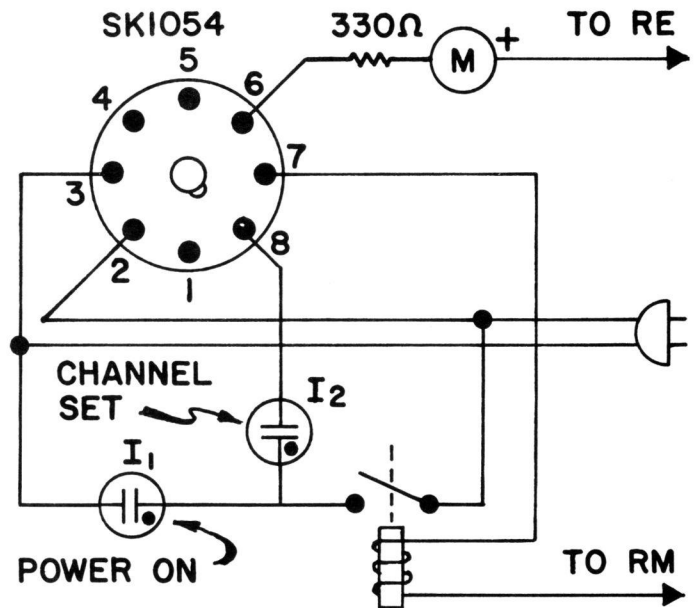


Figure 3






2. UNABLE TO TURN TV OFF - either manually or with the Remote Transmitter.
 - a. Check adjustment of the Min. Volume and On/Off threshold controls.
 - b. Monitor the voltage on pin no. 6 of sound IC - it should increase in the + value as either the manual button or the remote button is depressed.
 - c. A shorted sound IC could cause the problem.
 - d. Check the power relay (contacts stuck closed).
 - e. Check Q1070, Q1068, Q1066, or Q1062 for shorted condition.
 - f. Check the signal measurement chart if problem is only on Remote.
3. VOLUME LEVEL HIGH, UNABLE TO CONTROL.
 - a. If problem is common on both manual and remote, problem possible in sound IC100 or Q1066 (volume control FET) monitor the voltage on Pin no. 6 while depressing the Off/Volume Down buttons.
 - b. Refer to signal measurement chart if problem only on Remote.
4. UNABLE TO CHANGE CHANNELS - on remote.
 - a. Check relay 1052 and contacts.
 - b. Refer to signal measurement chart.
5. CHANNEL SELECT MOTOR CONTINUES TO RUN.
 - a. Check relay 1052 for sticking contacts.
 - b. Check C1073 for short.
 - c. Re-check Command frequency of transmitter and tuning of C1070 and L1056.
6. LOW SENSITIVITY - all command signals.
 - a. Substitute the transducer.
 - b. Refer to signal measurement chart.
 - c. Disable the Horizontal sweep circuit in TV and re-check the sensitivity; if OK, check the horizontal output transformer and its mounting. The command signal could be blocked at the transducer, by an interfering signal from the H.O.T. due to loose mounting.
7. FALSE TRIGGERING - set turns on at random.
 - a. Re-check the command signals frequencies and tuning.
 - b. Increase value of C1066 to a 10MFD.
8. RELAY CHATTER.
 - a. Possible oscillation in a broad band stage - check for poor ground in associated area.
 - b. Check for open ground in the input area.

ADJUSTING THE MINIMUM VOLUME AND ON/OFF CONTROLS USING THE KH-100A.

1. Connect a jumper from RL to RD on remote receiver chassis.
2. Set the Min. volume adjust to MAXIMUM CW.
3. Set the On/Off adjust to MAXIMUM CCW.
4. Transmit the On/Volume Up frequency and adjust the Min. volume adjust until the ON light comes on. (Meter will read approximately .2 ma.)
5. Adjust the On/Off adjustment CW until the ON light goes out.
6. Remove the jumper and check unit by transmitting the On/Volume Up frequency. Note the up scale movement of meter. Unit should remain on when On/Volume button is released.

NOTE: A slight readjustment of the Min. Volume and/or the On/Off adjustments may be necessary when the unit is re-installed into the TV chassis.

COMMAND SIGNAL MEASUREMENTS taken using the KH-100A

TRANSISTOR	BASE	COLLECTOR
Q1056		 .5 VPP - when any command signal is transmitted.
Q1058	.5 VPP	 .5 VPP - when any command signal is transmitted.
Q1060	1 VPP	 less than 1.5VDC when 37.25kHz is transmitted.
Q1062	1 VPP	 approximately 6-7VDC when 37.75kHz is transmitted.
Q1064	1 VPP	 less than 1.5VDC when 40.25kHz is transmitted.

WALT BIEDA RETIRES

AT A RECENT PARTY, MR. WALTER BIEDA, SUPERVISOR OF QUALITY ASSURANCE IN THE SYLVANIA SERVICE DEPARTMENT WAS THE GUEST OF HONOR - HONORING HIS RETIREMENT.

OVER THE LAST 25 OR MORE YEARS WITH THE SERVICE DEPARTMENT, MR. BIEDA HAS AIDED MANY TECHNICIANS IN SOLVING SOME OF THEIR TOUGH DOG PROBLEMS. MANY OF YOU KNOW HIM AS UNCLE WALT.

PICTURED WITH WALT IS MRS. BIEDA.



HAPPY RETIREMENT, UNCLE WALT!



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