

S/1 NEWS

I would like to thank those of you who have written with repair and modification information. The few minutes you take to write is keeping this newsletter going!

W8CXS comments on the CX-11 seen at Dayton: According to Paul, they still are using that stack of 3 circuit boards making any service in this troublesome area very difficult.

A call to Signal/One in New Jersey netted no information whatsoever on the CX-11. I was told that units were being shipped to Payne but in a subsequent call to Don Payne I was told that only one unit had been shipped. Don said he did not know when to expect further units but that any future orders would be shipped 6-months hence. No new orders are being accepted at \$2,900. A new price has not yet been announced. Don says the CX-11 he has works quite well.

One of the troublesome areas of the CX7 and CX7A units is the audio output stage which uses an IC that is no longer available. A number of modifications have been described for improved audio quality and power. One of the best utilizes a LM380N that will drive the speaker directly. Using the LM380N will result in greater audio output and cleaner audio. Since everyone does not have facilities for making their own PC boards and since it is sometimes difficult to procure parts in small quantities these days, I am going to put together a little package consisting of a small PC board and all the parts required to replace the existing CX7 or CX7A audio output stage with the LM380N. The modification is very easy and consists only of moving a few connections and mounting the PC board in any convenient place. (See elsewhere in this issue for the mod)

I will sell this package for somewhere between \$15 and \$20 (The actual cost being determined by how large an order I place for parts and PC boards. If you are interested, please send me \$10 which I will credit for your order. I will let you know the difference as soon as possible.

CORRECTIONS AND ERROR TO TRANSISTOR SUBSTITUTION CHART IN THE VOLUME I, NUMBER 7 ISSUE:

The Sylvania replacement listed for the 2N5184 should be ECG-154, not ECG-124 as listed.

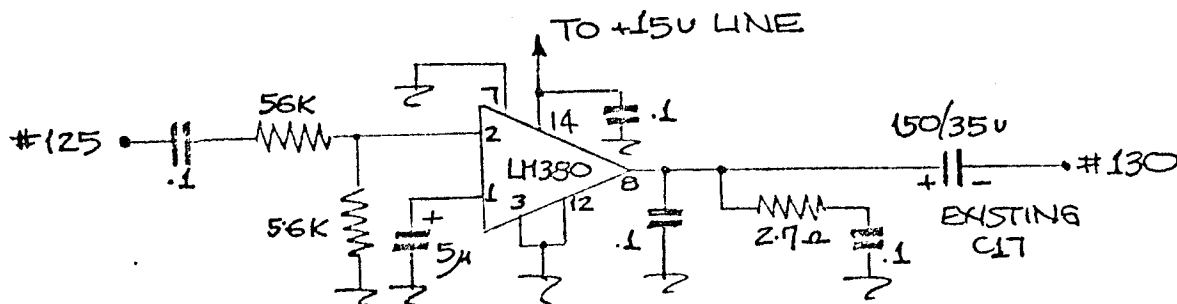
Another possible replacement for the 2N5184 is a Motorola MPS-L01

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The following modification sent by WØNVE will provide for a much simpler audio output circuit and cleaner output. The parts count goes way down on the power supply board. The modification replaces the existing PA237 (or MFC9020) with a LM380 IC audio amplifier chip. The LM380 may be mounted on a small vector board or directly on the power supply board with some simple modifications. The following parts may be removed from the power supply board:

- C14, C15, C16, C20, C21, C19
- R34, R35, R36, R33, R37, R38, R42
- PA-237
- Q11, Q10, R22, R30, C18 (24-volt regulator parts)

Wiring for the LM380 is as follows:



Notice that C17 may be reused but with reversed polarity. The output transformer is no longer used. Wire pin #130 from the power supply board directly to the speaker jack.

If your unit utilizes the Motorola MFC-9020 audio output IC, refer to page 6-15, Figure 6.4A of the Thomas manual for parts to remove in lieu of those listed above. The 24-volt regulator parts listed above should be removed.

The following information and corrections are courtesy W8CX5:

1. For those using CX7A power supply boards: Figure 6-4, Thomas manual, lists the Zener diodes used for transient protection with an error: The 1N4734A, although the one used by the manufacturer is NOT the best unit to use since it will conduct all the time at 5 volts. A better choice is the 1N4735A which is a 6.2 volt unit and no conduction at 5 volts.

2. Both manuals: Page 4-2, Figure 4-1: C-2 is actually C-9; C-3 is actually C-6; C-6 is actually C-3; C-9 is actually C-2.

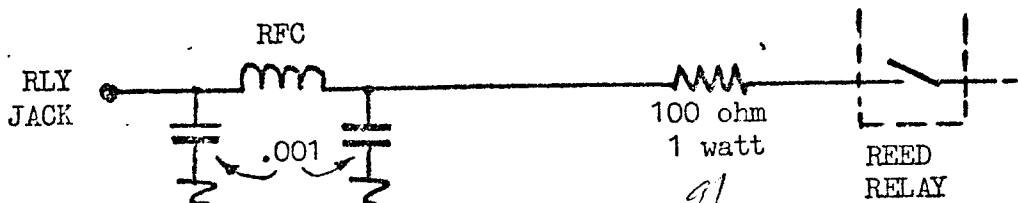
3. Page 6-14, Figure 6-4, THOMAS manual: Power circuit color code: Plus 5 VDC is BROWN and Minus 15 VDC is BLUE.

The following suggestions and modifications are from Dick Ehrhorn, W4ETO, of Ehrhorn Technological Operations, Brooksville, Florida who manufactures the Alpha 77 linear. There are suggestions concerning operation of the A77 with CX7 units and modifications to the A77 itself.

Dick recommends the modification published in Volume I, No. 6 of S/1 NEWS concerning the addition of a transistor in order to utilize ALC but notes that the basic reason for not recommending ALC in the first place is the very low input impedance of the CX7 ALC tends to unduly load the ALC detector in the A77.

Occasionally, an A77 may be found on which the grid current protection relay trips at substantially lower current on one band usually 15 but possibly 10 or 20 meters also. It should not trip until grid current meter reading is at least twice the usual 150 ma key-down condition. If you experience tripping at lower levels on one or two bands, make the following fix: At the A77 ALC output jack, leave the small disc ceramic from the center contact but disconnect the wire from the harness to that center pin and insert in series a resistor of about 470 to 1000 ohms. This breaks up a latent resonance involving the harness wire and by-passes at each end! This fix should be made if you experience the problem described regardless of whether or not you are utilizing ALC.

Another problem sometimes encountered when using the CX7 and A70 or A77 combination is CX7 control relay sticking. The symptom of this problem is the failure of the A70/77 to return to the receive condition when the CX7 does. The combination of vacuum T/R relay control for speed and rf bypassing in the A70/77 combine to provide a fairly substantial capacitive discharge through the relay control line upon closure. This is bad-news for reed relay contacts! The solution is simple and will provide protection for the CX7 control contacts. **MAKE THIS CHANGE IF YOU ARE USING THE A70/77.** It is almost certain that sooner or later you will have relay problems in the CX7 if you don't. The modification is as follows: Insert a resistor (approximately 100 ohms @ 1 watt) in series with the relay contacts inside the CX7. Add a bit of decoupling for RF on the side of the relay line AWAY from the relay itself (at the chassis jack location) by using a small molded choke or a couple of ferrite beads and a .001 disc to chassis. The object is to keep RF OUT of the CX7! The important point is to make sure there are NO capacitors directly across the reed relay contacts unless the 100 ohm resistor is in series with them. See diagram below:



A-76 MEASURES 12544. SO USE 2 W. RESISTOR

Some CX7 units, at the moment of pressing PTT or activating VOX will produce a large RF spike regardless of the position of the OUTPUT control. If this spike is of any duration more than a fraction of a millisecond, the A77 grid relay will probably drop out. The correct solution to this problem is to fix the CX7 so as not to produce these spikes (anyone have any ideas?). Another way to solve the resulting problem is to "slow down" the A77 grid relay. This is accomplished by increasing R10 from 100 to 680 ohms and adding a capacitor of about 100 uf/3 volts from the base of Q2 to ground. An additional change designed to protect Q5 from excessive overdrive (which could result from the slowing down feature) is to install from the base of Q4 to ground four (4) silicon diodes in series (such as 1N4001 or 1N914). These will act as a clamp at approximately 2.5 volts. To protect Q5 from breakdown due to high voltage resulting from very severe grid current spikes, shunt it with a zener of about 40 volts/5 watts such as a 1N5366. It might also be a good idea to replace Q5 with a higher power unit such as a MJE 340 (400 volts/1/2amp).

For all A70/A77 units: The HV feedthrough tip jack located at the top, front of the partition between power supply and rf compartments is rated at 11KV by its manufacturer but may fail catastrophically, taking with it the bias switch semiconductors (Q4,5, D17,18) and quite possibly the HV rectifier (D5-8) and/or the plate overcurrent relay shunt R42!! Avoid this by pulling out the jack, installing a rubber grommet in the 1/4-inch hole, and run a piece of the original HV red lead wire through, soldering it on both ends.

NOTE: See attached schematic for changes discussed above.

INFORMATION WANTED AND FOR SALE

Jan, W8SWN, is interested in buying a CW filter. Contact Jan at 1348 W. Grand River, Howell, Michigan, 48843

Don Payne (PAYNE RADIO) has the following for sale: Nixie-type counter boards with plug-in IC's @ \$70. Audio boards @ \$40. CX&A-type power supply boards @ \$70.

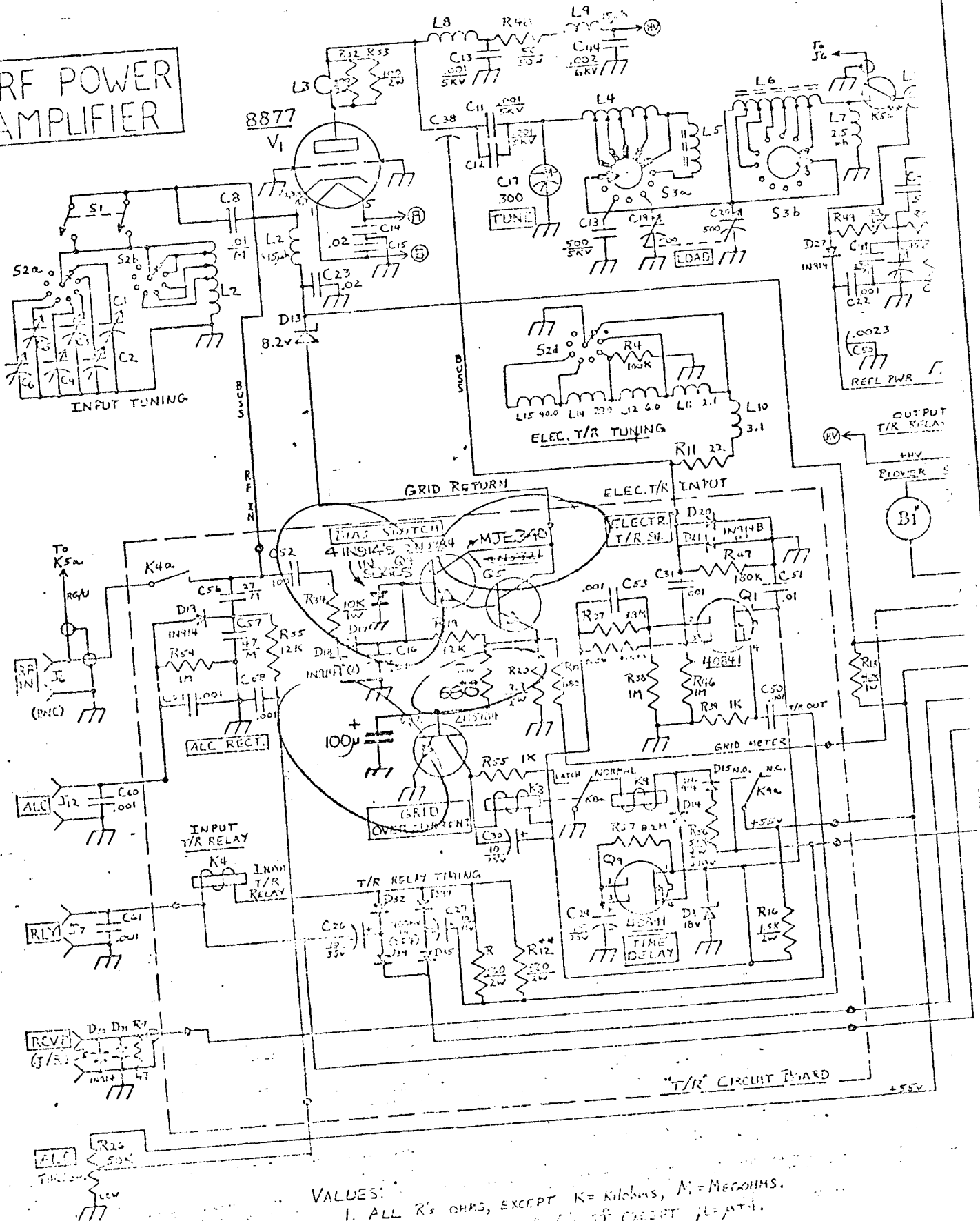
CX7/CX7A THOMAS Technical Manual and the latest issue of my Signal/One TROUBLE GUIDE. \$20 post paid. Write to editor.

CLEAN CX7, SERIAL #00111, NEW FINAL & JUST UPDATED BY PACE BUT MAY STILL REQUIRE MINOR REPAIR WORK - TOO MUCH RADIO FOR YOUNG LAWYER!! \$800 OR BEST. CONTACT STEVE GUERRA AT 915-544-6056 (evenings). 299 KINGSFORT, APT 110, EL PASO, TEXAS, 79912

73...

BOB, WØYVA/4

RF POWER AMPLIFIER



- VALUES:
1. ALL R's OHMS, EXCEPT K= Kilohms, M= Megohms.
 2. ALL CAPACITORS UNLESS NOTED OTHERWISE ARE IN PFD.
 3. ALL C's IN PFD UNLESS NOTED.

BANDSWITCH SHOWN IN FULLY CLOCKWISE (24-30 MHz) POSITION