COBRA 132/135 XLR CLARIFIER
ALSO
BROWNING BARON & TRAM D-62

STILL HAVING PROBLEMS WITH THE CLARIFIER? IF SO, READ ON FOR THE SOLUTION.

First, let's discuss the problem. This particular clarifier circuit is unique due to its three distinct modes.

1. AM RECEIVE 2. SSB RECEIVE 3. TRANSMIT

The transmit mode is the function we are interested in, but we must learn how the receive mode functions in order to properly convert the clarifier.

If all we ever used was the SSB mode, the conversion would be simple and straight forward, however, the radio is also AM and this is where the problems arise. The output of the clarifier is shifted 2.5KC from receive to transmit. NOTE that the output of the clarifier is the same in all 3 modes while transmitting. Only in the AM receive mode is the output shifted down 2.5KC. The solution, therefore, is to build a circuit that shifts the required 2.5KC after converting the clarifier to slide on transmit.

One more problem encountered is a R/T split which can be corrected by adding a "tight" supply voltage to the clarifier. The following circuit was designed to give the required 2.5KC shift on AM and to regulate the voltages:

First, lets begin by getting all our parts together:

PARTS LIST:
- 1 - Relay SPDT (Radio Shack #275-003)
- 2 - 1N4001 Diode (#276-1101)
- 1 - LM317T Pos. Voltage Reg. (#276-1778)
- 1 - 220Ω ½ W Resistor (#271-015)
- 1 - 68Ω ½ W Resistor (#271-010)
- 1 - 1n4735 6.2 V Zener (#276-561)
- 1 - 5 K Pot (#271-1714)
- 2 - 1,000 ufd/16V Capacitor (#272-958)
- 1 - Perfboard (#276-1395)

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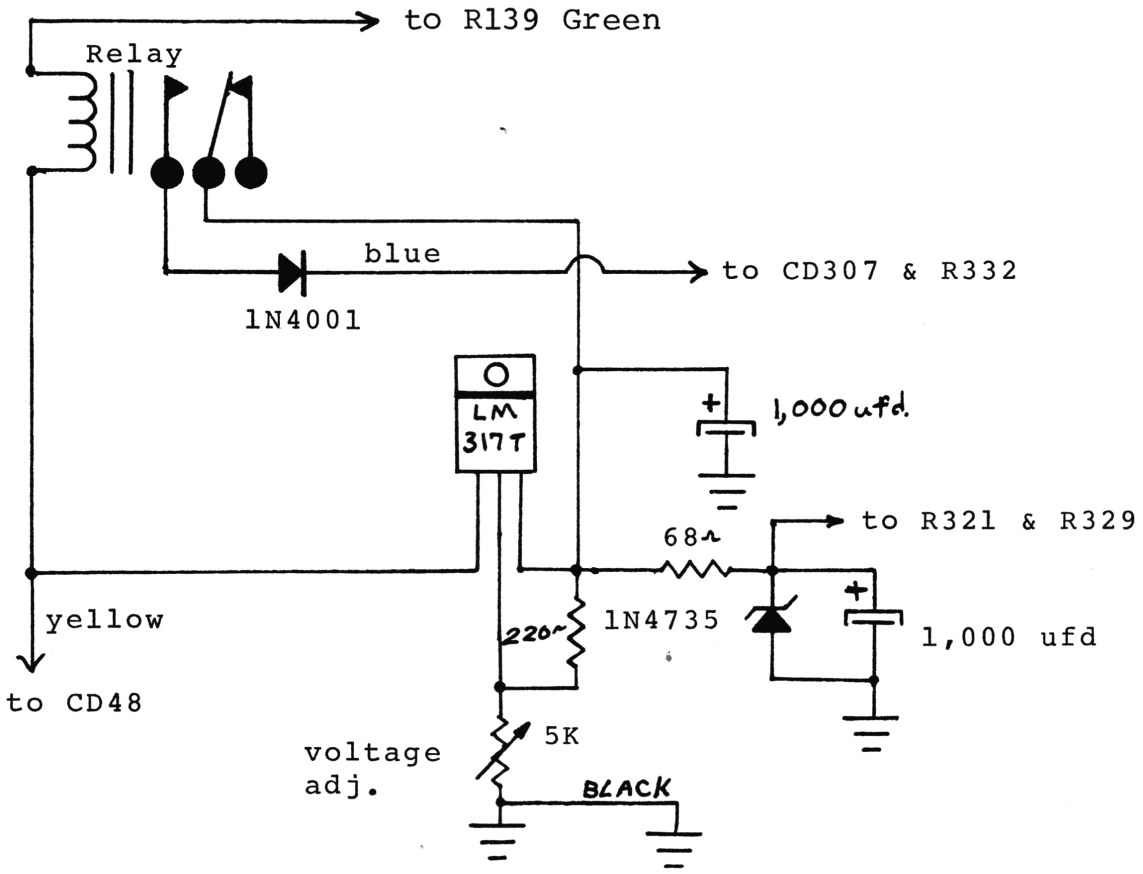
CLARIFIER SOLUTION CONTINUED:

Assemble the parts as shown below. Follow instructions to the letter - radio has double-sided PC board and installing parts on the wrong side will result in PROBLEMS!



1. Unsolder R321/R329 from the 6 volt source. Solder the two resistors together and solder the WHITE wire from the kit to the resistors.
2. Locate CD307 and R332. Unsolder the ends going to the 7 volt source., Solder the free ends of the diode and resistor together. Connect a 1N4001 diode as follows: cathode (banded end) to D307/R332, anode to the hole where CD307/R332 were connected. At the junction of the NEW diode/Cd307/R332, solder the BLUE wire from the kit. The parts will be on the top side of the board - this is where the double sided board will mess you up!

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CLARIFIER SOLUTION CONTINUED:

3. Connect YELLOW wire to cathode (banded end) of CD48 (located by relay) to pick up 13.8 V.
4. Connect the GREEN wire from the kit to the end of R139 not connected to the transistor. This provides ground on transmit to switch the relay.
5. Solder a BLACK wire to ground on the kit and solder other end to radio ground.

ADJUSTMENT:

Measure voltage at the BLUE wire in receive mode. Key the mike and adjust the VOLTAGE ADJUST for this same voltage. If no accurate voltmeter is available, hook up your frequency counter to the VCO and adjust the VOLTAGE ADJUST for the same frequency RX and TX.

NOTE: If USB and LSB do not come on center together check the 7.8025 crystal frequency. I have found the adjustment CRITICAL.

HOW TO MEASURE FREQUENCY ON YOUR SCOPE

The period of a waveform is the time that it takes for 1 cycle to occur. It is inversly proportional to the frequency f=1/P. Inject the signal to be measured into the vertical input. Adjust the TIME/CM control to display several cycles. The granticle on our scope is 10 CM across. The TIME/CM setting must be multiplied by 10. Now we divide to find the frequency in cycles per second.

$$\frac{\text{COUNTED CYCLES}}{\text{TIME/CM X 10}} = \text{CPS}$$

XAMPLE: We counted 11 cycles with TIME/CM on 1 Ms setting.
1 Ms= .001 Second 10 Ms= .01 Second

$$\frac{11}{1\text{ Ms X }10} = \frac{11}{10\text{ Ms}} = \frac{11}{.010} = 1100 \text{ cycles}$$