

“In step #4 there was a slight tone with the Pan control at full "R"; when turning the "Modulation Null Trimmer" there was no discernible difference in the tone.

In step #6 there was a modulation sound, but the carriers were not of the same volume. The original carrier was much more dominant than the modulating signal.

There are remedial steps listed listed we are not sure if the step #6 is the expect behavior. Do we treat this as failing step #4 and step #6 or just step #4?”

4) Disconnect the amp from the L+R output and listen to the A output. You should hear the noise/tone mix being modulated in volume following the changes in the ADSR output. Turn the Pan control to full R and Toggle the ADSR/Cycle switch to ADSR. While still listening to the A output, adjust the Modulation Null Trimmer (R24 on the circuit board) to minimize any tone that you hear from the Amp.

A problem here most likely involves IC4, Q3, Q4 or associated parts. IC6 might be a problem, but sections of it are working OK in the VCAs so the chip is most likely good. Check front panel wiring involving J3 and J6. If you don't find anything, continue to the next test which may help localize the difficulties.

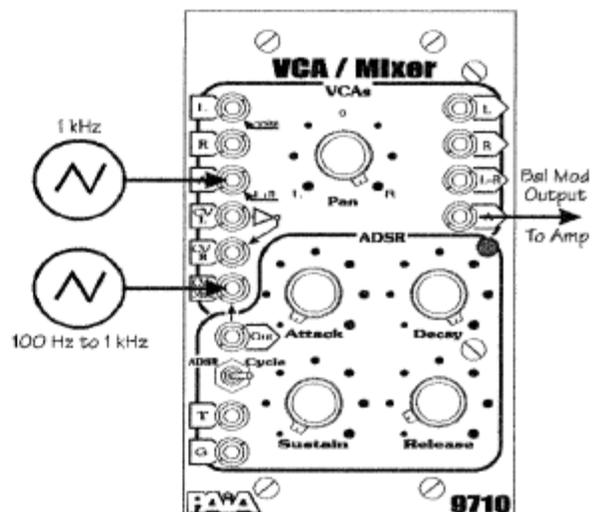
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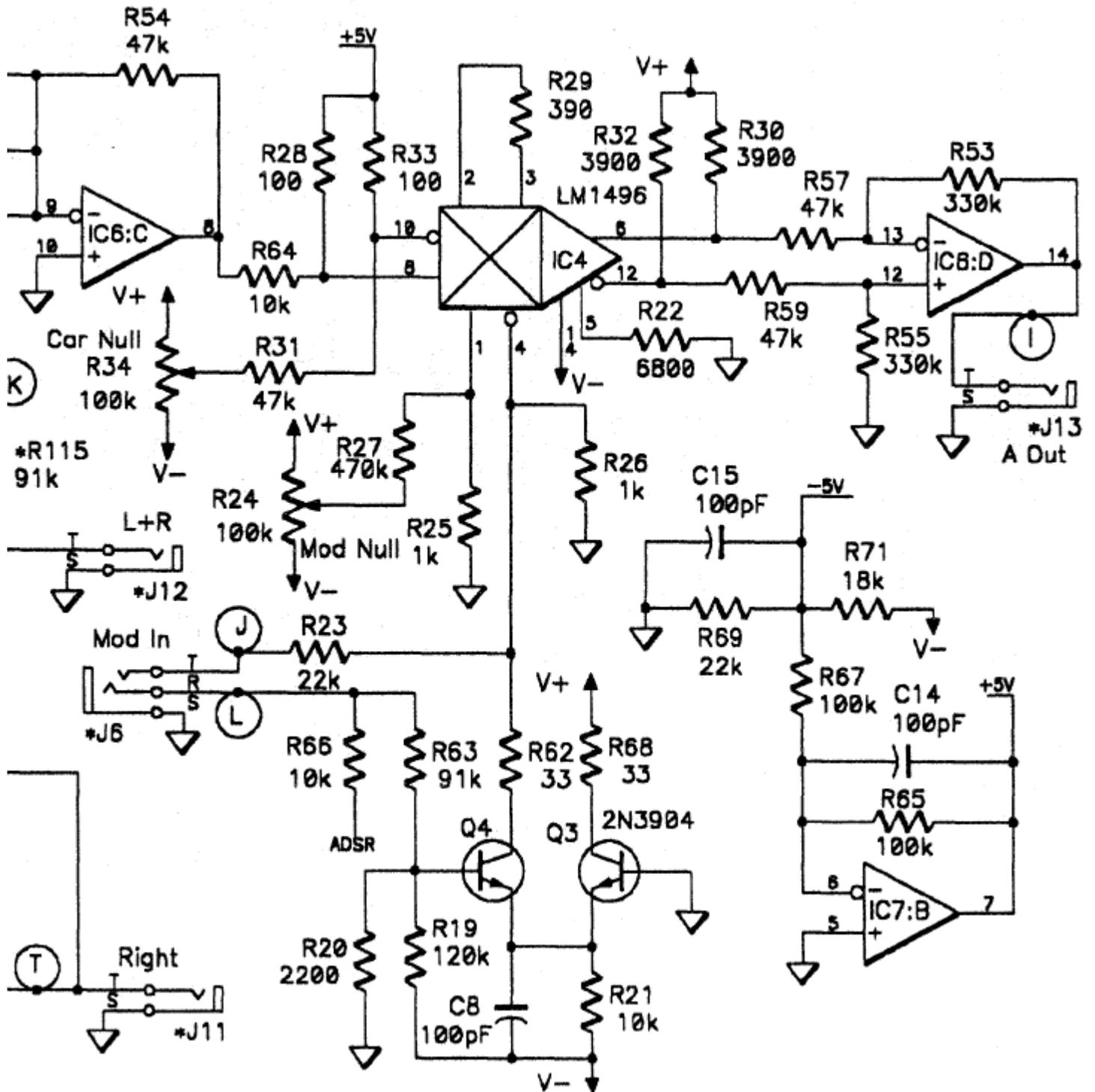
6) Connect a second signal source to the CVa (Mod) input and listen to the A output for a balanced modulator sound while the relative frequencies of the two sources are varied. If you're not sure what Balanced Modulator should sound like there are .wav file samples at <http://paia.com/9710.htm>.

If this step checks out OK but step 4 didn't, you should suspect the expo converter, which comprises Q3 and Q4 and the parts around them.

If this is not working and there was also a problem in step 4 the culprit may be IC4 or the parts associated with it. The Carrier input buffer IC6:C or the differential output buffer IC6:D may not be working.

If step 4 was OK but there's a problem here in step 6 there is probably something wrong with the way J6 is wired.





VCA section from 9710 illustration supplement, fig 7, schematic

The “trouble” checks following each Testing section are only very general. For example, for Test #4 check IC4, Q3, Q4 or associated parts, and, IC6 and Js 3 and 6 wiring – this simply implies verifying the parts are the ones specified and with the proper polarity, good soldering, etc. It is rare for parts to be the trouble due to defects, though they can fail if an accidental short-circuit occurs (ie board soldering comes in contact with metal while powered or probing for voltages results in contact between two nearby but separate circuits).

Specific to the trouble you describe, the R24 Modulation Trim not affecting the signal output in Test #4, check the middle, wiper terminal of the trim (also the end of R27 which connects with the wiper terminal) for a DC voltage which varies from negative 12VDC to positive 12VDC as the disc is adjusted from one extreme to the other.

This variable voltage should work to minimize the signal level at the VCA A output. It might not be eliminated, particularly if you are going into a sensitive input, but there should be a significant difference between the levels heard at the extremes and the dip which occurs at an intermediate setting of the trim corresponding to a VCA ADSR “off” control into the VCA A section. Looking at the one in P9700S here, it is set about mid-rotation for this condition.

If this checks to be OK, below are some other DCV readings in the VCA A section going sort of left to right from IC6c to IC6D according to the schematic. Set ADSR controls to 9:00 and modulator to Cycle.

IC6pin9 0V
IC6pin10 0V
IC6pin8 4.9

R34 wiper terminal (appx. calibrated setting) 4.4V

IC4pin10	5v
IC4pin8	5v
IC4pin2	-0.73
IC4pin3	-0.74 to -0.91
IC4pin1	-0.01 to -0.02
IC4pin4	-0.02 to -0.20
IC4pin14	-12
IC4pin5	-10.47
IC4pin6	6.33 to 6.35
IC4pin12	6.35 to 6.37

IC6pin13	4.75 to 4.90
IC6pin12	5.35 to 5.37
IC6pin14	-0.04 to 0.23

Test#6 has you checking for a complex tone which results from using one audio signal to modulate another audio signal. The difference you notice in the “mix” of the signals can be the result of something awry in Test#4, but it also is affected by the Carrier Trim setting which is set in the Calibration section on page 22 of the manual (advanced about two-thirds of the way on the unit here). DC voltage testing can be made for this trim, R34, in the previously described Modulation Trim tests.