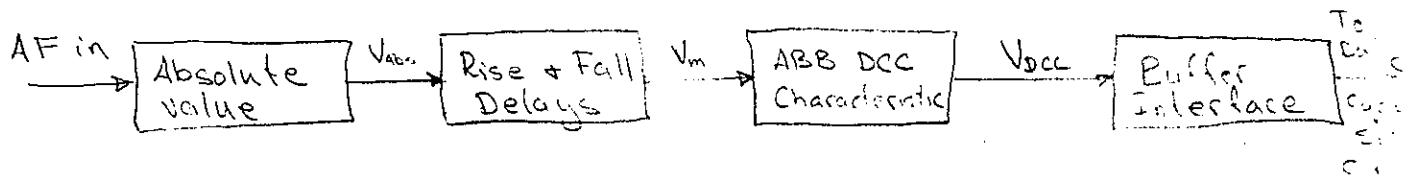


12/20/91

Bob Fiske

Dynamic Carrier Control Model II

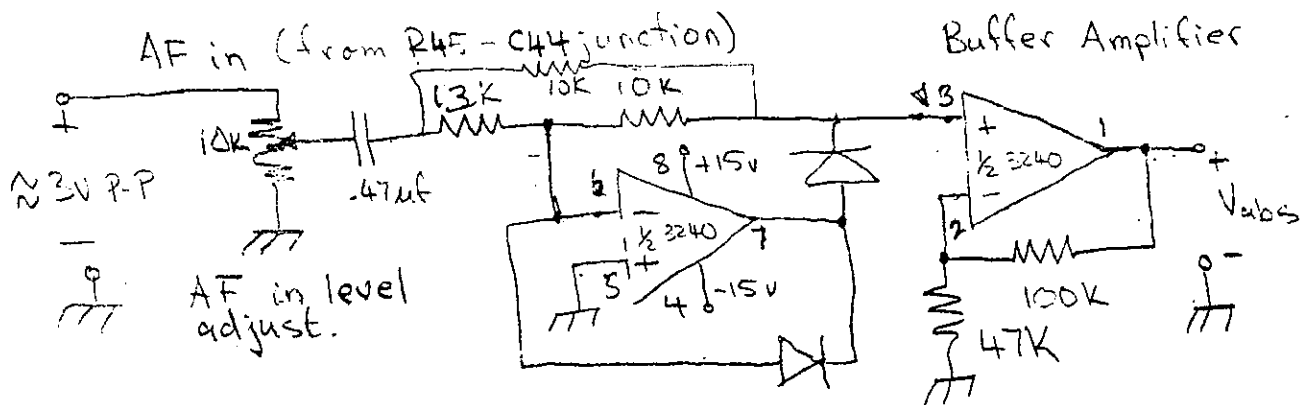
The objective in model II is to provide for the continuous high voltage control as shown in the Brown Boveri's DCC document on page 3. Distinct and variable rise and fall times for the high voltage will be possible. It will disturb the present circuitry as little as possible. It uses the op-amp approach since Elvin prefers it + it isn't too complex.



Block Diagram

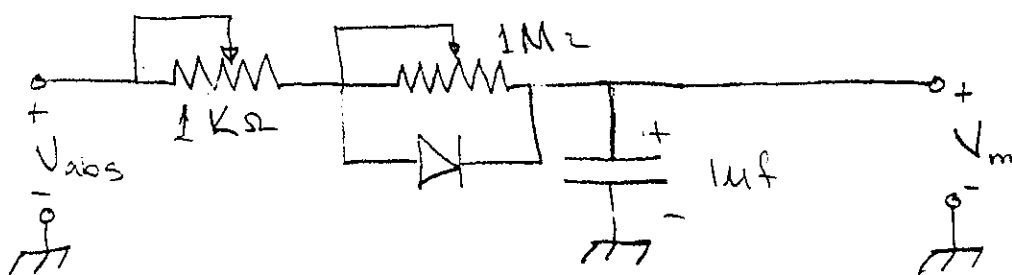
This is the main circuit, but a current limiter must be added to the RF screen power supply so that the screen dissipation ratings are not exceeded in the RF final amplifier.

Absolute Value Circuit



The voltage V_{abs} will be set to swing between 0 and +10V using the AF gain control. The AF input comes from the junction of R_{45} + C_{44} on the modulator circuit board.

Rise + Fall Time Circuit



Initially I will set the rise time to about $(1/5000)$ seconds = 200 μ s. The fall time I'll try at about $(1/10)$ seconds = .1s.

Brown Boveri DCC Characteristic Generator Circuit.

From the comments on the DCC document from Brown Boveri it appears that it is beneficial to lower the carrier less when the audio input is very low. See the plot in Figure 2 from their document.

Fig. 1 Reduction characteristic
Traditional reduction characteristic with the carrier voltage as a function of the AF input level m'

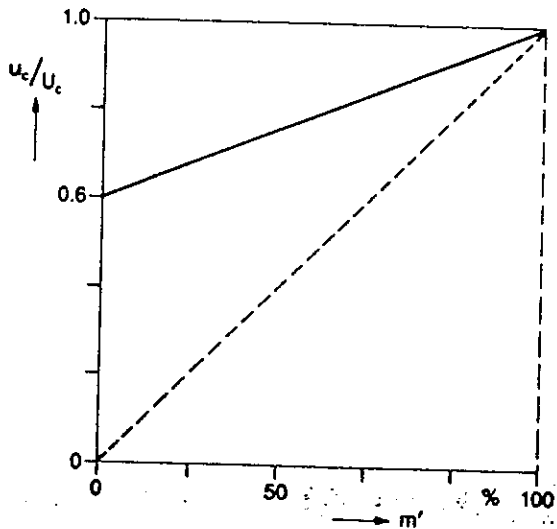
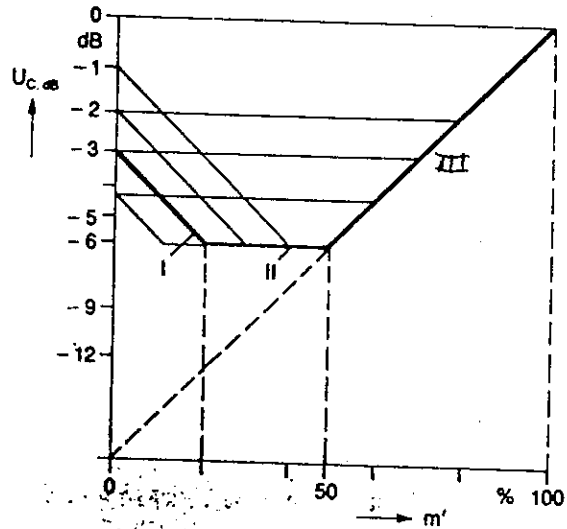
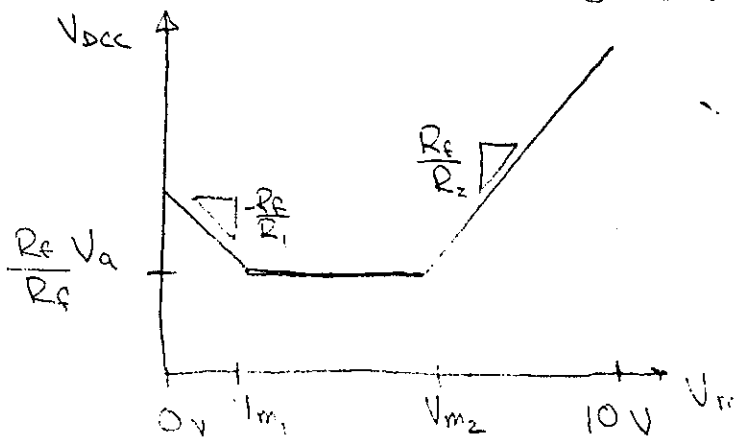


Fig 2 Asea Brown Boveri's DCC
The parts I and II of the characteristic function are to be chosen by the user.
The thick line depicts a mostly used, well-established compromise, it is designated as DCC 3/6: from the attenuated levels -3 dB and -6 dB
See also the picture on the cover for DCC 3/6 for the reduction scope of input power.

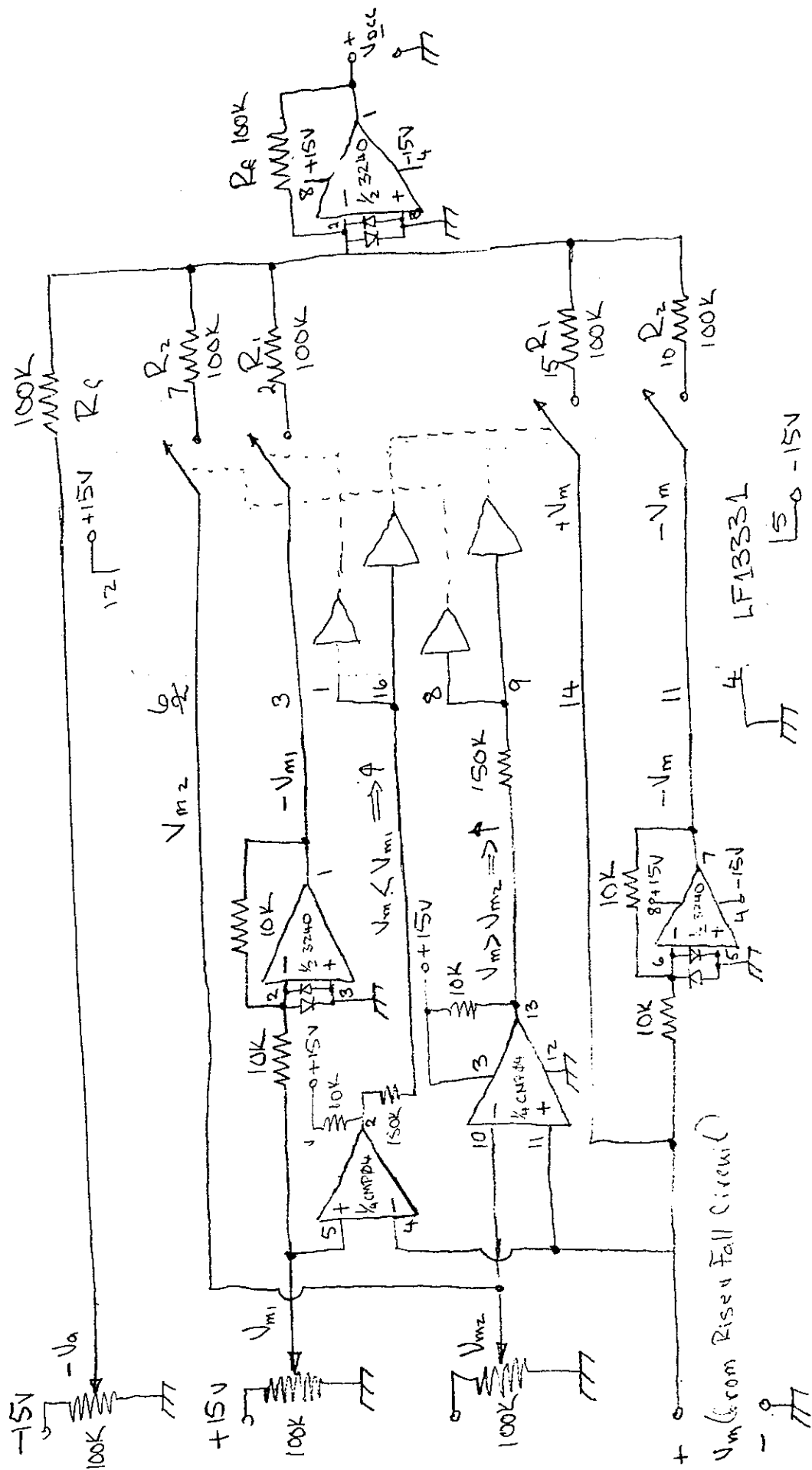


3

From this, the voltage out versus voltage in curve below was basically copied.



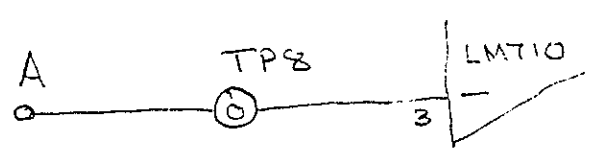
The parameter voltages V_a , V_{m1} , and V_{m2} can be set with voltage divider potentiometers.



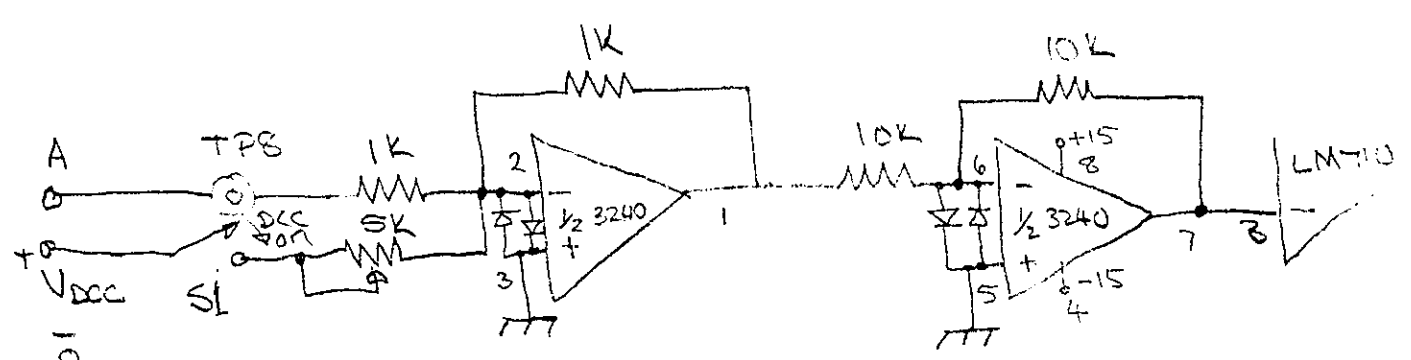
DCC Characteristic Generator

Buffer Interface

The continuous DCC characteristic requires an interface that will vary the duty cycle of the squarewave generated by the LM710 in the modulator. ^{continuously} Though this circuit uses two op amps, it disturbs the present circuitry very little.



Original circuit



New Circuit

Switch S1 is used to turn off the DCC. This circuit isolates the DCC circuit from the original modulator circuit.

Each IC should be should have all power supply leads bypassed with .01uf capacitors to suppress RFI.