K188A VALVE PRE-AMPLIFIER KIT

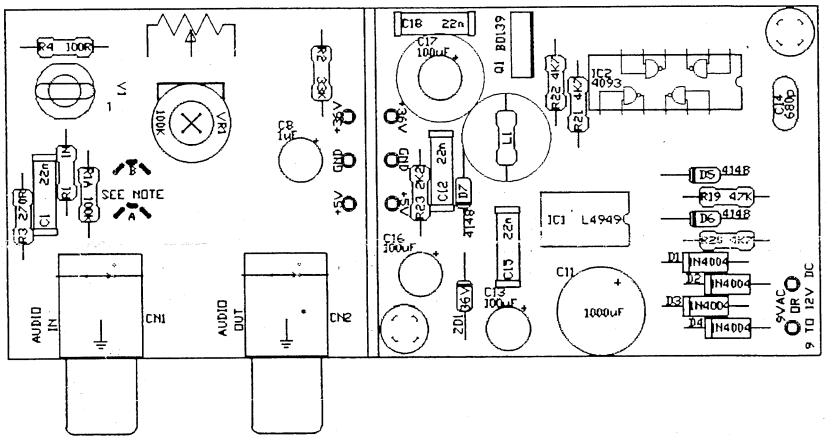
This low cost, simple to construct valve preamplifier lets you experience "valve sound". It is based on a low power consumption sub-miniature pentode: Raytheon JAN6418, which is equivalent to a CK512AX.

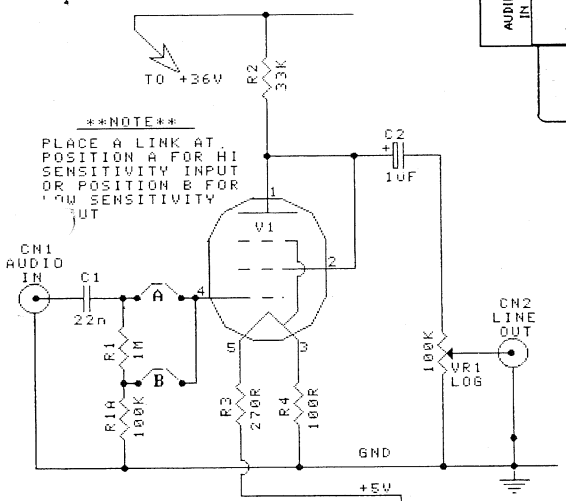
HOW IT WORKS

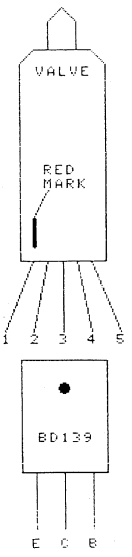
POWER SUPPLY SECTION..Diodes D1-D4 rectify the incoming AC voltage, C3 smooths this voltage. IC1 is described as being a low dropout 5V voltage regulator with power-on reset and voltage sense. Its data can be found at the manufacturers web site under: http://www.onsemi.com/pub/Collateral/L4949-D.PDF In this application only the 5V regulator section of the IC is employed.

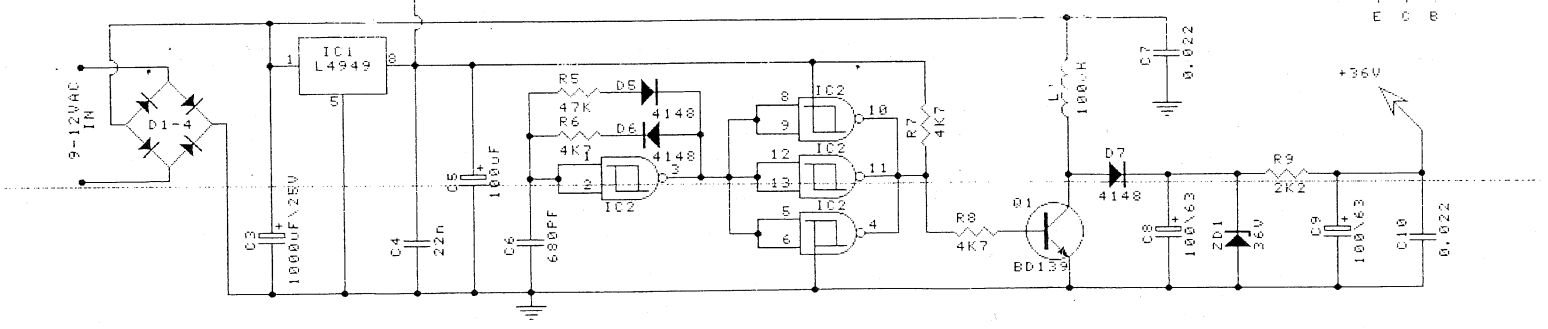
IC2:A and its associated components form a pulse generator that produces narrow negative going pulses with a duration of approximately 3uS at a frequency of approx. 30KHz. The paralleled gates IC2:B, IC2:C and IC2:D invert this output to produce narrow positive going pulses. These narrow pulses are used to switch on Q1 via R8. Due to the back EMF generated by the inductor when Q1 switches off the voltage at its collector can rise to a very high value and could exceed the breakdown voltage of the transistor. However this can not happen because of the clamping action of the 36V Zener via the forward biased diode D7. This section of the circuit produces a regulated output voltage of 36V and the filter comprising of R9, C9 and C10 further smooths this supply.

PRE-AMPLIFIER SECTION....The pre-amplifier is based on Raytheon JAN6418 valve. Further information on this valve can be found by searching on google.com for "6418 data tube". The input signal is applied via a coupling capacitor C1 to the series combination of R1 and R1A. Link A should be included for low level signals such as microphones, link B should be included for line level signals of say around 100mV. Resistors R3 and R4 limit the current to the filament of the valve from the 5V supply. The resultant filament voltage is 1.3V and the current is 10mA. The valve is configured as a common cathode amplifier and the overall gain (grid-anode) is approx. 8 times. The signal at the valve anode is transferred via coupling capacitor C2 to potentiometer VR1.









The power supply PCB can be cut away from amp PCB

One power supply PCB can be used to power two amp PCBs