

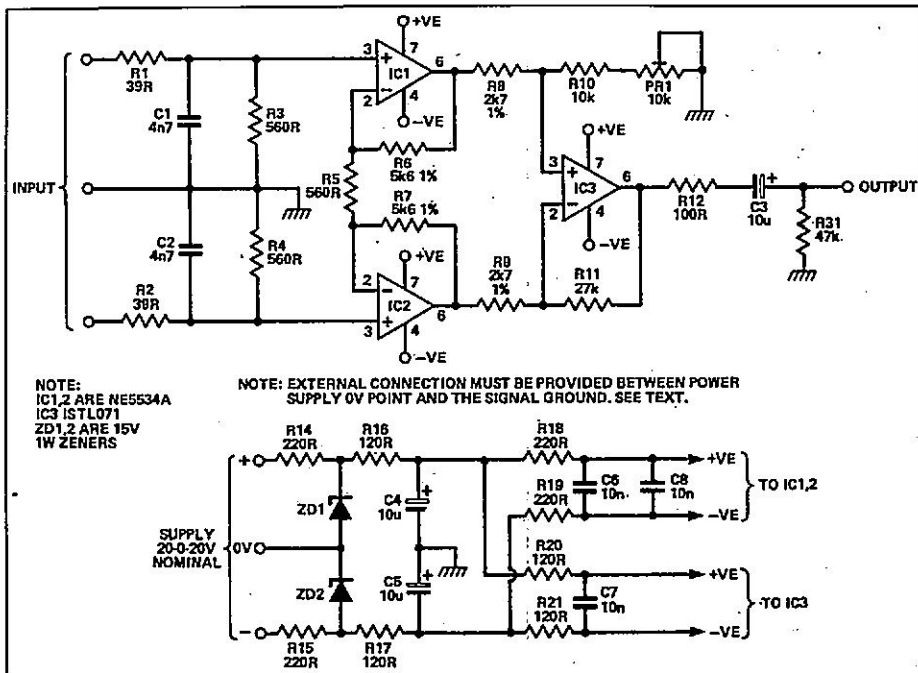
Circuit Supplement

A circuit for every occasion. From beginner to advanced, a whole bunch to keep you busy 'til next month.

BALANCED INPUT PREAMP

THE circuit is a relatively straightforward instrumentation amplifier. The main differential stage is formed by IC3, the TL071. This is a biFET op-amp with good common mode rejection ratio (CMRR) figures. This stage is buffered from the inputs by a pair of NE5534A op-amps that also provide additional gain and determine the overall noise performance of the preamp. The overall gain of the preamp is determined by the gain of the first and second stages. The gain of the second stage is determined by the ratio of R11 to R9, and is around 10. The gain of the first stage is approximately 20, giving an overall gain of about 200, or 46 dB. If you require a different gain to this, try to keep the ratios of gain in the first and second stages the same. The amount of gain provided here should be suitable for most microphones, providing around 100 mV output from a 0.5 mV input signal level.

The circuit is DC-coupled at the input. This assumes that the driving source will be transformer or capacitively coupled at the output, which should be a safe assumption. The input impedance of the stage is set by the two input resistors R3 and R4. To increase the input impedance, simply increase the value of these resistors.



The RC networks consisting of R1-C1 and R2-C3 are high frequency filters to reduce the circuit's susceptibility to Rf interference.

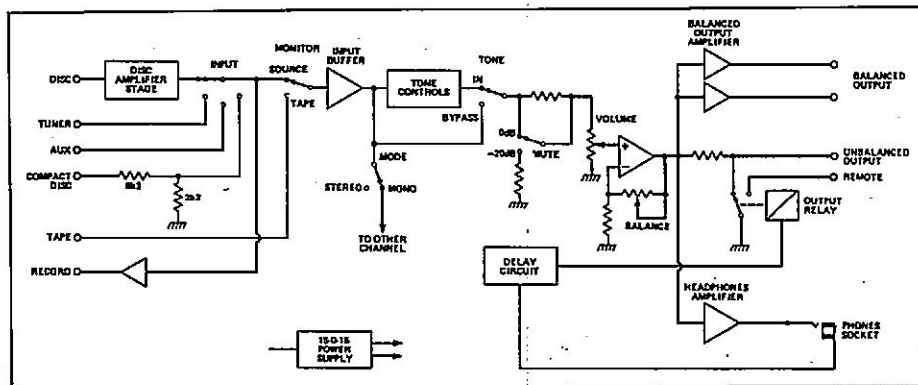
The split power supply is provided either from two zener regulators or from a

well-regulated and filtered DC source. The supply pins to each IC are decoupled by 1k0 resistors and 10n capacitors to prevent IC-to-IC interaction and possible feedback via the supply rails.

TONE CONTROL

THE type of tone control fitted to most hi-fi equipment is far from ideal, usually being much too dramatic in operation — for example, if it is required to lift frequencies below about 100 Hz, the effect is usually to lift by varying amounts, everything up to at least 1 kHz, and even higher.

The circuit shown is somewhat more sophisticated than usual, possessing in addition to the normal lift and cut controls, adjustment of the turnover frequencies of the two sections.



Circuit diagram of the tone control module.