

are more definitely spread out, as the sound-stage is widened. It also makes my moving magnet cartridge sound rather more like my more expensive moving-coil unit.

### Impulse-noise blanker module

Among my l.p.s there are some, dating from the early to mid-1950s, which have acquired surface scratches which generate sufficiently loud 'crashes' from the speakers that the known advent of certain

damaged areas on the disc discourages the playing of otherwise artistically satisfying performances.

A commercial unit for 'eliminating' record scratch noises made a brief appearance some years ago, and stimulated my own interest in such a device. Having played with these circuits, my appreciation of the possibilities is now more firmly based, and is the reason for the inverted commas above (and perhaps the lack of commercial success of the equipment mar-

keted). There are many problems in this field, but perhaps the chief one is that there is no such thing as a standard scratch width. One consequence of this is that there is no universally appropriate length of time during which the signal feed through the amplifier should be suppressed.

Measurements on a number of scratched records (including one which was deliberately vandalized 'in the interests of science') showed noise pulse lengths ranging from about 0.3-7 ms. Most of the minor, relatively low-amplitude ticks due to dust in the groove, or small groove wall blemishes — many of which were due to the impact of the stylus on a dust particle on a previous playing — lie within the range 0.3-1 ms duration. However, these are a lesser problem than those groove injuries which cause the loud and disconcerting bangs and crashes. These lie in the range 2-7 ms, or sometimes even longer. If the system adopted is chosen to interrupt the signal path for the duration of the noise pulse, the question then arises as to what should be substituted for the signal during this period. If the length of noise blanking was, for example, 0.3 ms, then it would be feasible to hold the signal waveform at the point prior to the noise pulse to fill in the gap, but if the blanking duration were extended to 8 ms in order to cope with the worst-case noise pulse, which would by definition be the one that the user would most wish to avoid, then it would be very improbable that the signal waveform level would still be at the same point 8 ms later, which could give a larger discontinuity on restoration of signal than if a zero level had been substituted.

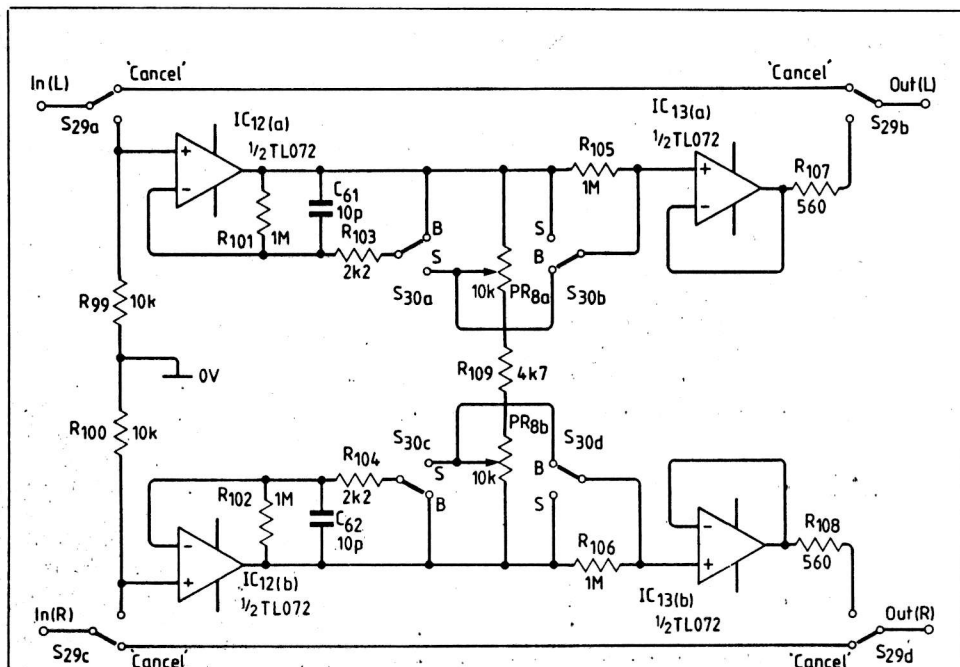


Fig. 21. Circuits in Fig. 20 combined to form complete 'image-width' module.

Fig. 22. 'Noise-blanker' circuit.

