Pre-amplifier using op-amps

In your July issue, I read with a great interest the description, by Mr Daniel Meyer, of a low-distortion pre-amplifier using operational amplifiers. I agree with the advantages of such a circuit regarding of low distortion and the fact that input and output are at the potential of the Earth. But one of the disadvantages of using a great amount of feedback is to provide phase shifts which may become important. In the case of the R.I.A.A. network, for instance, this phase shift is strongly dependent on the frequency and the result is that the amplifier oscillates during about one second when switched on. This seems to be due to the charge of C_f (33μ F). The frequency of this oscillation is slipping (2 to 10 kHz, approximately). This does not occur when using a linear feedback network like the microphone one. This causes a brief but strong and very disagreeable kind of whistle.

I did not succeed by any means to correct it. I must confess that I used BC409 and BC309 transistors instead of the ones recommended by Mr Meyer which are quite impossible to find in France. But BC409 and BC309 are of low-noise type and seem perfectly good for this circuit. Can you help me to correct this trouble?

The 0.1μF capacitor in the input causes an attenuation at low frequencies (its impedance is about 30kΩ at 50 Hz!) and should be replaced by a 1μ F. This explains the value of 750kΩ used in the R.I.A.A. network which will normally cause an excessive bass boost. With 1μF in the input, this value may be set at 510kΩ and give a result very close of the R.I.A.A. curve.

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The author replies:

The transient, or oscillation, in the pre-amp circuit that occurs upon start up can be eliminated, or at least greatly reduced, by adding a 47kΩ resistor in parallel with C_f. As you note, this is noticed primarily in the "Phono" compensation network. The reason being that the capacitor is charging through a much larger resistor with this network (750kΩ in this case) and more time is required for it to reach its normal operating point. The added resistor may cause an increase in the offset of the circuits output from ground, but our experience indicates that it will never be enough to cause any changes in the circuit's characteristics.

As noted in the article, I favour the complete elimination of the input