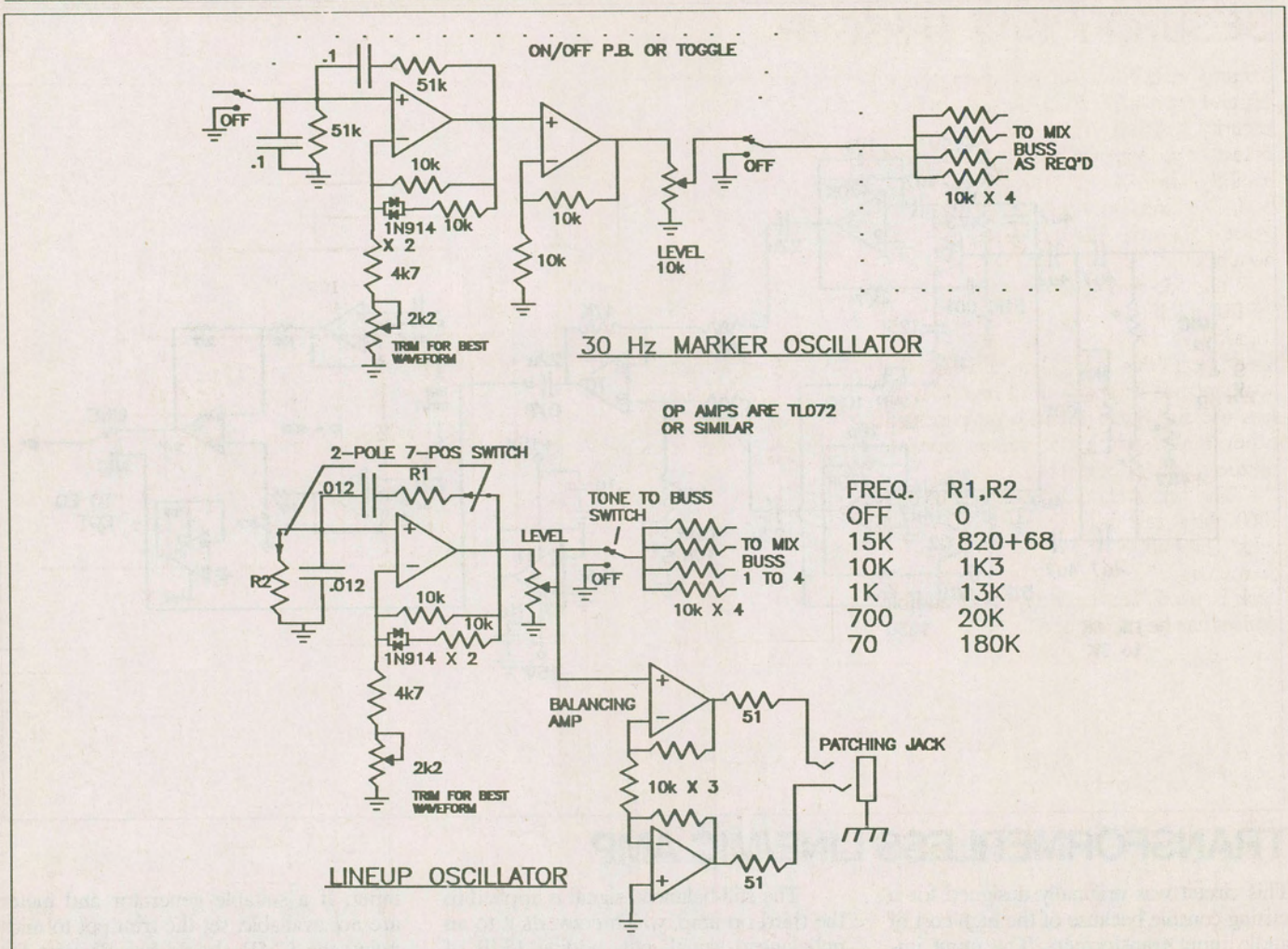


Circuit Special



MARKER/LINEUP OSCILLATOR

Both the above circuits are indispensable in the recording console. The **Marker Oscillator** at the top produces a 30Hz sine wave; this tone is injected into the console's outputs (or its talkback-to-tape circuit) when the operator is slating takes with the talkback microphone ("Beethoven's Ninth, Take 37"). When the tape is moved in fast-forward or reverse, the 30Hz tone (which is normally barely audible) appears as a much higher pitched sound, allowing the operator to tell instantly when a take has gone past.

The left-hand op amp is configured as a standard Wein bridge oscillator; the operating frequency is set by the two 51k resistors and the two 0.1u capacitors. Amplitude stabilization is set by the two 1N914 diodes in inverse parallel; when the amplitude begins to rise, the diodes will conduct and stabilize the gain.

The following op amp has 6dB of gain, producing an adequate output signal. The output level pot, which can be any

value from 1k to 25k, applies the signal to the output mixing busses; four outputs are shown, though one to sixteen could be used. The 10k mixing resistors are a typical value which should work with almost any type of mix buss; they can be changed to suit if necessary.

To set the waveform, connect a scope to the output and adjust the trim pot until minimum distortion is seen. If you don't have a scope, listen to the output at a fairly loud level and adjust for minimum audible distortion (this isn't a low-distortion oscillator by any means, but it's simple).

The op amps can be any general-purpose duals or singles; the circuit shown uses TL072 types.

The Lineup Oscillator — proper operation of the tape machine, such as best signal to noise and flat response, often depends on how well you adjust the fine-tuning controls for various tapes (once the playback response is set to a professional-quality test tape).

This oscillator allows proper alignment of recording response, and also is invaluable for troubleshooting. It produces five of the more popular sine waves for testing, with Off positions at both ends. More can be added; see below.

The first op amp is a simple Wein bridge as described above. Five pairs of resistors are switched in and out of the circuit to change frequencies. To add more, note that the reactance of the capacitor is equal to the resistor at the frequency of interest: $R = 1/(6.28 \times C \times f)$, where C is in microfarads and f is in Hertz.

The level pot, which can be any value from 1k to 25k, feeds the signal to the mix busses by way of 10k mixing resistors; change these as necessary to suit the console.

If your console uses balanced patching, you can add the balanced output as shown. It converts the single-ended signal to a balanced tip-ring-sleeve output.