

# Signal Clamping Of PI Input

Waveforms tested with an Express preamp & PI at lower power supply voltages to suit a 6P1P push-pull output stage. 6N2P valves were used in place of 12AX7, which give an equivalent response. This 10W 6N2P/6P1P amp version of an Express is set up to exhibit similar screen power supply node sag with signal, has split plate PI resistors to feed the right signal levels into the power grids, and has excellent clean to mean response similar to a full size Express. Measured with a Tektronix THS720P oscilloscope and captured with the Wintek32 program.

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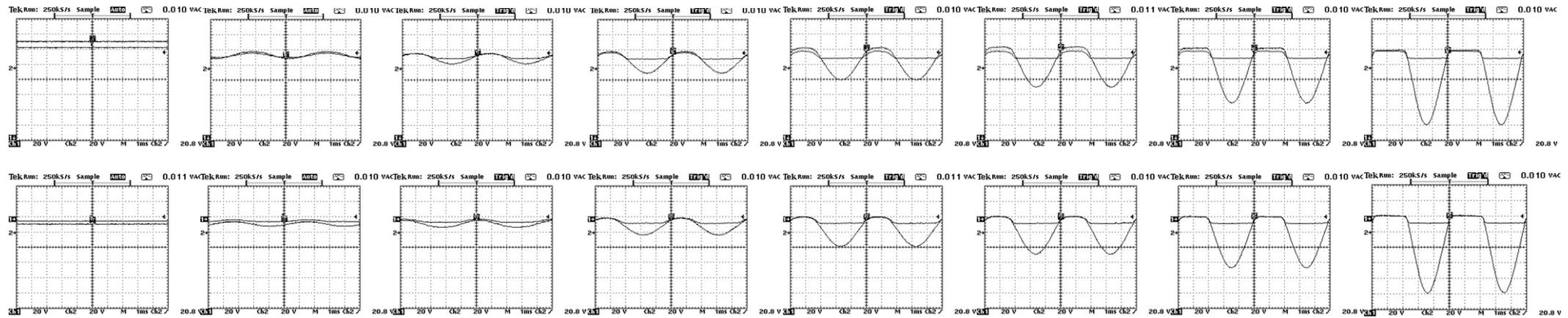
## 3<sup>rd</sup> Stage Anode & PI Common Cathode Signals

Both CRO channels set to DC to show the relative movement between the two signals. The DC offset shown was arbitrarily set to display this relative movement.

The upper row of waveform captures shows the 3<sup>rd</sup> stage anode and PI common cathode signals.

Both drop in their average DC component due to sag of the screen power supply node when the power screens start drawing current with output clipping.

Relative to the PI common cathode, the 3<sup>rd</sup> stage anode signal increases in amplitude until it eventually reaches cutoff, and then tracks the sag in the 3<sup>rd</sup> stage power supply voltage.



## PI Input Grid & PI Common Cathode Signals

Both CRO channels set to DC to show the relative movement between the two signals. The DC offset shown was arbitrarily set to display this relative movement.

The lower row of waveform captures shows the PI input grid and PI common cathode signals. CRO probe loading on the PI grid reduces the signal and DC magnitude but the signal characteristic remains true.

Relative to the PI common cathode, the PI input grid signal increases in amplitude but becomes clamped by PI grid conduction. From then on the signal shifts downward as it gets bigger keeping the top peak clamped at the same DC voltage.

The top peak does not keep moving upward like it does on the 3<sup>rd</sup> stage plate side of the coupling cap.