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TIME BASE CALIBRATION

AFTER THE KIT REPORT on the Heath IO-4550 oscilloscope (Issue #4, 1976, p.38) was written, I devised a more accurate method of calibrating the time base without using a precise frequency generator. Use the power line frequency provided by your friendly electric company.

To prevent possible shock a low voltage, isolated source such as a transformer secondary should be used. A square wave makes it easier to identify the beginning and end of a cycle. Luckily, the scope provides both.

Set the trigger mode to LINE and connect the vertical input to the trigger comparator output. (In the IO-4550 use the output side of R209 or R211 on the horizontal circuit board.) Set the sweep speed to 5 msec./cm. and adjust the calibration control so three cycles span exactly 10 cm. (for 60Hz line frequency).

To adjust the x5 multiplier, connect the vertical input to a 1kHz source and set the sweep speed to 1 msec./cm. Adjust the input frequency so 10 cycles span 10 cm. (Alternatively, adjust the variable sweep speed.) Turn on the x5 multiplier and calibrate it so that two cycles equal 10 cm.

This calibration technique can doubtless be adapted to scopes other than the IO-4550.
FRED M. GLOECKLER, Jr.
Contributing Editor

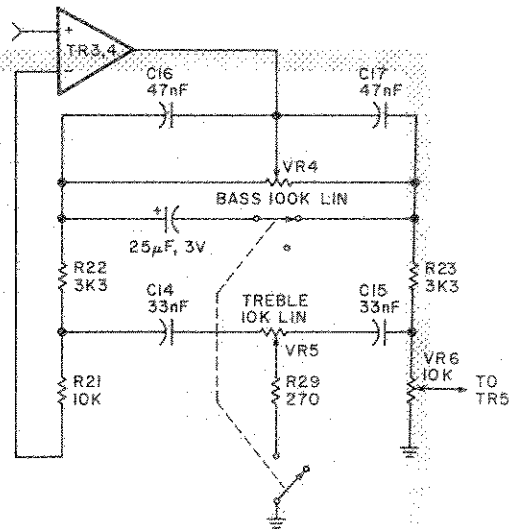
WE REPRINT here David Carlstrom's offering on the Williamson preamp tone control bypass--this time with the necessary diagram and our apologies.--Ed.

FLATTENED WILLIAMSON

AUDIOPHILES WILL PROBABLY argue beyond the grave about how nearly flat the response of a tone control stage ought to be in its flat position. Reg Williamson's Twin Twenty Mark II preamp (Issue #2, 1971 series, p.11) is within one dB of being flat from 20Hz to 20kHz with the tone control pots set using test equipment.

For those purists who need something nearer perfection or don't have (or wish to use) a 'scope to adjust their knobs, it is easy to add a switch to disable the controls.

The simplified schematic shows the changes. All you'll need is a two pole, double throw switch and a 25µF @ 3V (or higher) capacitor per channel. The switch disables the bass control by putting an AC short across it and disables the treble



control by disconnecting the wiper.

The switch is silent when operated and makes no change in any characteristic of the preamp except to make the response flat. A nice, low-priced device for the job is the 6PDT push-push type available for 69¢ from James Electronics.

If you have some other preamp and would like to add this switch, check your schematic carefully: it is quite likely the same switch connections will work.

DAVID CARLSTROM
Huntington Woods, MI 48070

DAVIS: HEIL TYPE DRIVER

Continued from page 20

Center the bottom and apply glue, pulling on the plastic with tweezers until the glue sets, so the diaphragm will be somewhat taut and will not rest on the pole pieces.

Secure the two leads from the diaphragm to the type of fasteners used to connect the foil on burglar alarm systems, or else sandwich the leads between copper-coated circuit board material and clamp tightly. Secure the clamps to the magnet structure with glue. The speaker will "rattle" and buzz if the connection to the leads is not perfect. Aluminum is a very reactive metal and will corrode quickly if there is any arcing.

Wire up your new unit and compare it to what you had before. You will quickly hear it was worth the time and frazzled nerves. Be careful to limit the amount of current flowing through the mini-Heil, as heat can build up in the closely spaced folds and melt the plastic. The other Heils are much sturdier and can take quite a bit of power. In the event of diaphragm failure the five-minute epoxy holding it can always be scraped off the iron pole pieces with a razor blade for replacement.

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