About cables and the influence they have on outputs of fuzzes and guitar pick ups
by Björn Juhl

Today there's a plethora of cables, but back in the -70's I'd go down to a store in Old Town and get Shaller cables and maybe as a consequence the first effect I got was treble booster and it was an EH Screaming Bird. The particular unit I had had a series resistor of 100K, like this there was a 3n3 (0,0033uF) capacitor from collector and that went through 100K to output. I had the SB built into a guitar and it was invaluable at the time with the dull cables and somewhat tired amps that were vogue. Now the Shaller cable I later found out would likely be similar to cables used by the Beatles in studio. Of course the spiral cables where even worse and there was a local myth that the tech of Hepstars as well as local TV and radio repair guy in my hometown at night rode around on his moped collecting all spiral cables and making them straight through the local school's cable straightener…or maybe it was so that the spiral cables simply broke down to eventually be thrown away that at the point where you'd had to reattach the plug at the coil of the cable.

Now a reflection here is that the Shaller cables presumably had a capacitance of maybe one to a couple of nano Farads and then of course with 100K series resistance the resulting low pass corner frequency would be around 2KHz at best and the net effect then of using the EH Screaming Bird as per above would be a midhump in the upper mid/lower treble. Let's say at the time Phillips offered a circuit to give presence effect to electric guitar and that was made with a Twin T-filter nested feedback at center frequency 2KHz and of course in recordings if you wish to highlight electric guitar without increasing volume you can do so by slightly boosting from 2KHz then for distorted guitar choose from 4KHz,6KHz,8KHz.

Later I changed guitar and used RG58 antenna cable for cables and those absolutely had low capacitance at approximately 300pF at 6 Meters compared to Shaller at 3000pF at 6 Meters.

Today you can choose form low capacitance to high capacitance and also tune response of guitar pick ups this way: consider that the output of an electric guitar is inductive and measures a couple of hundred K at resonance of typically 3-9KHz. Obviously the bigger capacitance will affect what happens when you turn down your volume control since then in addition to inductive output you also get a resistive output and at say '6' on a 500K Log pot the resulting impedance just resistive is about 125K Ohms at frequency 0 and higher at resonance.

There are methods described online where one would have a capacitor and resistor in parallel connected from terminal 3 to terminal 2 on a volume pot on a guitar: of course then the resistor will change the taper of the pot. However if we consider the output behavior of above one could balance out losses by connecting a capacitor in series with a resistor while to balance precisely either the vital variables are known or balance can be made manually until losses are nulled- it follows that since it can be desirable to highlight treble with electric guitar balancing for exact nulling may not coincide with the most desired results.

Noise resulting from rattling or bending cables is generally undesirable. In use with high gain and loud levels such cables are to be avoided while at low levels and uncritical applications such cables can still be used

Some time ago I got a yellow spiral cable that was new in its wrapping but with some years in storage and it was a typical kind as used in the 70's and it measured a little over 1500pF at 2

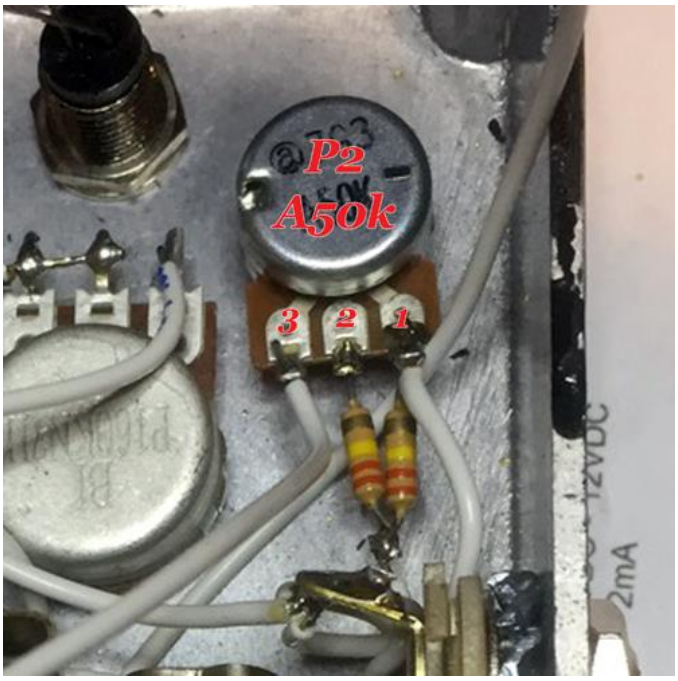
meter cable while a modern easy to get low price cable measured 750pF at 6 meters.

At the shop I use this modern kind and keeping the know capacitance in mind I can foresee losses and count on them and the effects of loading.

Now consider that if the output impedance (that is defined as impedance looking back into circuit) is about 110K and that feeding a cable with a capacitance of 750pF the resulting corner frequency is about 1,9KHz.

Consider now an old fuzz face and that it produces overtones high up even above audio range and 110K is placed in series with output and cable at output has 750pF the net effect is that of a peak at the low treble high midrange and this is how you can get a midrangy response from a Fuzz Face albeit it does not have any filters.

For the kit the volume control is placed right after fuzz output but at the viper of volume control there is a voltage divider made by two 220K resistors and that result in 110K output impedance regardless of setting of volume control and thus the fuzz is filtered.



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