Stereo Filter LSF 1 calibration

A:) the VCO calibration.
The resonance in Phoenix is on full blast. When you hear a low whistle as the VCA offset potentiometer must be adjusted until the background noise is gone.

B:) Filter calibration
Normal LR calibration with the potentiometers lin
1 :) all oscillators in Phoenix must be switched off
2 :) Cutoff in Phoenix on 32, response to 64, LFO and ENV to 0.
** It must now be clear to hear the resonance signal. Channel 1 must of course be connected to a mixer or with the soundcard of the PC
3 :) Now connect the TubeOhm Filtercalibrator

The filter calibrator to automatic, now 3 octaves by scanned.
4 :) The potentiometer R7 (lin1) now as long as adjust to a frequency doubling per octave as is.

Then remove the first channel from the mixer / sound card and connect the 2nd channel.
Cutoff and resonance should not be changed.
5 :) Now with the potentiometer R6 (lin2) and the second channel to adjust so that we have a doubling of frequency per octave.

Now both channels aligned and adjusted with CUT-BAL to zero phasing.
Although we have adjusted both channels on frequency per octave, but not yet on a common base frequency.
For example, Channel 1 have 100,200,400 Hz, channel 2 but 120.240 and 480Hz.
With the potentiometer Cut-balance the two filters are now so adjusted that both resonance frequencies have the same frequency.

The easiest way is to adjust the potentiometer as long as (and thereby a key on the keyboard Press and hold) until both filters have the same resonant frequency. This can be heard through the phasing.
If the filters are detuned to beats arise in the signal. With cut-Bal now the frequencies are set so that the detune is minimal.
Caution, slight detune are normal because the filter is not compensated for temperature.

Now comes the balance on the CV1

Cutoff and resonance should not be changed (33,64)
First, we must prevent the run along the cutoff / resonance frequency.

For this we go into the modulation matrix and make them follow a.

1 :) Modulation Matrix 1, source = note, target cutoff, Amount is -64 (minus 64)
*** No longer follows the cutoff frequency of the played note. About all scores almost the same frequency output.

2:) Modulation Matrix 2, Source = OFS, target = CV1, Amount = 10
The offset must be 10 so that the correct voltage for CV Phoenix are starting out.

3 :) Modulation Matrix = 3, source = note, target = CV1, Amount = 64
*** Only now we can compare R1-CV1 frequency per octave with the potentiometer. Also, since the resonance frequency has doubled per octave.
Now we calibrate R1-CV1 as long as is set to a frequency doubling per octave.

Now the 2nd channel is tuned. We now change CV1 by CV 2

1 :) Modulation Matrix 1, source = note, target cutoff, Amount is -64 (minus 64)
*** No longer follows the cutoff frequency of the played note. About all scores almost the same frequency output.
2:) Modulation Matrix 2, Source = OFS, target = CV2, Amount = 10
The offset must be 10 so that the correct voltage for CV Phoenix are starting out.
3 :) Modulation Matrix = 3, source = note, target = CV2, Amount = 64 will now be set over R2-CV2 the 2nd channel, entering a doubling of frequency per octave.
Congratulations, now the filter is tuned.

Why so? Functionality.

Phoenix / Shruthi are once the cutoff control voltage in connection with frequency per octave directly to both filters from. Also, the envelope and LFO are modulated onto the control signal.
This happens automatically in the Filter menu of Phoenix / Shruthi.
Thus, once both filters are identical driven.

As the filters are now driven separately ??
This happens in the modulation matrix on the additional outputs CV 1 and CV 2.

Example 1, VCO ADSR Filter 1, VCO ADSR Filter. 2
On the Filter menu of Phoenix / Shruthi once the ADSR Envelope is made to 0.
Then we go into the modulation matrix and make the following adjustments.

Modulation Matrix 1, source = ADSR 1, target is CV1, Amount is 10..64.
Now we have ADSR 1 routed to the first filter.
Now we go to the modulation matrix 2, source ADSR 2, target = CV2, Amount = 10..64.
Now we have 2 ADSR routed to filter. 2
Depending on the adjusting and both ADSR we obtained now Different filter characteristics for the first and the second filter.

Example 2, the LFO 1 is intended to drive the filter 1 and 2 but filter 2 rotated by 180 degrees phase. The sound is from the left to the right walk.

Modulation Matrix 1, source = offset, target = CV1, Amount = 30
Modulation Matrix 2, Source = LFO1, target = CV1, Amount = 30
Modulation Matrix 3, source = offset, target = CV2, Amount = 30
Modulation Matrix 4, source = LFO 1, target = CV2, Amount = -30 (minus 30)

This is more difficult, why the offset ???

Now that can spend CV outputs only positive values. The LFO is but of positive and negative values. This means that the negative values can modulate the filter is shifted all the signal into positive territory over the offset. I have, for example, the LFO signal with a value range of -32 +32 after so only the values 0 ... + 32, which is a half-wave would modulate the filter .By offset the entire LFO signal is now shifted into the positive range, the I now have a value range of 0 ... 64th And therefore I can filter modulate with a full sinusoidal oscillation.
If the offset is too small, the LFO signal is simply clipped in the lower region - which can also be quite sexy.

Let's go again to the Mod Matrix 4, there happens the phase rotation of 180 degrees by the value -30 (minus 30)
I give a negative values, so the signal rotates 180 degrees. Thus we get a traveling sound.

In addition, CV1 and CV 2 can be also modulated by other parameters as yet 6 Modulation slots are available.

Important notes.

On the MOD matrix you had set FIRST the offset than the modulator.

Means
MOD 1, Ofsett , CV 1 , Amount
Than
MOD 2 , Source, Destination .
**offset only if you want to use the LFO or Values that have a negative value also .
**for the ADSR you don't need the offset.

WHY first OFFSET ?? Phoenix/SHRUTHI add the first MOD with the NEXT. IF you first set the CV modulation and than the Offset – this doesn't works .

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