Philco Tube Amp EQ + Auto-Wah FX

General Information

This library includes programs sampled from an old Philco tube amp that was pulled out of a phonograph/radio console. The amp has input jacks for radio, phono, and tape, so it was a single component of what would have been a very nice entertainment center back in the 1950s. It has basic EQ ability, and a great sound!

Three vectors (the .n2v sample sets that are the source of any Nebula effect) capture the sound of this amp, including its bass and treble controls which are separately adjustable. It was sampled in 3 different setups/hardware chains to get different results. All 3 versions were sampled with dynamics, which is very rare for equalizer type programs in the Nebula world. Most (in fact almost all) are static impulses with no dynamic behavior captured, at least not in the actual EQ programs themselves (usually an EQ library will provide a program captured with dynamics but no EQing, for you to use together with the EQ program). This takes a lot more work to do, and results in programs that use more CPU/RAM, have higher sample counts, but gives a more authentic result!

Then there are some 'auto-wah' programs (also sampled with dynamics), which were made by combining LFO/envelope follower modulation of the sampled treble control on the amp (which was also combined with a sampled vst EQ peak band). It's a custom built effect and adds a lot of value to this library if you're into filter modulation type effects.

Installation/Use

Just copy the .n2p files to your Nebula 'Programs' folder, and the .n2v files to the 'Vectors' folder. The amp EQ programs will be found in the 'EQU' category, then the 'PH' and 'PH*' sub-categories, for the 96khz and 44.1khz versions, respectively. The wah programs are in the 'FLT' category, then 'PH' and 'PH*' sub-categories.

Lite, Standard, SHQ

The 'lite' versions are best to use for auditioning the sound in a mix project, so you can set the controls and hear the results in your mix while you work. You should be able to have several of them running at once. They have less harmonics and shorter sample lengths (which means slightly less accurate bass reproduction). They use less CPU/RAM and load quicker. You should at least switch to the standard version of the same program before rendering.

The standard programs are the next step up in quality. They have more harmonics, and full sample lengths. Because of that, these programs usually have many more samples than the lite versions, and use a fair amount more CPU, but they also sound more authentic.

SHQ programs add more harmonics (for a full 10k), and the first kernel is using TIMED mode instead of FREQD. You don't need to know what that means, just that it might sound a <u>little bit</u> better. You may find that these changes gives a slightly better sound, but then you may not notice the difference. You WILL notice the greatly increased CPU use. These should really only be used for rendering. You may or may not find that they are worth the longer wait you'll have during renders. You may not even be able to get them to work. That's ok though because the standard versions are to be considered the main product, and they sound great. SHQ programs are merely bonuses, which you may or may not choose to bother with.

Philco Amp EQ programs

The 6-tube amp was sampled in 3 different hardware chains for 3 different 'flavors'- 1, 2, and 3. They can be used as simple equalizers that also provide a lot of color, with each having different EQ behaviors and tone/character.

EQ 1 was the most straight-forward sampled setup. It only involved D/A, the amp, then A/D. EQ 2 used a Tascam 122 mk3 (which has very clean amps) in the setup to drive the Philco. It was done with a pre-emphasis boost for the bass going into the amp to try to counteract some of the filtering that happens around and below 100hz. This also means that bass input into this program will produce stronger harmonics. EQ 3 is the most colored. An FM transmitter sent the signal to an FM tube tuner, which was connected to the Philco. This is similar to how the amp could have been used in the console. Between all 3 versions slightly different tube sets were used in the Philco amp to help further give a little more variety to the final tones.

Controls:
<u>Bass</u>- Almost like a cross between a low-shelf and a high pass filter. As the bass control is lowered in all 3 versions it has the effect of raising a smooth high-pass filter up to around 300-500hz. EQ 1 can actually give a little bass boost around 180hz with this control.
<u>Treble</u>- Acts as a high-shelf. Can smoothly roll off highs to create a muffled sound, or boost highs for a big gain, giving a very bright, or even crispy effect at max. The treble control has a direct effect on the bass response if set to extreme positions. At full treble gain, the bass end drops a few db, providing a bit of compensation/balance. At full treble cut, bass end goes up a bit.
<u>Bass/Treble</u>- All 3 versions load with these controls in position to give the most flat possible frequency response with that version. You can get simple 'tilt EQ' style effects with some combinations of the two controls.
**<u>Trim</u>-** Boost input while keeping output level constant. This is an important

control here. Sampling these with dynamics took quite a while, so don't let that effort go to waste! Use trim to position your input right in the sweet spot- or drive the input a little hotter for a little more harmonic distortion!
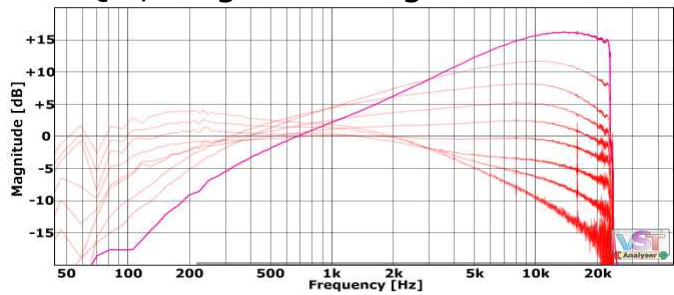
Dist- The typical Nebula 'drive' control, renamed to reflect better what it really is- a mixer control for the generated harmonics. Adjusting it will break the natural balance between the main signal and the distortion, but it can be useful.
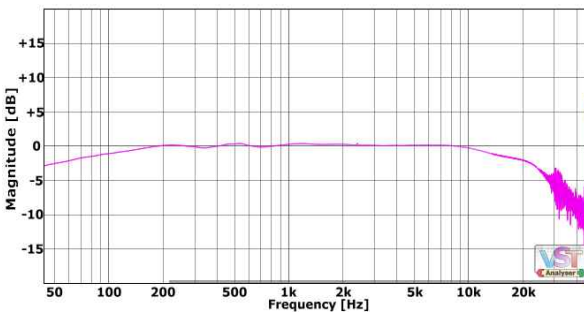
Frequency response graphs:
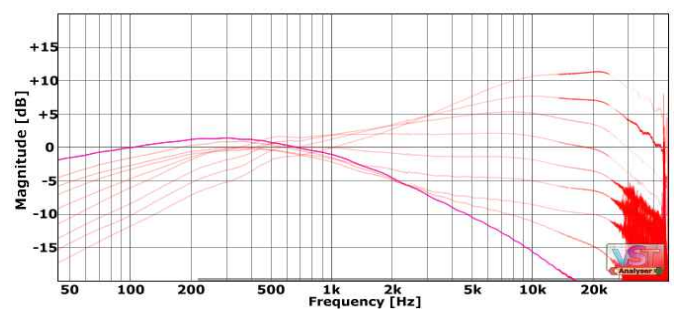
EQ 1, default settings:
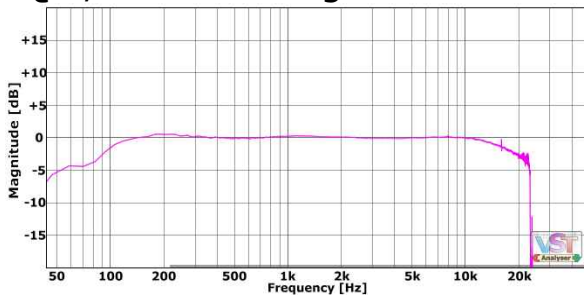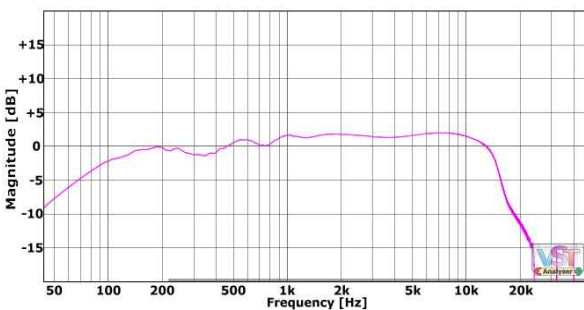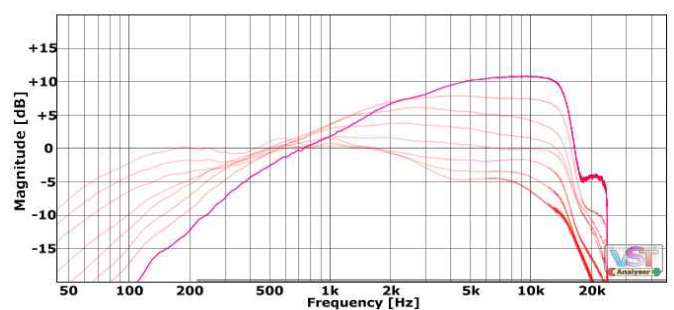
EQ 1, range of settings:

EQ 2, default settings:

EQ 2, range of settings:

EQ 3, default settings:

EQ 3, range of settings:

Wah/Filter FX

An auto-wah effect that was custom built from a peak filter taken from a vst EQ, and from the treble knob on the Philco amp. This effect only exists in Nebula. It uses an envelope follower triggered by the input to modulate the filtering. It comes with both standard and inverted versions, which have the peak+shelf moving in opposite directions when triggered. The peak filter slides between 600hz and 10khz. The amp was driven so that the peak would get squashed and generate more harmonics when it is in the lower range. As it goes up it was squashed/distorted less.

There are 3 types of programs using these samples in different ways, to make 3 different types of effects. They are explained separately, below.

Philco Wah:

These are the programs where the filter is modulated by Nebula's internal envelope follower. I've programmed them to actually produce 3 different versions, A, B, and C, which all have different things going on with the envelope follower(s), to get different types of behaviors/results. Besides that, there are also 2 different directions the filter can go in- forward, and reverse (or- up and down in frequency). There are forward and reverse versions for all of the A, B, and C types. The program names are pretty clearly labeled so you should be able to figure out what you're loading by looking at them. Basically, just try them all!

The external sidechain programs allow you to have a 2nd stereo input going into Nebula to trigger the envelope motion processing the 1st stereo input, so they require you to set the routing up in your DAW to use them properly. The external sidechain programs only include one going forward and another going in reverse, because the way the A, B, and C types are designed doesn't really apply to how the external sidechain works.

Controls:

BaseF- Short for Base Frequency. This is the starting frequency from which the envelope motion will begin. The direction it goes from there depends on whether you picked a 'forward' or 'reverse' program.

EVF Width- This control determines how sensitive to the input level the effect will be. If you turn it up higher, the filter moves farther when an input triggers it. Beyond a certain point the control may not change the results anymore, because the filter is already reaching its maximum distance. You want to focus on fine tuning this to just the right amount.

Attack/Release- These determine the speed that the peak/shelf filters slide around after input audio triggers the envelope follower.

Shelf- This control determines how much of the Philco amp's treble control will be factored into the effect. At 100 it's fully 'in', and at 0 it's fully off. The treble control on the amp acts basically as a high shelf, so when you add that in here, the shelf is being modulated along with the sweeping filter. It also increases the level going out a bit so you should probably raise this slowly and compensate by lowering the output.

Trim- The same trim found in other Nebula programs. Here it has a bit of an extra effect though. When you increase trim, you are going to cause the peak filter to travel further when audio triggers it (because you are raising your input level). If you decrease it, the filter travels less. At the same time, increasing trim increases harmonic levels.

Hipass- This isn't a high-pass filter on the audio you're running through the effect, but on an internal sidechain. This can be useful if you are processing a complex input and don't want the bass elements to control the filter. It's still available with the external side-chain versions, and there it actually filters the external side-chain.

**Smooth-** It can smooth out the effect, making it a little less sharp.

These graphs show what actually happens. In the forward programs the peak filter moves upwards in frequency as the input level increases. It starts wherever you set BaseF (in these examples it's at lowest position), and can go up to around 10khz. Shelf moves up in gain.

Red arrows show filter motion, black arrows are start/end points.
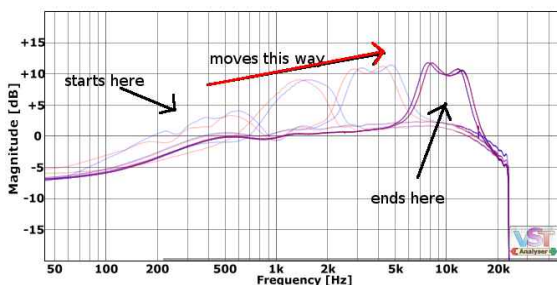
Shelf control set to 0:   Shelf set to 100:
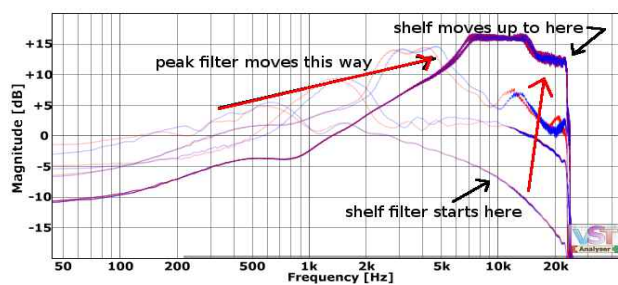
The reverse programs move in the opposite direction. Peak filter moves downward from the BaseF setting, and can go down to around 300hz. Shelf filter drops in gain.

These graphs describe filter motion of wah B.

Shelf control set to 0:   Shelf set to 100:

As you can see, the shelf filter only factors in when the shelf control is set above 0. At 0, you only get the peak filter. At 100, the shelf filtering is drastic.

Philco LFO:

These programs modulate the peak filter and shelf with Nebula's internal LFOs instead of the envelope follower. There are different programs to give you the different LFO shapes, since Nebula unfortunately doesn't have a way to select them from within a single program. The control scheme is very similar to that found in the envelope follower programs.

Controls:
BaseF- Short for Base Frequency. This is the lowest frequency the LFO will be able to move the filter to.
LFO Width- This control determines how high up in frequency the LFO will be able to move the filter to. It's set up so that it's always a % of the total distance left between the base frequency and the maximum possible frequency the filter can travel to (10khz). In other words, at 100% it will always be able to go up to 10khz, and at 50% it be able to go up to half way between the base frequency setting, and 10khz.
LFO Rate- Determines the speed of the LFO.
Shelf- This control (and the remaining ones not listed here) does the same thing as with the envelope follower programs, so check out its description for those, above.

Philco Manual: These programs are for manual adjusting of the filter/shelf, for automation, or for setting up so that your DAW modulates the filter with its own LFOs or other types of controllers. Check the info about this down in the Tips

section below, before using these programs. Controls for these programs are pretty simple, you just have a single 'freq' control to adjust the filter, then the other controls have already been explained for the other programs above.

General Usage Tips/Ideas:

- To get smooth modulation with the manual programs you would have to lower the buffer settings in your nebula setup xml, but if you were going to do that I would suggest making a copy of the .dll and .xml with a new filename, just for this set, and altering that xml, instead altering your main Nebula's settings. Then you'd need to make sure to load that Nebula, for using the manual wah program. Unfortunately you can't make multiple Nebulas with different settings like this, for Nebula on Mac. Basically without the faster buffer you will get choppy automations with Nebula so if being able to do this is important to you, that's what you need to do. The exact way to do it isn't going to be explained here, but if you really want to know you can check out the manual (available to look at on my site) for my 'bawling brat wah' library which does explain it in detail. Be aware that doing this also increases CPU use which is why you should only make the xml change if you do it with a new nebula .dll, and only use that to open programs you intend to automate. You don't need to do it for the LFO and envelope follower programs (unless you plan on automating/modulating parameters with those too).
- For the amp/EQ: Remember to always adjust trim to find the best sounding spot! The dynamics are a very important part of these effects, and trim allows you to quickly place your input at various levels and hear the result. Use it!
- For the envelope follower auto-wah programs, the main thing to know about setting up the wahs to get some interesting responses from the filter, is that you usually need to 'fine tune' the base freq, and evf width controls, to find the best sounding range. For these programs the evf width control is really sensitive, so you probably won't need it up very high unless your input is very quiet.

Thanks:

Giancarlo, Enrique, everyone at Acustica!
www.acustica-audio.com

Zabukowski- maker of Nebulaman. I use this program a little, as a tool, when I'm developing stuff. Its function is to apply one or more Nebula programs to multiple audio files. It's a batch processor for Nebula. It's MUCH faster than a batch script with my favorite .wav editor! You can use it to process each track in a mix with a favorite Nebula effect or chain, to add a little analog flavor to each element before mixing. Check it out!
http://www.zabukowski.com/software/

Thanks to my customers/supporters, and everyone who has helped with and participated in the development of the Nebula technology, including the people commenting/suggesting/etc in the forums, and all 3rd party devs.