ChowTape User Manual

ChowTape is an analog tape machine physical model, originally based on the Sony TC-260. The current version can be used to emulate a wide variety of reel-to-reel tape machines. As well as a tool for mixing engineers and producers, ChowTape is a research project on developing physics-based models of analog tape emulation[1]. The plugin is currently available as VST/VST3/AU/LV2 for Windows, Linux, and Mac.

Installation

To install ChowTape for Mac or Windows, download the latest release, unzip the downloaded file, and copy the plugin files to your plugin folder. Note that Macintosh users may need to allow applications from unidentified developers. Linux users may download builds from the Open Build Service, or compile from source.

Controls

ChowTape contains a wide range of controls allowing the user to design the the physical characteristics of the tape machine and magnetic tape being emulated. Several of the controls even allow the user to achieve more "extreme" results than would be possible with a physical tape machine.

[1]The plugin is based off a 2019 DAFx paper "Real-time Physical Modelling for Analog Tape Machines".

Figure 1: *A Sony TC 260 reel-to-reel tape machine*

Main Controls

Input Gain controls the gain level going into the rest of the plugin. Note that abnormally large levels can cause the plugin to become unstable, so it is recommended that your levels are below unity gain going into the plugin, and any extra gain you wish to add should come from the input gain control.

Dry/Wet allows the user to choose how much of the signal they want to the plugin's processing to affect.

Output Gain controls the level coming out of the plugin.

Oversampling controls the amount of oversampling being done internally within the plugin. More oversampling will result in a higher quality sound with fewer aliasing artifacts and better

noise characteristics, but will also use more of your CPU. It is recommended to use as much oversampling as your CPU will allow.

Mix Group: When using ChowTape on multiple channels in your mix, you can synchronize parameters between plugin instances belonging to the same mix group. Essentially, all the plugin instances in the same mix group will share the same parameters.

Hysteresis Controls

@TODO **Hysteresis Mode Drive Saturation Bias**

Tone Controls

The tone section applies a set of pre-/post-emphasis filters to the signal before and after the hysteresis processing is applied. The filters work similar to RIAA filters, in that the pre- and post-filters have exact opposite frequency responses.

The **Bass** and **Treble** knobs control the frequency response of the pre-emphasis filter, and the post-emphasis filter will automatically adjust. The **Frequency** knob controls the transition frequency between the bass and treble sections of the filter.

Playhead Controls

Physical tape machines also have a frequency response that is affected by the amount of space between the playhead and the tape, the width of the playhead gap, and the thickness of tape used. The frequency responses of each of these "loss effects" is also dependent on the tape speed.

Spacing controls the amount of space between the playhead and the tape, measured in centiimeters.

Thickness controls the thickness of the tape, measured in centiimeters.

Gap controls the width of the playhead gap, measured in millimeters.

Speed controls the tape speed as it effects the above loss effects, measured in inches per second (ips). While this control is continuous, standard tape speeds are 7.5, 15, and 30 ips.

Tape Degradation Controls

The degradation parameters control a simulation of old, degraded tape.

Depth and **Amount** control the amount of degradation that is added to the tape, while **Variance** adds a time-varying randomness to the degradatation.

Chew Controls

The chew parameters simulate tape that has been chewed up by a broken tape machine.

Depth controls how deep the tape is chewed;

Frequency controls how much space there is between bits of tape that have been chewed up.

Wow and Flutter Controls

Tape machines also exhibit timing irregularities, often due to small imperfections in the mechanics of the machine causing the tape to subtly speed up and slow down while being played back. The flutter characteristic in this plugin was measured from an original Sony TC-260 tape machine.

Rate controls the rate of flutter, with higher values causing the flutter to occur faster.

Depth controls the depth of the flutter, with 0 meaning that no flutter is occuring, and higher values making the flutter more noticeable.

"**Wow**" is similar to flutter but on a much longer time scale, and contains similar controls.