FOR AUTHORIZED PERSONNEL ONLY

SHADOW HILLS MASTERING COMPRESSOR

— Deployment Operational Procedures —

You have been issued the latest operative technology, the Shadow Hills Mastering Compressor Plugin, developed by the industrial military contractor, Shadow Hills Industries. You are to decelerate audio material, for encrypted transmission, to other operatives deployed in theater. This ground-breaking technology employs the Shadow Hills electroluminescent optical attenuator and discrete voltage controlled amplifier sections, for a two stage deceleration process. Coupled with side chain filtering and a transformer switching matrix, the Shadow Hills Mastering Compressor is the most advanced system for limiting temporal and transient proportions ever issued to operatives.

OVERVIEW

The Shadow Hills Mastering Compressor Plugin is a faithful 1:1 model of the corresponding hardware version, offering all its non-linear behavior and analog sound quality in the digital domain. As is standard in all equipment deployed by Shadow Hills, the Mastering Compressor boasts discrete op-amp technology, custom-designed transformers, and a signal path devoid of any IC's. The unit houses two linkable channels of two separate compressors, which can be operated independently, or in a chain. The first compressor in the circuit is the Optical Section. Utilizing electroluminescent optical attenuator, the circuit provides gain reduction with a very musical two-stage recovery. The second compressor in the circuit is the Discrete Section, which is powered by our discrete voltage-controlled amplifier in a feed-forward mode. By the versatility of its features and the precision of its controls, the Discrete Section capably finishes the job started by the Optical Section. However, the coup de grace lies in the final processing stage of the Shadow Hills Mastering Compressor. Each channel is equipped with three distinctive output transformers, which can be toggled via the Transformer Select Switch, effectively changing the frequency response and distortion characteristics of the entire unit.

HARDWIRE BYPASS

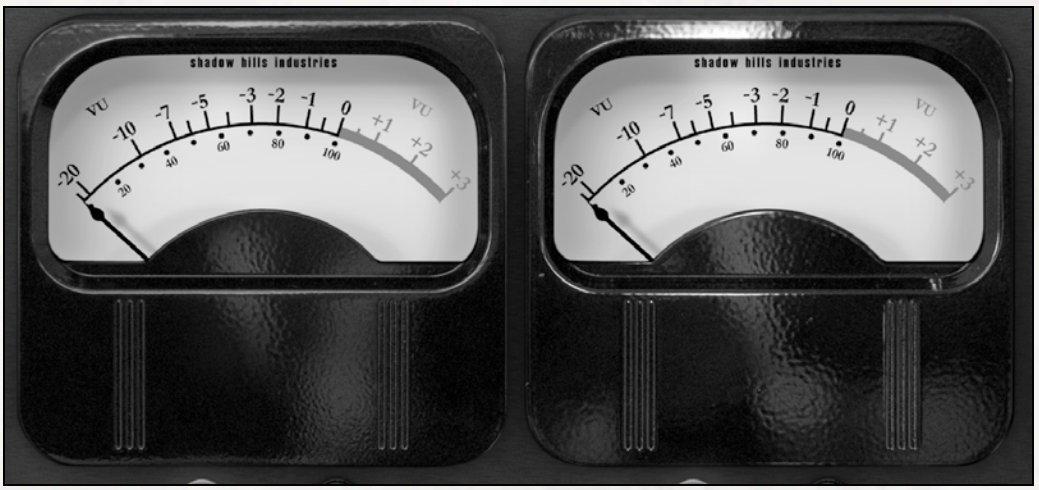
The operation of the Shadow Hills Mastering Compressor is controlled by a series of toggle switches. When flipped to “IN”, the “Hardwire Bypass” switch engages the line amp and output transformer circuitry. When flipped to “OUT”, the inputs are directly connected to the outputs with no processing. The Optical, Discrete, and Side Chain switches function in an identical manner – “IN” engages the corresponding circuit, and “OUT” bypasses it. In order for the compressors to operate, the hardwire bypass must be “IN”, however the hardwire bypass can be engaged with the compressors “OUT”. This allows audio to be colored by our discrete op-amp and custom transformer technology at unity gain, even when no compression is desired, turning the Mastering Compressor into an effective tone shaping tool.

STEREO OPERATION

The Shadow Hills Mastering Compressor can operate in Dual Mono or Stereo. While in Dual Mono, each side has independent operation and all of the controls on both sides are active. In Stereo, the left-hand controls operate all of the Mastering Compressor’s features with the right-hand controls not having any effect and the green light bulbs reflecting the left-hand settings. The only exception is the Meter Select Switch, which remains independent on both channels. This facilitates viewing a combination of gain reduction and output, or the two different stages of compression simultaneously while in Stereo.

METERING AND THE MAGIC EYE

The Shadow Hills Mastering Compressor is equipped with two VU meters for proper visual analysis of audio processing. Each VU meter has the capability of displaying optical gain reduction, discrete gain reduction, and output level, as determined by the position of the "Meter Select" switch. When used on mono signals, the two VU meters can be used to display the gain reduction of both compressors simultaneously. The same goes for linked Stereo mode. It is only in Dual Mono mode that the VU meters show gain reduction independently for both channels. The internal reference level corresponding to 0 VU can be set in the "About" dialog, which is brought up by clicking on any of the two meters.



The green, glowing Magic Eye tube at the bottom of the unit is the final component in the metering system. When both VU Meters are in "Output" mode, the Magic Eye displays a mono signal in its top quadrant.

TRANSFORMER SWITCHING MATRIX

You have remarkable control over the tone and vibe of your music thanks to three switchable output transformers. This matrix switches the selected transformers in and out of the circuit. The various material compositions, size and methods of winding impart different frequency and distortion characteristics as well as the transient limiting caused by the magnetics. The ability to switch between the different transformer selections, equates to being able to switch in the final gain stages from different vintage consoles and providing remarkable flexibility.

Besides its obvious use on the stereo master buss and stereo subgroups, we highly recommend to use the mono version of the Mastering Compressor Plugin on individual tracks, adding coloration to vocals, electric bass or guitar.

TRANSFORMER CHOICES

TOP POSITION – NICKEL
The cleanest position with the least distortion. This position has a subtle accentuation of ultra-high frequencies.

MIDDLE POSITION – IRON
This position has an additional Class-A amplifier section adding even-ordered harmonic distortion, resulting in a very musical upper low frequency boost.

BOTTOM POSITION – STEEL
The most distorted selection with an extremely tight boost in the low frequencies.

Mastering the Transformer Switching Matrix involves a certain learning curve and the sonic differences between the three transformers can be more or less obvious depending on the audio signal running through. In general, differences are most easily heard on "busy" mixes with rich low end and sizzling high frequencies – like a real drum kit with open hi hats or dance mixes. Listening through a big speaker system will also help to get a feel for each transformer as they primarily affect the very low end of the frequency spectrum.

SIDE CHAIN FILTER

The Side Chain Filter switch engages a high-pass filter on the side chains of both the optical and discrete compressors. No signal below 90Hz will affect the amount of compression applied. Thus the Side Chain Filter can help to reduce unwanted "pumping" artifacts, as the compressors will react less to low frequency content such as bass drum hits.

OPTICAL SECTION

The Optical Section is the first gain reduction circuit in the Mastering Compressor. The compressor is characterized by its very musical compression circuit featuring a slow attack and a two-stage release. The initial eighty percent of compression is released very quickly, whilst the remaining twenty percent takes over a second to recover, varying slightly with the amount of attenuation applied. Modeling the Optical Section with its unique electro-luminescent optical attenuator was certainly the biggest challenge during the production of the Mastering Compressor Plugin.

OPTICAL GAIN

This control provides post-compression make-up gain or attenuation using a 24-position rotary switch. The gain control provides greater accuracy around unity gain, which occurs roughly at position “7”, and offers coarser adjustment towards more extreme settings.

OPTICAL THRESHOLD

This control determines at what input level compression begins to occur. The compressor operates with a fixed ratio of 2:1, so compression is achieved by lowering the threshold into a range in which it begins to attenuate. Minimum compression occurs at “1” and maximum compression occurs at “24”.

DISCRETE SECTION

The Discrete Section is the final gain reduction circuit in the Mastering Compressor. It achieves compression by means of our custom, discrete voltage-controlled amplifier. Due to the breadth of the controls, the discrete compressor is extremely versatile and can be configured to attain a variety of sounds.

DISCRETE GAIN
This control provides post-compression make-up gain or attenuation using a 24-position rotary switch. The gain control provides greater accuracy around unity gain, which occurs roughly at position “7”, and offers coarser adjustment towards more extreme settings.

DISCRETE THRESHOLD
This control determines at what input level compression begins to occur. Minimum compression occurs at “1” and maximum compression occurs at “24”.

DISCRETE RATIO
This control determines the amount of compression achieved when the input signal reaches the threshold. A ratio of “1.2” means that for every 1.2 dB of input over the threshold, 1 dB will be outputted. At “2”, 1 dB will be outputted for every 2 dB of input over the threshold, etc. When the dial is set to “Flood”, a ratio of 20:1 occurs.

DISCRETE ATTACK
This control determines how quickly the compressor engages attenuation once the threshold has been reached. Each setting is in milliseconds.

DISCRETE RECOVER
This control determines how quickly the compressor disengages attenuation once the threshold has no longer been reached. Each setting is in seconds. At “Dual” the compressor mimics the two-stage recovery of the optical section.

IN USE

In the vocal chain, on the master fader or the drum buss, the S.H.M.C's two-stage compression and transformer matrix will impart its unique sound quality and character upon your best work to take you to new levels of creativity. Sometimes there is no finer chain for female vocals than the optical cell with medium compression, side chain filter out and nickel transformer selection from the output matrix. The optical will soothe as it adjusts sultry voices as only this combination can deliver. The nickel transformer adds that ultra high frequency 70's hi-fi sheen like a subtle air band.

Mastering is the most subtle use of the Mastering Compressor. Dial in one dB of optical gain reduction and two dB of discrete gain reduction. Select a ratio of 1.2:1, an attack time of thirty milliseconds and a recover time of .1 seconds. Set the side chain filter to "In" and select the transformer matrix to taste.

Another application of the Mastering compressor is to bypass the optical and discrete cell and to pass the signal through the transformer matrix only, for the color it imparts. If you record dry electric bass or guitars through a DI box for re-amping or use of amp simulation software, try the transformer matrix as the last part of your signal chain before going into the amp.

The Mastering Compressor's flexibility and precision of controls will enable you to apply any type of compression you can imagine, on purpose, every time.

EVADING ENEMY CAPTURE

Should the probability of its capture be greater than not, it is the duty of the operative so issued to destroy the Shadow Hills Mastering Compressor to keep the technologies contained therein from falling into the wrong hands and thus forfeiting our advantage to the enemy. The following instructions are offered for the proper destruction and disposal of the Shadow Hills Mastering Compressor, should it become your duty.

First, use a torque screwdriver to remove the nine 6/32 screws from the top cover. Inside, along the bottom of the unit, are the two main audio boards. On each of the audio boards are the Shadow Hills Operational Amplifiers. There are six total. These op-amps attach to the audio boards by six pins. Pull each op-amp out vertically - they are friction-locked, so no desoldering is required. Once removed, break off each of the six pins and crush the op-amp circuit board with the heel of your boot. If time permits, incinerate all pieces after crushing, and then bury or scatter the ashen remains. Remove the eight screws securing each audio board to the chassis with a Philips screwdriver and pull the boards out. Cut all wires several times, in a random fashion, so that the former lengths can not be determined.

The transformers connected to the audio boards and chassis must be shot through their cores, and the windings unraveled, their lamination separated, bent, and scattered some distance away. The audio boards should be crushed under heel, then folded or ripped, and then incinerated according to the previously described method. The 8/32 screws that attach the front panel chassis should be removed. The tube and meter glass should be smashed and the meter pointers broken off. The panel should be bent or folded, and then placed inside the chassis and either buried at least six feet deep, or exploded by a grenade or other means.

Your cooperation is greatly appreciated.