

AMTEC



AMTEC MODEL 099 TUBE LIMITING AMPLIFIER

OPERATION MANUAL

AMTEC MODEL 099

calibration instructions

The 099 has two calibration modes: static and dynamic.

The static mode allows to check symmetry at one of the two bias points. The current of each side of the push-pull tube stage can be monitored on the unit's meter. By pushing the blue push button, the meter is switched to see the current of the other half of the push-pull tube circuit. The tube stage is statically balanced if the meter pointer shows the same or very similar current in both halves. If there is a significant difference then the tubes should have their balance set.

The unbalance can lead to unstable operation and severely restricted low frequency response.

The dynamic mode injects a pulsing 50Hz signal into the control signal. The signal feedthrough should be minimised, otherwise audible "thumps" will appear during compression action in regular operation.

Static balance calibration:

- 1) set the toggle tube selector at position V1. This position isolates the first tube and cuts off other tubes.
- 2) set the rotary selector at STAT-10. This setting applies negative bias to the grids.
- 3) using the blue push button check balance in both halves of the circuit. If there is any unbalance, use trimmer V1 to minimize it.
- 4) set the rotary selector to STAT0 position and set the toggle tube selector to position V1&V2
- 5) check for unbalance by pushing the push button and in case of unbalance turn the V2 trimmer only
- 6) set the tubes selector switch to "ALL" position
- 7) check for unbalance by pushing the push button and in case of unbalance turn the V3 trimmer only

Dynamic balance calibration:

- 1) turn the rotary selector to position "DYNAM". The operation lamp will shine indicating there is some audio signal at the output to be heard. Use an audio installation to hear the output of the 099
- 2) for best results also monitor the level on the external level meter
- 3) use trimmer "AC SYM" to minimise the buzz at the output. Static balance trimmers V1, V2 & V3 can also be used to minimise the buzz, but their use is limited in order to not unbalance the static conditions too much.

When adjusting the trimmers pay attention to the low frequency component of the buzz (hum), as the high frequency component is less important for proper operation.

The Meter trimmer lets to adjust the zero on the upper meter scale (Gain Reduction). Make sure there is no gain reduction and the Time Constant selector is set at 1.

The Gain trimmer lets to adjust the overall gain of the unit over a limited range (about 1.2dB). Its function is to calibrate gains of a stereo pair. When using a single unit it should be at the maximum position for maximum gain.

Before performing any calibration make sure the unit is fully warmed up (for at least 1 hour).

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specifications

Gain: +18dB (+/-0.5dB)

Input impedance: 2K ohms (transformer balanced)

Output impedance: below 150 ohms (transformer balanced)

External sidechain input impedance: 30K ohms (transformer balanced)

Recommended load impedance: from 600 ohms to infinity

Frequency response:

-1dB points: better than 25Hz to 25kHz

-3dB points: better than 10Hz to 45kHz

Max output level (1% THD): +22dBu

Compression ratio: soft-knee, from 2:1 to 10:1 in 6 steps (NORMAL mode only)

Tubes:

V1: ECC82 / 12AU7

V2: ECC81 / 12AT7

V3: ECC81 / 12AT7

Link connector: mono (Tip&Sleeve) 1/4" Jack

Power requirements: 230V/50Hz or 115V/60Hz (factory option)

Power consumption: 40VA

TIME CONSTANTS

Settings 1 through 6 are the same as in the Fairchild 660/670:

Position 1: 0.2ms attack / 0.3s release

Position 2: 0.2ms attack / 0.8s release

Position 3: 0.4ms attack / 2s release

Position 4: 0.8ms attack / 5s release

Position 5: 0.2ms attack / program dependent release: 2s / 10s

Position 6: 0.4ms attack / program dependent release: 0.3s / 10s / 25s

Preset F is a faster version of the classic preset 1 with constants of 0.15ms attack / 0.15s release

Preset P has medium attack time and fast release time (3ms attack / 0.3s release)

Preset S is a slower and more relaxed version of preset P (6ms attack / 0.8s release)

Preset E has medium attack and release times (about 1.5ms attack / 0.5s release)

Preset D has slow attack and fast release (about 20ms attack / 0.3s release)

Please note that presets E and D have program dependent attack characteristics.

Unmarked position of the Time Constants rotary switch disengages the compression.

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compression characteristics

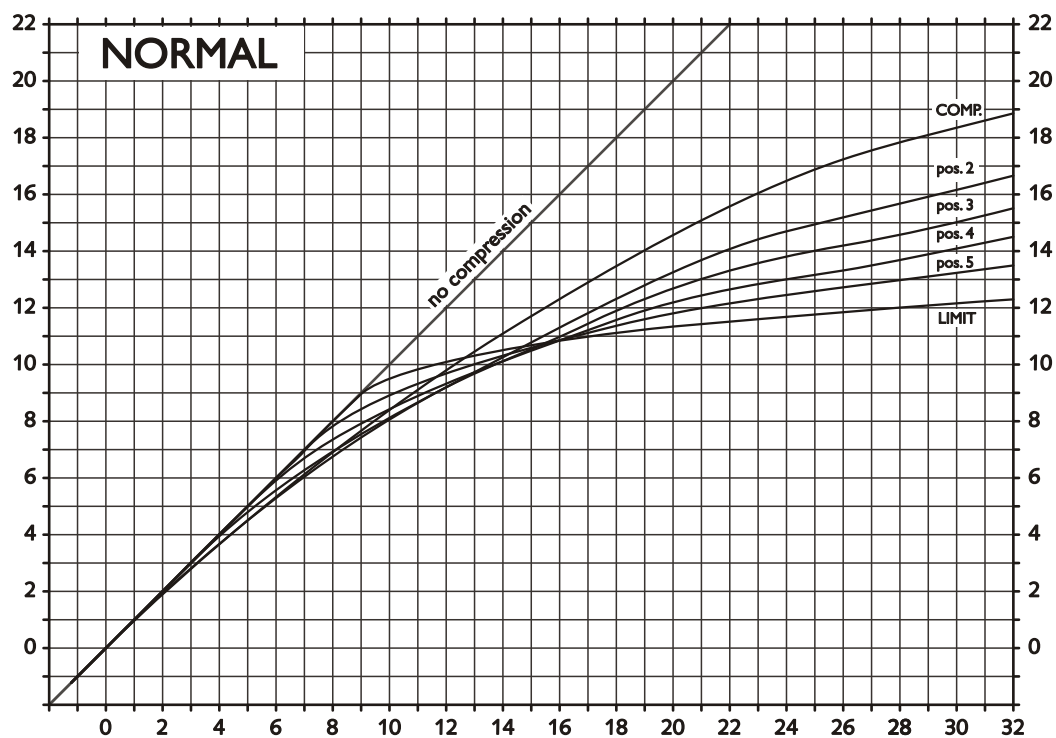


fig. 1: Compression characteristics in the NORMAL (feedback) mode

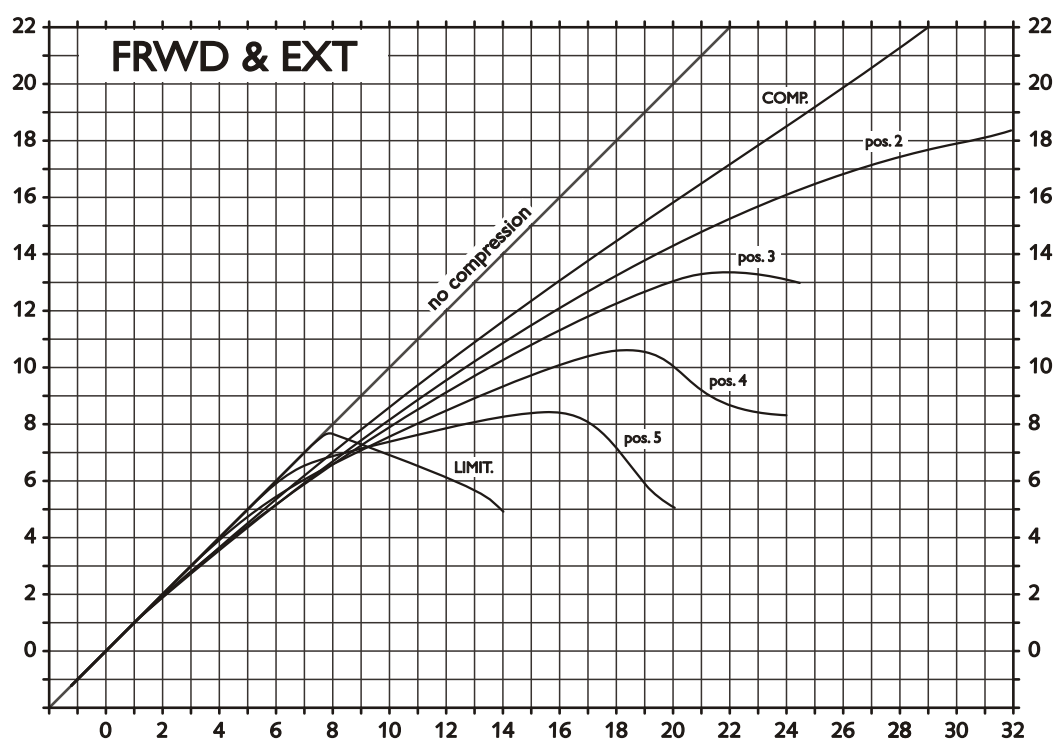


fig. 1: Compression characteristics in FRWD and EXT (feedforward) modes

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signal flow

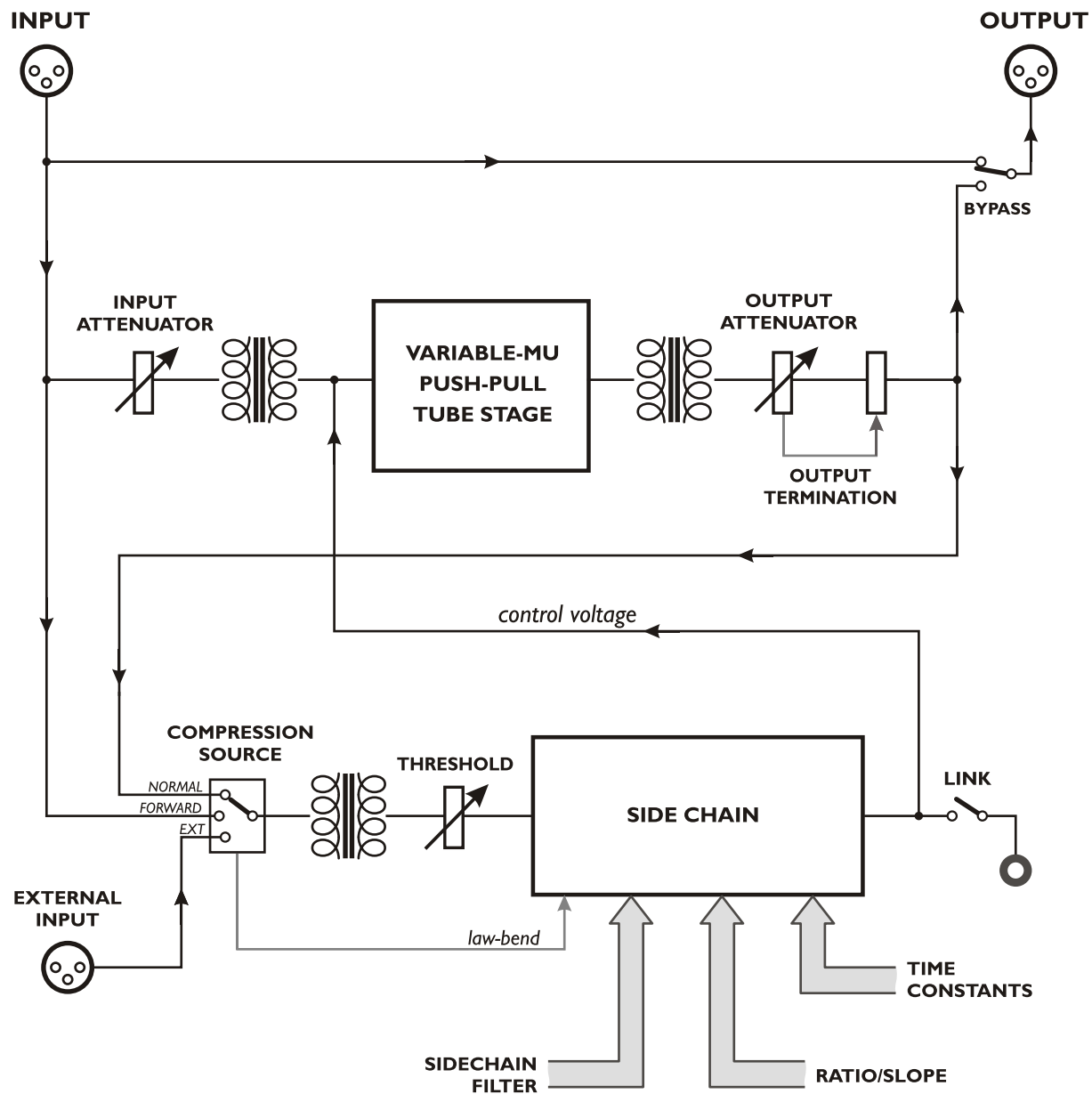


fig.3: Block schematic of the Amtec Model 099 (excluding power supply)

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TIME CONSTANT selector:

Positions 1 to 6 are the same as in the Fairchild 660/670.

Position F is a faster version of the preset "1".

Position P (Program) is similar to the fastest setting on the EMI TG limiter.

Position S is inspired by the EMI RS-124 compressor.

Position E has medium attack and release times.

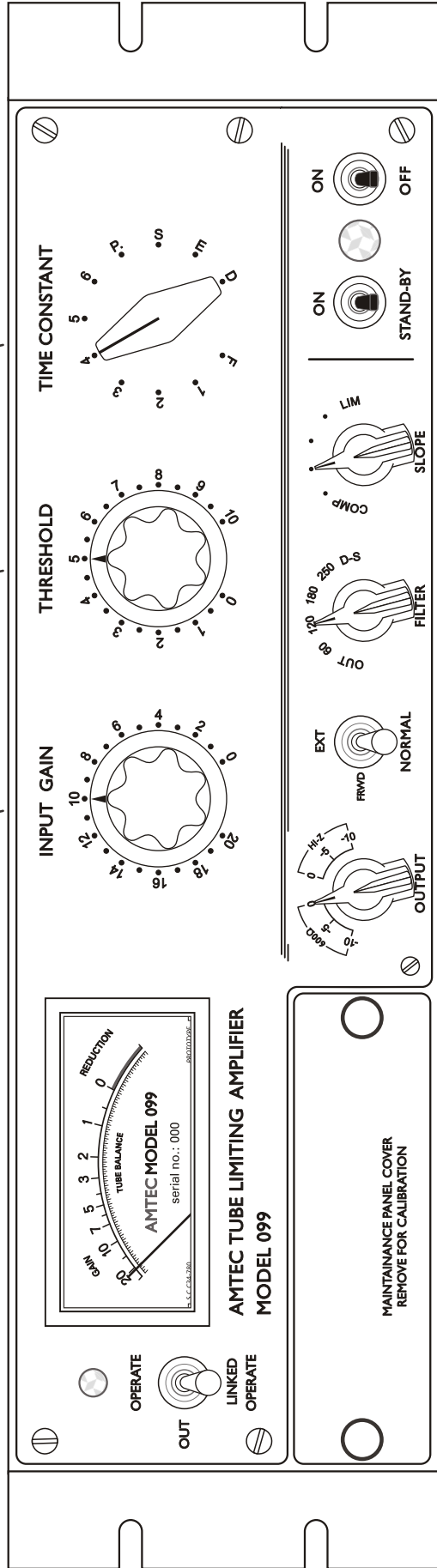
Position D (Drums) has very slow attack and fast release.

THRESHOLD control.

INPUT GAIN control in 1dB steps.

The overall gain of the Amtec 099 is 18dB,

the unity gain with no compression is at the position "18".



OUTPUT ATTENUATOR.

Use the right side when the next device has high input impedance (bridging load).

Compression type selector.

NORMAL mode allows for traditional feedback-type compression, whereas FRWD and EXT modes are of feed-forward type.

In the EXT mode the sidechain signal is taken from additional input on the rear panel.

SLOPE/RATIO control
Originally called D.C.Threshold

Sidechain high-pass filter.
Position D-S makes high frequencies pronounced for de-essing.