

# **TUBE-TECH EQ 1A, EQ 1AM** **Equalizer**

## **Description:**

The TUBE-TECH EQ 1A is a full range one channel unit, featuring low and high cut filters with a slope of 6 dB/octave or 12 dB/octave, low and high shelving filters and three overlapping bell type bands with variable bandwidth.

The cut filters are designed around unity gain tube amplifiers (cathode follower) and the shelving and the bell filters are designed around two tube operational amplifiers.

All seven sections have a separate in/out switch.

An all bypass switch is also provided.

The unit is all tube based except for the power supply.

Input and output have fully floating transformers.

All DC voltages are stabilized, except the anode voltage for the output stage.

The TUBE-TECH EQ 1AM has the same features as the EQ 1A and in addition, all pots on the front panel has been substituted with 12 positions rotary switches, to give better precision and repeatable settings.

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## **CONTROLS:**

**LOW CUT:** The low cut section includes a frequency switch, a slope switch and an in/out switch.

**FREQUENCY:** The -3 dB point at which the frequency response starts to decline. There are a choice of six frequencies: 16, 25, 40, 60, 90, 130 Hz.

**SLOPE:** The slope can be switched between either 6 dB/oct. or 12 dB/oct.

**IN/OUT:** Switches the frequency dependent network in and out.

## **LOW SHELVING:**

**GAIN:** EQ 1A: The gain control is continuously variable from 0 dB to 15 dB.  
EQ 1AM: The gain control has 12 steps and is variable from 0 dB to 15 dB.  
Steps: 0, 1, 2, 3, 4, 5, 6, 7, 9, 11, 13, 15 dB

**FREQUENCY:** There are a choice of six frequencies: 22, 32, 45, 70, 100, 150 Hz.  
The frequency where the boost or cut is 12 dB when the gain is at max.

**BOOST/CUT:** Determines whether the gain control shall be boosting or cutting.

**IN/OUT:** Switches the frequency dependent network in and out.

## **BAND 1-3:**

**GAIN:** EQ 1A: The gain control is continuously variable from 0 dB to 20 dB.  
EQ 1AM: The gain control has 12 steps and is variable from 0 dB to 20 dB.  
Steps: 0, 1, 2, 3, 4, 6, 8, 10, 12, 14, 17, 20 dB

**FREQUENCY:** There is a choice of twelve frequencies:

Band 1: 40, 50, 63, 80, 100, 125, 160, 200, 250, 315, 400, 500 Hz.  
Band 2: 0.25, 0.315, 0.4, 0.5, 0.63, 0.8, 1, 1.25, 1.6, 2, 2.5, 3.15 kHz  
Band 3: 1.6, 2, 2.5, 3.15, 4, 5, 6.3, 8, 10, 12.5, 16, 20 kHz

**BW:** EQ 1A: The bandwidth control is continuously variable from 0.5 to 2.0.  
EQ 1AM: The bandwidth control has 12 steps and is variable from 0.5 to 2.0.  
Steps: 0.5, 0.6, 0.7, 0.8, 0.9, 1.0, 1.1, 1.2, 1.4, 1.6, 1.8, 2.0

**BOOST/CUT:** Determines whether the gain control shall be boosting or cutting.

**IN/OUT:** Switches the frequency dependent network in and out.

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## **HIGH SHELIVING:**

**GAIN:** EQ 1A: The gain control is continuously variable from 0 dB to 15 dB.  
EQ 1AM: The gain control has 12 steps and is variable from 0 dB to 15 dB.  
Steps: 0, 1, 2, 3, 4, 5, 6, 7, 9, 11, 13, 15 dB

**FREQUENCY:** There are a choice of six frequencies: 4, 6, 8, 12, 18, 26 kHz.  
The frequency where the boost or cut is 12 dB when the gain is at max.

**BOOST/CUT:** Determines whether the gain control shall be boosting or cutting.

**IN/OUT:** Switches the frequency dependent network in and out.

**HIGH CUT:** The low cut section includes a frequency switch, an slope switch and an in/out switch.

**FREQUENCY:** The -3 dB point at which the frequency response starts to decline.  
There are a choice of six frequencies: 6.3, 8, 10, 12, 18, 25 kHz.

**SLOPE:** The slope can be switched between either 6 dB/oct. or 12 dB/oct.

**IN/OUT:** Switches the frequency dependent network in and out.

**BYPASS:** This switch bypasses the whole unit by a click less relay.  
This means that in case of power failures, the input is connected to the output.

## **ADJUSTMENT PROCEDURE:**

### **CAUTION:**

**Before making any adjustment let the unit heat-up at least 30 min.**

**Always check the DC voltages at the power supply.**

### **ADJUSTMENT OF PSU:**

- 1) The DC voltage in TP3 shall be + 150,0V.  
Adjust with P202.
- 2) The DC voltage in TP1 shall be - 150,0V.  
Adjust with P201.

### **ADJUSTMENT OFFSET IN TUBE-OP-AMPS:**

- 1) The DC voltage in TP6 shall be  $<+/- 50\text{mV}$ .  
Adjust with P1.
- 2) The DC voltage in TP7 shall be  $<+/- 50\text{mV}$ .  
Adjust with P2.

### **ADJUSTMENT OF BASIC GAIN:**

- 1) Apply a signal of 1 kHz, 0,0 dBu to the input of the equalizer.
- 2) Turn all gain controls at "**0**" and switches on "**OUT**" (except **BYPASS**).
- 3) Adjust the preset **GAIN** P3 (located on amp/psu PCB) to an output reading of 0,0 dBu.

### **ADJUSTMENT GAIN CONTROLS IN LOW/HIGH SHELIVING AND BAND 1-3:**

#### **LOW SHELIVING:**

- 1) Apply a signal of 20 Hz, 0,0 dBu to the input of the equalizer.
- 2) Turn the **GAIN**-control a "0". Turn the freq. switch to "150Hz".
- 3) When switching between boost and cut, observe that the level is exactly the same ( $<+/- 0,1\text{dB}$ ).  
Adjust with P2 located on the front PCB.

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### **HIGH SHELIVING:**

- 1) Apply a signal of 20 kHz, 0,0 dBU to the input of the equalizer.
- 2) Turn the GAIN-control a "0". Turn the freq. switch to "4 kHz".
- 3) When switching between boost and cut, observe that the level is exactly the same (<+/- 0,1dB).  
Adjust with P13 located on the front PCB.

### **ADJUSTMENT GAIN CONTROLS IN BAND 1-3:** **(THIS IS NOT VALID FOR EQ 1AM)**

#### BAND 1, (2), >3<:

- 1) Apply a signal of 100Hz, (1kHz), >5kHz<, 0,0 dBU to the input of the equalizer.
- 2) Turn the **GAIN**-control a "0". Turn the freq. switch to 100Hz, (1kHz), >5kHz<.
- 3) When switching between boost and cut, observe that the level is exactly the same (<+/- 0,1dB).  
Adjust with P4, (P7), >P10< located on the front PCB.

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## SPECIFICATIONS:

### EQ 1A, EQ 1AM

<b>Gain:</b>	0dB
<b>Input impedance:</b>	> 600Ω
<b>Output impedance:</b>	< 60Ω
<b>Distortion (THD+n @ 40 Hz):</b>	
0 dBU:	< 0,10 %
10 dBU:	< 0,15 %
max output (1% THD+n):	> +26 dBU

<b>Noise (Rg=200Ω):</b>	
22Hz-22kHz:	< -85 dBU
CCIR-468-4:	< -75 dBU

<b>Frequency response (-3dB):</b>	5 Hz - 80 kHz
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<b>CMRR (@ 10kHz):</b>	< -60dB
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### FILTERS:

Low cut:	16, 25, 40, 60, 90, 130Hz
Slope:	6dB or 12dB/octave
Low shelving:	22, 32, 45, 70, 100, 150Hz
Gain:	+/- 15dB
Band 1:	40, 50, 63, 80, 100, 125, 160, 200, 250, 315, 400, 500Hz,
Band 2:	0.315, 0.40, 0.50, 0.63, 0.80, 1.0, 1.25, 1.6, 2.0, 2.5, 3.15kHz
Band 3:	1.6, 2.0, 2.5, 3.15, 4.0, 5.0, 6.3, 8.0, 10, 12, 16, 20kHz
Gain:	+/- 20dB (BW= sharp).
(band 1-3)	+/- 12dB (BW= broad).
High shelving:	4.0, 6.0, 8.0, 12, 18, 26kHz
Gain:	+/-15dB
High cut:	6.3, 8.0, 10, 12, 18, 25kHz
Slope:	6dB or 12dB/octave

<b>Tubes:</b>	3x ECC81, 1x ECC82, 3x ECC83
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<b>Dimensions:</b>	H: 2 units, W: 19", D: 205 mm
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<b>Weight:</b>	5,5kg
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<b>Power requirements:</b>	115V/230V, 50-60Hz, 35W
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All specifications at RL=600Ω

Lydkraft reserves the right to alter specifications without prior notice