MYSTERY MAGICIANS®

M808A Two Channel Microphone Preamplifier

OPERATION/MAINTENANCE

M808A Microphone & Instrument Preamplifier

Operation & Maintenance

Written & Illustrated By Arash Mafi

Important Safety Instructions

Cautions & Warnings:

1. Read these instructions.

2. Keep these instructions.

3. Heed all warnings.

4. Follow all instructions.

5. Do not use this device near water or in a moist environment.

6. Clean only with a dry cloth.

7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions. Install in a well-ventilated rack mount cabinet. Preferably near the bottom of the rack as heat rises to the top. It is suggested to use rack ventilation spacers for cool intake of airflow.

8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.

9. Do not defeat the safety purpose of the grounding-type plug. A grounding-type plug has two blades and a third grounding prong. The third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for the replacement of the obsolete outlet.

10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.

11. Only use attachments/accessories specified and provided by the manufacturer.

12. Unplug this apparatus during lightning storms or when unused for long periods.

13. NEVER Tamper with AC Power cable or reverse the polarity of LIVE and NEUTRAL wires to the unit. Serious damage to the unit can occur.

14. For continued protection against the risk of fire, replace only with a fuse of the specified type and current ratings.

15. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated “dangerous voltage” within the product’s enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

Introduction

We appreciate you adding the M808A microphone and instrument amplifier to your studio. We wish you many years of outstanding service from this preamplifier and look forward to hearing the outcomes you have been seeking.

The M808A is a sophisticated dual channel strip valve Microphone/Instrument/Line level Preamplifier designed to provide engineers with rich and clean sonic output for professional recording systems. This preamplifier is typically used in recording studios, and any high-quality condenser, dynamic, or ribbon microphones with output impedances ranging from 33Ω to 600Ω can be utilized successfully with excellent results.

Numerous devices, including microphones, bass and electric guitars, instrument pickups, keyboards, organs, and many more, can be connected to the M808A.

With the DIRECT/INSTRUMENT IN inputs, such instruments as stated above can be "directly" injected into the preamp, and a transformer-balanced signal will derive on the LINE OUT. Since the M808A is fully transformer balanced from input to output, many balanced and unbalanced effect units can be used through the inserts.

Devices such as vintage tape echos, reverbs, equalizers, compressors, and even effect pedals. Regardless of whether the device connected to the INSERTS is balanced or unbalanced, these signals will be transformer balanced at the LINE OUT jacks.

The M808A has been designed from the ground up with innovative features to produce the best sound quality and reliability possible. With a switch mode power supply that features fully regulated DC outputs, and automatic line voltage recognition ranging from 86VAC to 265VAC, it will operate globally.

The M808A's regulated power supply unique design contributes to high power supply ripple rejection and a low noise floor. Another feature of this excellent power supply design is its ability to automaticlaly adjust and maintain the target DC voltages. All DC voltages are constantly kept stable whether the line voltage sags up or down, these DC voltages will always remain with 1% of regulation. For the protection of the vacuum tubes, a 20-second high-voltage soft start feature allows the tube filaments to warm up before high voltage is applied to the tubes.

Our factory takes pride in producing high-quality audio transformers. Every microphone and output transformer in the M808A is designed and finished in-house, with each one individually wound, tested, and potted. All four audio transformers in the M808A have been potted in MuMetal shielding for the quietest operation.

M808A Electrical Specifications

M808A Electrical Specifications:

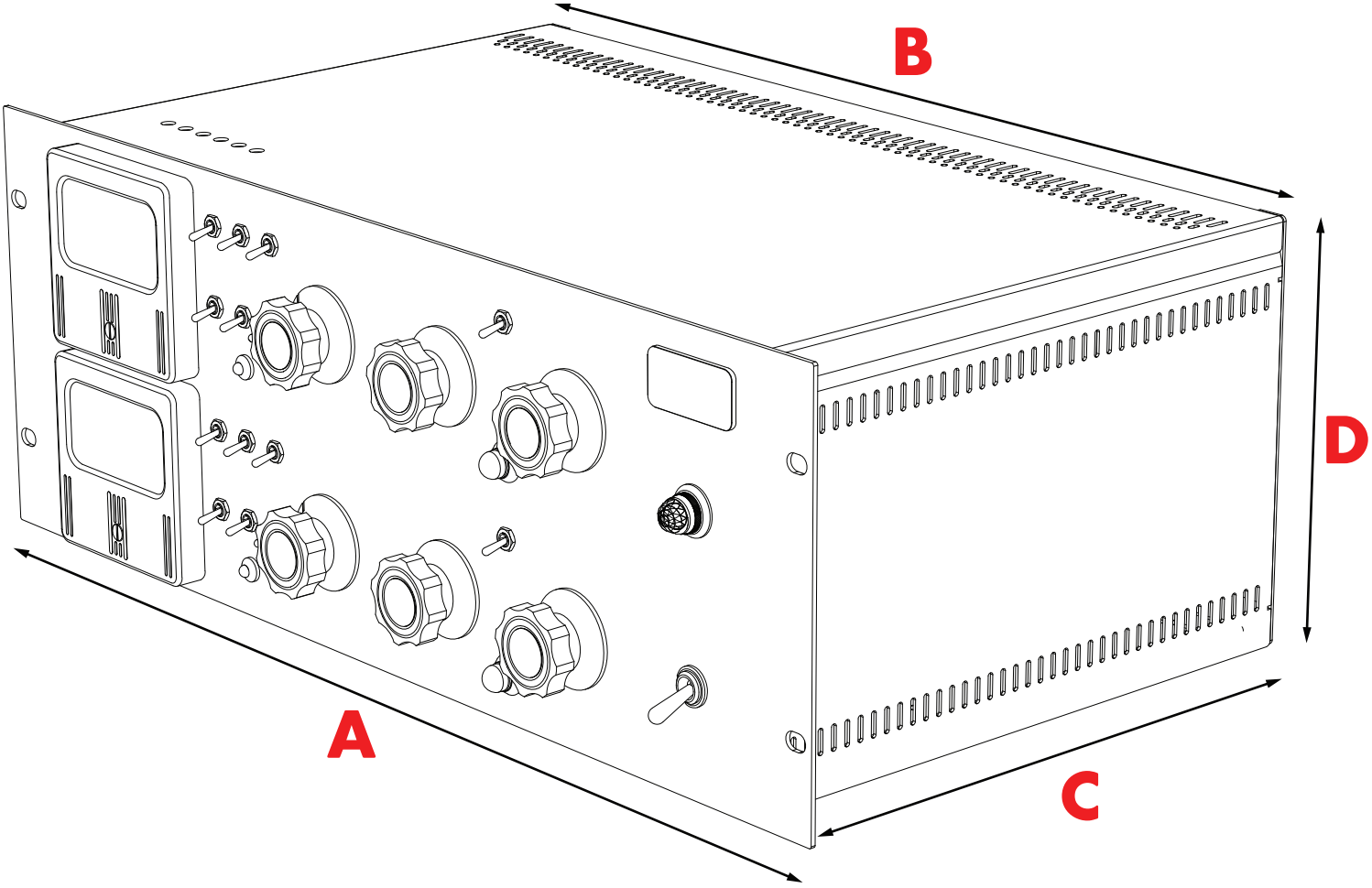
MIC IN Input Impedance:	**2K, Accepts Microphones from 33Ω - 600Ω**
MIC IN (Pentode Mode) Maximum Gain:	**Approximately 80dB**
MIC IN (Pentode Mode) Frequency Response:	**10 Hz to 25 kHz ± 1dB @ 100Ω Source Impedance**
MIC IN (Triode Mode) Maximum Gain:	**Approximately 65dB**
MIC IN (Triode Mode) Frequency Response :	**10 Hz to 25 kHz ± 1dB @ 100Ω Source Impedance**
LINE OUT Impedance:	**600Ω or 150Ω @ +4dB Output**
Recommended Load Impedance:	**10KΩ or Higher**
Minimum Recommended Load Impedance:	**600Ω**
INSERTS (SEND) Output Impedance:	**250Ω**
INSERTS (Receive) Input Impedance:	**100KΩ**
DI/INSTRUMENT Input Impedance:	**1MΩ**
Signal to Noise Ratio:	**>95 dB, A-weighted**
Maximum Output Level for 1% THD:	**+10dB**
THD + Noise at +4 dB:	**.02% 2nd Harmonic Dominant**
Crosstalk:	**-100dB Between channels**
Power Requirements:	**86V-260VAC 50-60Hz For Global Line Operation.**

M808A Physical Specifications

PHYSICAL MEASUREMENTS:

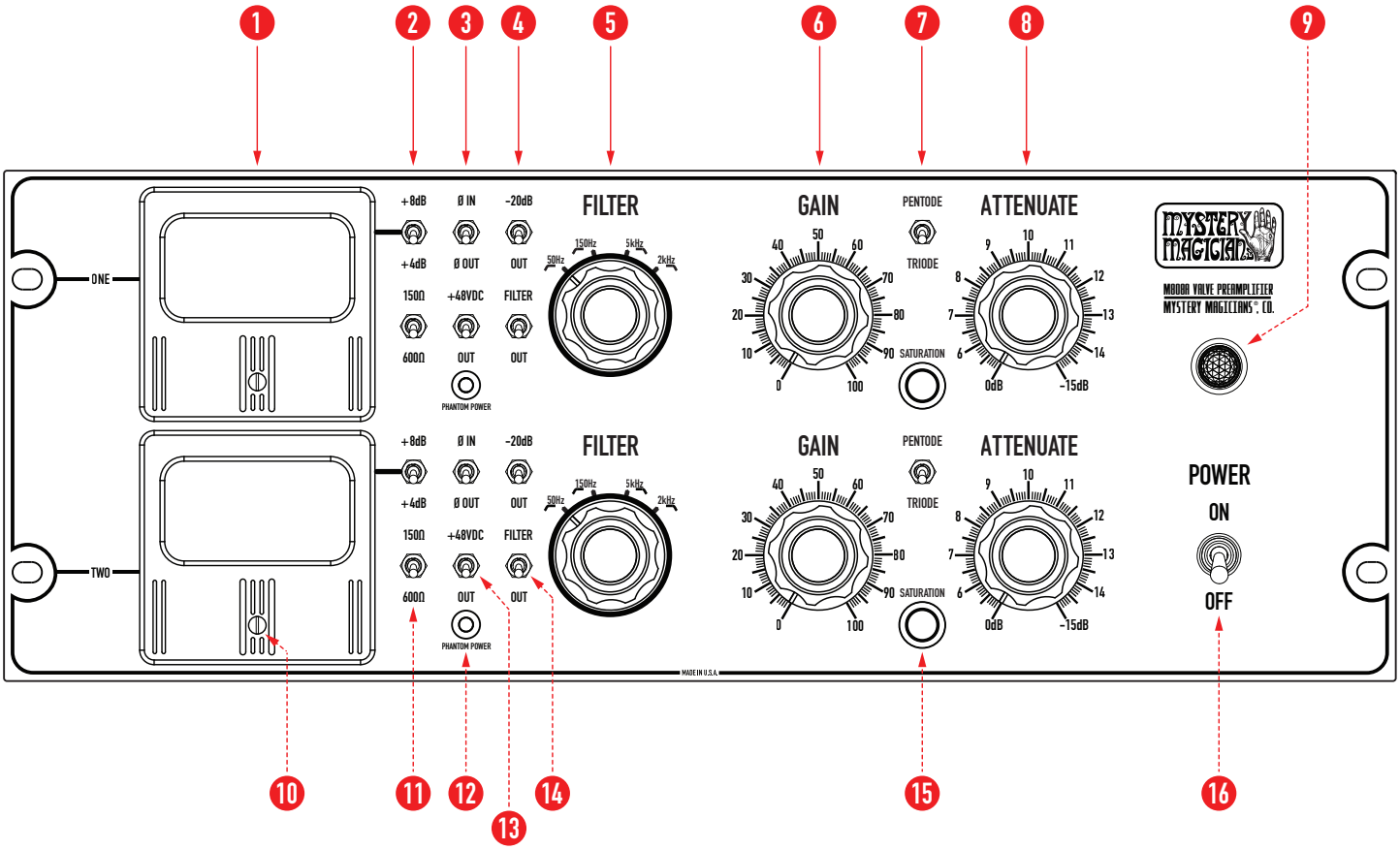
A:	483mm	(19″)
B:	428mm	(16.85″)
C:	268mm	(10.55″)
D:	177mm	(6.96″)

WEIGHT: 8.1kg (18lbs.)



M808A Front Panel At A Glance

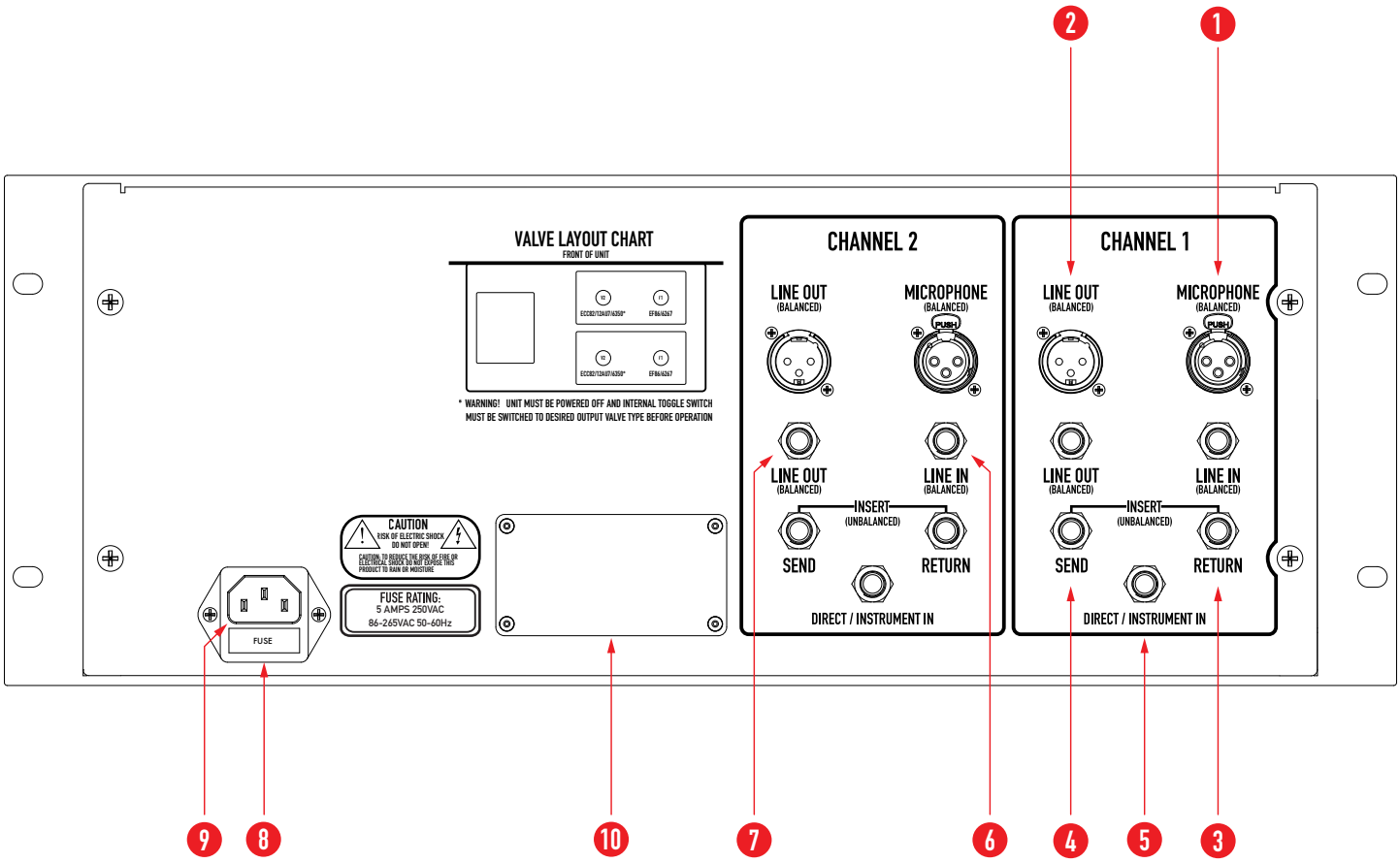
1. VU Panel Meters.
2. VU Meter Scale Adjustment from +4dB to +8dB
3. Microphone Phase Switch
4. Microphone -20dB Attenuation Pad
5. Filters Section for Microphone & DI/Instrument Inputs
6. Gain Adjustment Knob (Post Input Valve)
7. Input Valve Operation Method between Pentode Or Triode
8. Output Gain Adjustment
9. Power Indicator Pilot Light.



10. VU Panel Meter Needle Rest Adjustment.
11. Output Transformer Output Impedance Adjustment 150Ω Or 600Ω
12. Phantom Power Indicator Light (Per Channel)
13. Phantom Power +48V Switch (Per Channel)
14. Filter Selection True Bypass Switch.
15. Input Valve Saturation Indicator Light
16. AC Power Switch.

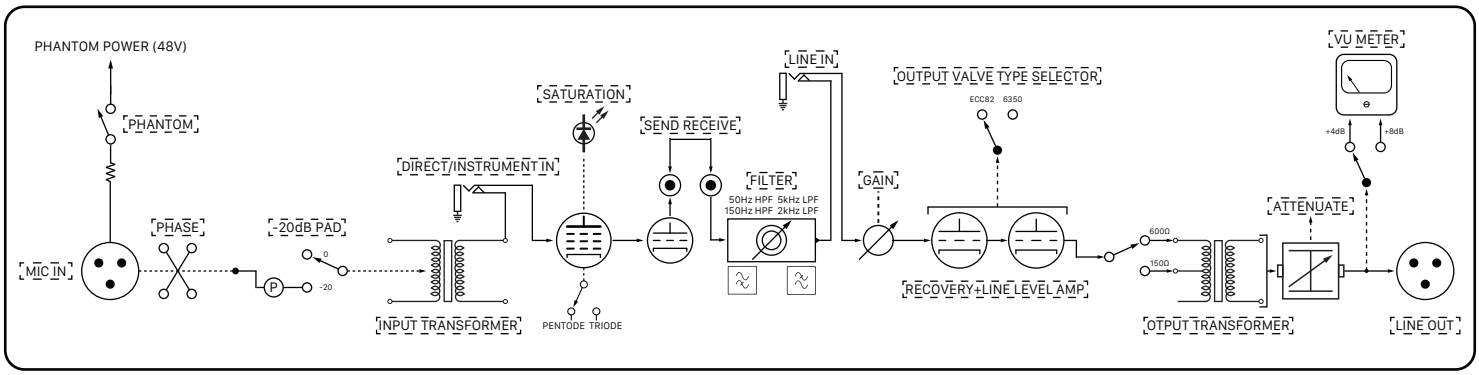
M808A Rear Panel At A Glance

1. Microphone Input XLR Jack (BALANCED).
2. Line Output XLR Jack (BALANCED).
3. Effect Inserts Return Point 1/4" TS (UNBALANCED).
4. Effect Inserts Send Point 1/4" TS (UNBALANCED).
5. Instrument & Direct Input 1/4" TS (UNBALANCED).
6. Line Level Input 1/4" TRS (BALANCED).



7. Line Level Output 1/4" TRS (BALANCED).
8. Mains Power Safety Fuse Inside IEC Receptacle Clip.
9. Mains Power IEC Jack Socket.
10. Serial Number Of Unit For Records & Registeration.

M808A Signal Flow At A Glance



This block diagram displays all controls, switches, amplifying stages, and connectors in their actual sequence. Learning to read it will provide the answers to any questions concerning "what comes where" on the inside. Things like "does the DIRECT IN jack come before the Filter circuit or after it?", Can be answered quickly.

MIC INPUT
A transformer balanced XLR conductor microphone input is provided. Any microphone with a low output impedance from 33Ω to 600Ω will work with excellent results.

PHANTOM POWER
The phantom power supply in the preamp conforms to the DIN standard # 45596, +48VDC supply voltage is applied individually to either channel via pins 2 and 3 simultaneously through a pair of current limiting resistors. The phantom power supply incorporates a soft start and shut-off circuit to reduce and smooth out the loud and unpleasant popping sound in the studio monitors. Each channel features a “PHANTOM POWER” pilot light indicator to display the status of the supply voltage.

PHASE REVERSE
In the out position, the phase is unaltered. Set IN, the switch reroutes pin 2 to wire 3, and pin 3 to wire 2, and thus the polarity of the incoming signal is reversed. When a sound source is picked up by more than one mic, the time displacement between each microphone's signal can be different enough that the mics cancel or add to each other to a greater or lesser degree; i.e., the sound may appear thinner than anticipated due to the mic placement. Should this occur, "flipping" the phase on one of the mics may cure the problem and eliminate the need to re-position the mics. Also, phase reversal may help to eliminate leakage from accidental sound sources into a given microphone. The PHASE reverse switch will affect only the MIC input circuit.

MIC -20dB PAD
A 20dB pad is inserted when this switch is activated. Switch in this pad when using a low SPL mic, or if the source material is causing the input valve to distort and create undesired effects. The GAIN or Attenuate knob cannot correct an input valve overload condition originating at the MIC IN.

DIRECT/INSTRUMENT IN
This jack will accept the signal directly from electric guitars, basses, and acoustic pickups. With some "hot" pickups you may have to turn down the instrument volume control to avoid overload or adjust the GAIN knob. There are a handful of ways to use this input. i.e., Keyboards, piezo pickups, etc.

SATURATION PILOT LIGHT
The input valve consists of an EF86, when the input gain of the valve is reaching saturation and the 2nd harmonic distortion starts to rise significantly the bulb of this pilot light will start to flicker. Depending on the duration and the brightness of the bulb you should have a good idea of what is happening in regards to input valve levels.

M808A Signal Flow At A Glance (Continued)

PENTODE/TRIODE MODE
At the heart of the microphone preamp is the EF86 high-gain pentode valve. This valve is known for low noise, low microphonics, and linear operation and is often used in microphones and phono preamplifiers. By triode strapping the valve, we can achieve a more linear frequency response, with lower distortion and lower gain. And in its native pentode operation, we achieve much higher gain, slightly colored sound, and rounder response in the ultra-high and low end of the frequency spectrum. By toggling between the two modes the user can achieve different gain characteristics for various source materials, as well as different colorations.

INSERTS (SEND & RETURN) JACKS
The high gain and low output impedance provided by the mic preamplifier stage allow us to place a patch point in this useful location. For example, an audio compressor/limiter connected to this point in the preamp can be set to a range of compression that will not be altered when the GAIN, ATTENUATE knob, or FILTER is adjusted. When no outboard device is bridged from the SEND to the RETURN jacks, the internal self-shunting jacks complete the circuit, thus eliminating the use of a patch cable. The low output impedance of the SEND jack in conjunction with the high input impedance of the RETURN jack allows the user to patch many useful balanced or unbalanced outboard equipment, such as equalizers, audio limiters, reverbs, echos, etc. Insert jacks are placed in pre-FILTER sections.

FILTER SELECTION ROTARY & BYPASS SWITCH
Each channel is equipped with two selections of high-pass filters and two low-pass filters. These four active filters consist of high pass frequencies of 2kHz, 5kHz, and low pass frequencies of 50Hz, and 150Hz. These active-type filters will not impose any losses to the signal (”no drop in gain”) when they are switched in or out. These filter frequencies can be useful to quickly correct many different types of source material without the use of an auxiliary equalizer. I.e., if the source material is a bass guitar, the engineer can quickly filter out any unwanted high frequencies. A filter bypass switch is provided to engage or bypass the channel's filter section with a single control. A filter setting can be compared to "flat" by alternately switching in and out, or the setting can be bypassed until needed and "dropped in" with a single action.

LINE INPUT JACKS
Each channel is equipped to accept signals from any line-level source via LINE IN jacks. Many tape machines, electronic pianos, organs, synthesizers, and drum machines are compatible with these inputs. These inputs can accept balanced or unbalanced signals. By patching unbalanced sources to the LINE IN jacks you can convert these signals to balanced output signals, and add the characteristics of the valves and audio transformers to them. LINE IN jacks is placed post FILTER sections.

GAIN
The gain potentiometer controls the output of the first valve into the proceeding amplifying and driving stages. This potentiometer only controls the amount of the output gain of the first valve. Should there be any need to pad the input level entering the first valve, the user can apply the -20dB PAD switch to achieve this front-end attenuation. The GAIN pot also serves as the input level for the LINE IN jack, and the INSERT RETURN recovery section due to its placement in the signal chain.

OUTPUT VALVE SELECTOR SWITCH
Each audio card PCB is equipped with a toggle switch to select between a choice of ECC82 (12AU7) or the premium grade 6350 valve. The driver valve has quite an effect on the overall color and sound quality of the unit. Each valve has its characteristics and the overall quality is subjective ear to ear.

WARNING! THE UNIT MUST BE POWERED OFF AND THE INTERNAL TOGGLE SWITCH MUST BE SWITCHED TO DESIRED OUTPUT VALVE TYPE BEFORE INSTALLATION AND OPERATION.

M808A Signal Flow At A Glance (Continued)

OUTPUT IMPEDANCE SELECTOR SWITCH
The output transformer has multiple primary taps to accommodate 150Ω or 600Ω output impedances. These two output impedance selections provide flexible impedance matching to various devices and will guarantee good drive capability for long cable runs. By selecting 150Ω output impedance the total output gain and output impedance decreases, This is ideal for driving long cable runs. By selecting 600Ω the output gain, and impedance increase and is typically optimum for medium runs. Besides switching impedances, the gain and slight tonal characteristics can be achieved by this switch.

ATTENUATE KNOB
A 15dB balanced H attenuator has been provided to control the final output level to various devices such as tape recorders, and audio interfaces. When the potentiometer is in the 0 positions, no attenuation is applied to the balanced output signal. As you advance the knob clockwise, the H attenuator will decrease the level up to -15dB. The H attenuator is designed to match both source and load impedances of 600Ω:600Ω or 150 Ω:150Ω. Unlike volume potentiometers, the balanced H attenuator will not create ill effects on the frequency response of the source or load devices and provides a fine logarithmic taper.

VU METER & +4dB/+8dB SCALE SELECTOR SWITCH
The VU meter circuit is calibrated from the factory to read 0VU when the output signal at the LINE OUT jacks reaches +4dB (1.228VAC). A convenient switch placed in the switch panel allows the user to switch the scale reading of the meter to higher levels. By switching to +8dB the meter driver circuit will be calibrated to read 0VU when the output signal at the LINE OUT jacks reaches (1.946VAC). This allows us to work with hotter signals in that range and will protect the meter movement from accidental damage. The vu meter circuit is a balanced type that is completely buffered and isolated from the audio circuit, this means that the driver of the circuit will NOT impose any loss to the audio or create any form of distortions whatsoever, and the driver circuit's sophisticated design ensures accurate meter reading.

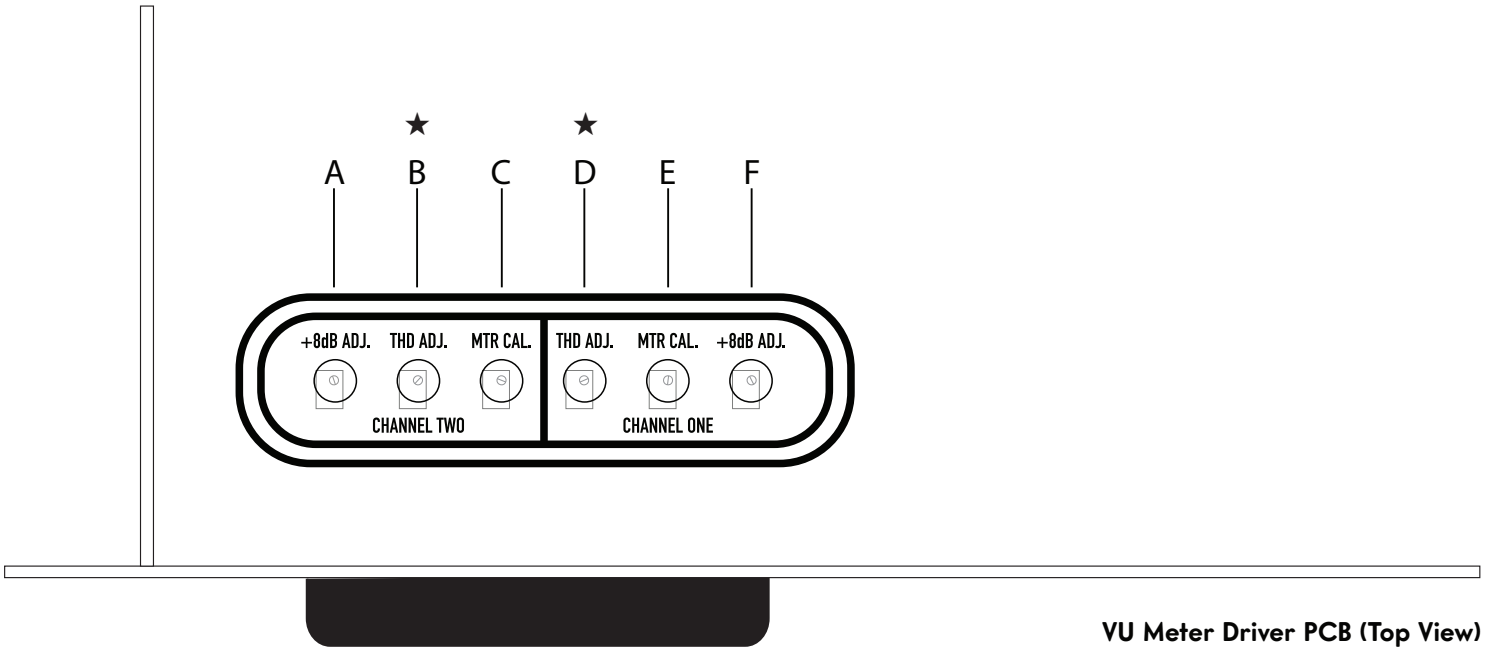
AUDIO TRANSFORMERS
The M808A Features one microphone input and output transformer per channel. These transformers allow a fully balanced operation, and excellent isolation, and cancel out ground loops, buzz, hum, and external Interference from the outside world. These transformers are hermetically sealed and potted in Mu Metal housing to shield them from electromagnetic and RF interference. We take pride in winding and potting our audio transformers for every single unit manufactured.

In this section of the manual, we have done our best to describe the individual functions and controls of the preamp. Some reference to the scientific terms used by our engineers will be necessary. We have tried to make this reference manual as simple as technology will allow. Each section and topic will give you some basic instruction in the terminology as well as a list of "what plug" goes into "which jack".

Calibration & Adjustments

Adjustment & Calibration Points:

VU Meter Driver Calibration & Adjustment Points



VU Meter Driver PCB (Top View)

The VU meter driver board has been calibrated from factory, however periodic checkup of vu meter circuit calibration is recommended.

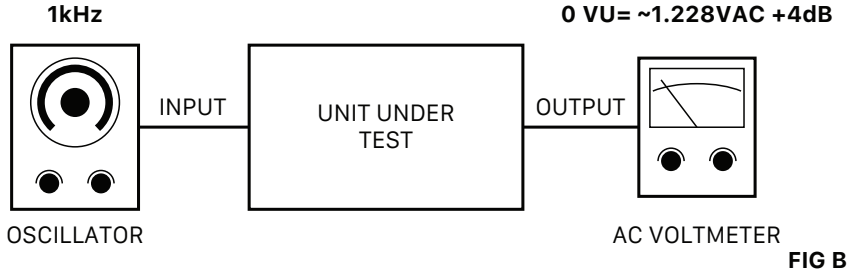


FIG B.

VU METER CALIBRATION

The VU meters are calibrated via trim pots C or E to indicate 0 VU when a 1kHz sine wave signal has been applied to the LINE IN input on the rear panel of either channel, in the reference level of +4dB, (1.228VAC). As shown above in FIG B.

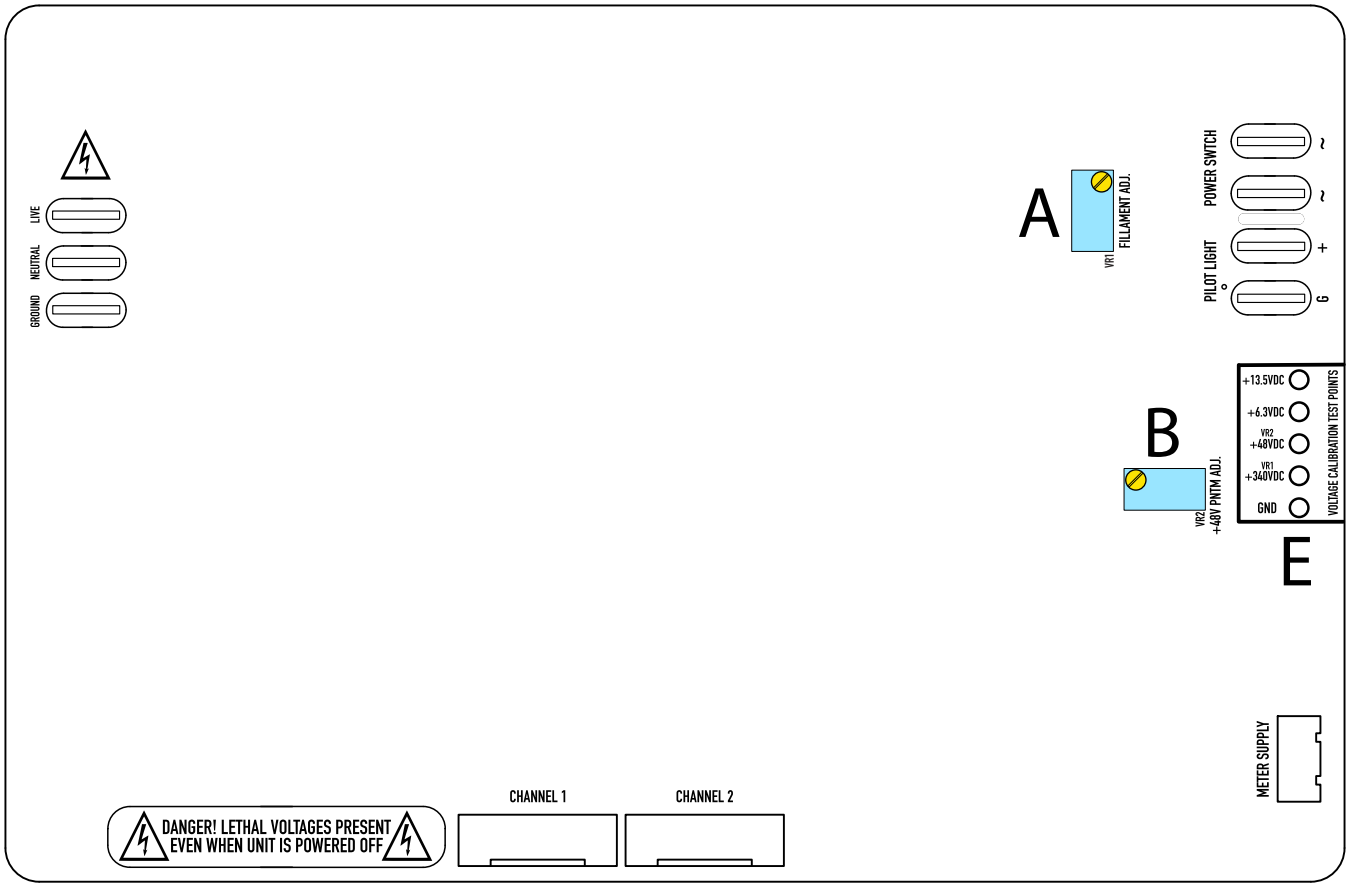
To check and adjust VU meters for +8dB scale range operation, toggle the range switch on the front panel to +8dB, and apply the signal as shown above in FIG B. Adjust the oscillator gain, or gain knob on the preamp to obtain a reading of (1.946VAC) or +8dB. If VU meters do not indicate 0 VU, adjust trim pot A or F (CHN 2 or CHN1) to obtain the proper reading.

★ **IMPORTANT**

Trim pots B and D are adjusted from the factory and are related to the THD detector circuit. It is highly advised that the user does not disturb the adjustment on these trim pots as it will create a big error on the saturation-detecting circuitry that drives the indicator on the front panel. These two trim pot adjustments are preset and adjustments without proper calibration equipment should be avoided altogether.

Adjustment & Calibration Points:

Power supply PCB and voltage rail calibration points



Power Supply PCB

The M808A power supply has been calibrated from the factory to have the correct Voltage outputs for all the nodes indicated in rectangle E.

CALIBRATION

For best performance, it is wise to check and calibrate the power supply rails if necessary. This calibration procedure should be followed at the time of installation, then verified from time to time as needed.

The M808A features a fully regulated power supply. The regulators will occasionally need to be calibrated to ensure the voltage stays within +/- 1% of the target Indicated voltages near test points on the PCB.

CALIBRATION PROCEDURE

Using a digital DC multimeter, probe the black lead to the ground point (GND) and the red lead to the +6.3V calibration node in the rectangle marked E. Each probing pad indicates the readout voltage next to it. Adjustment for the +6.3VDC point is made by VR1 (A) trim potentiometer with a fine insulated screwdriver if necessary. +48V phantom power node is adjusted by VR2 (B).

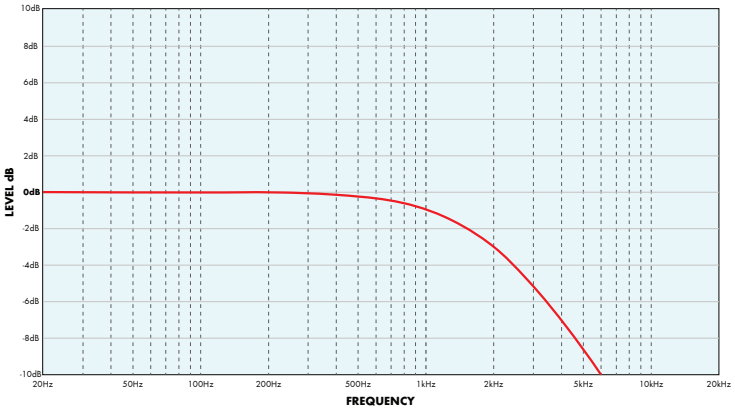
CAUTION ⚠

Practice extreme caution while handling anything inside the chassis. There are lethal voltages present in the chassis even if the unit is powered off and unplugged. If you feel uncomfortable with the adjustments please refer to a qualified technician to make these calibrations.

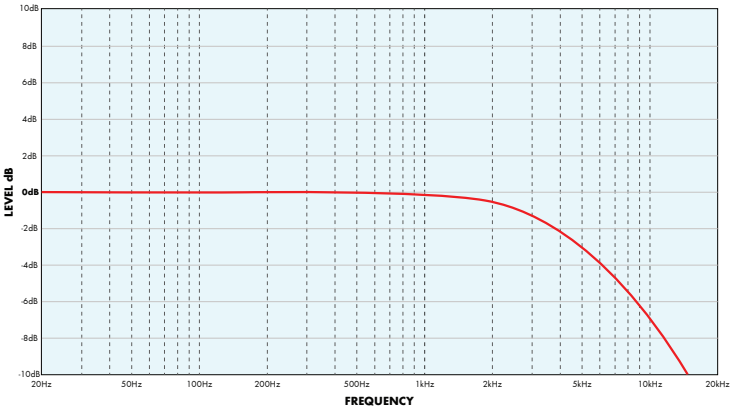
M808A Filter Selection FR Response Curves

–6dB Per Octave (–20 dB Per Decade) Butterworth 1st Order Filters

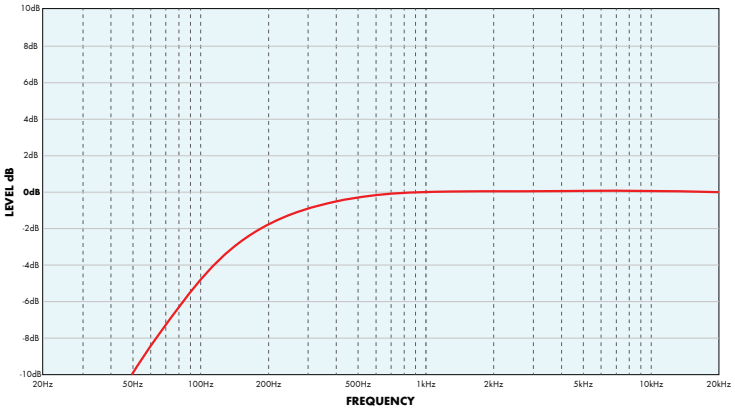
2kHz LOW PASS FILTER



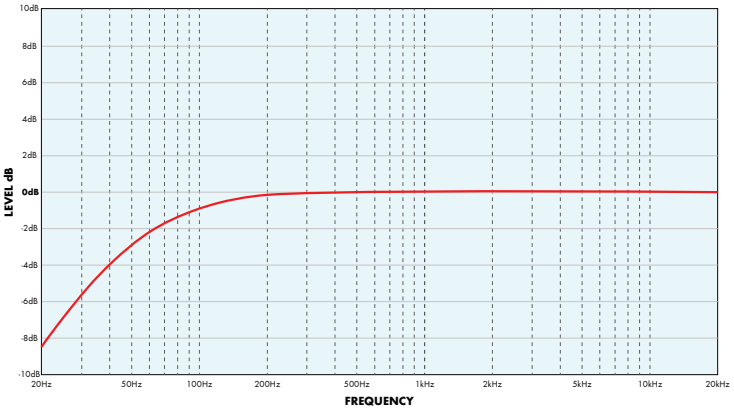
5kHz LOW PASS FILTER



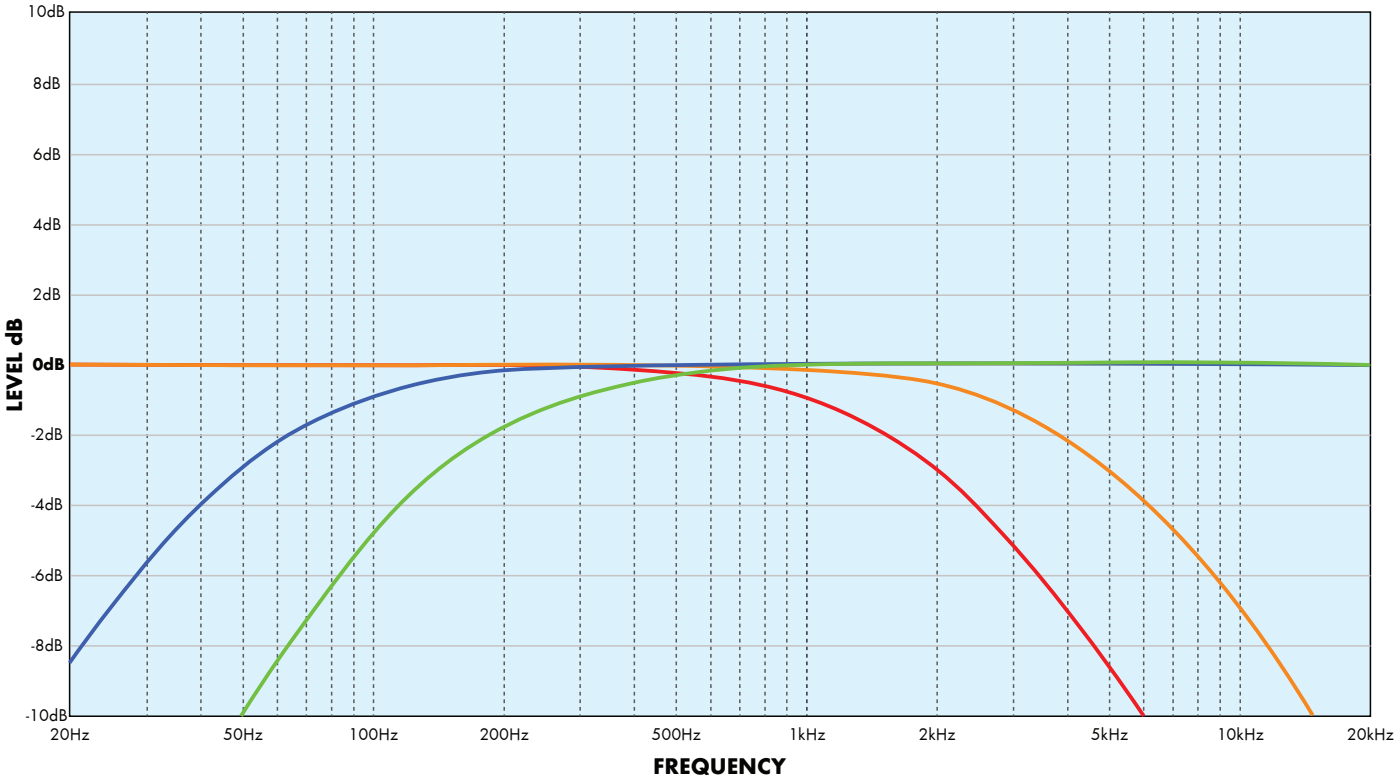
150Hz HIGH PASS FILTER



50Hz HIGH PASS FILTER

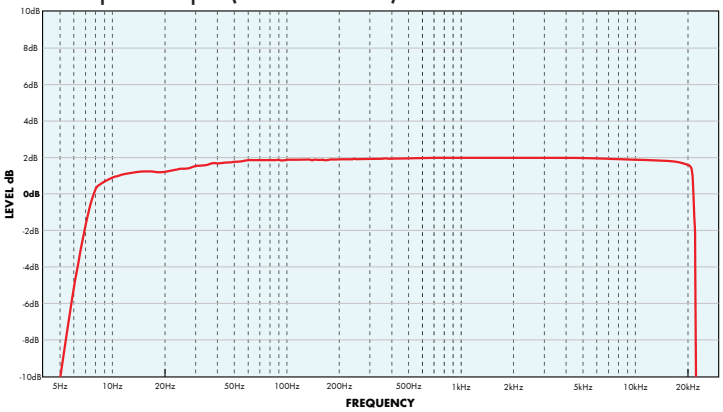


ALL FILTERS ILLUSTRATED

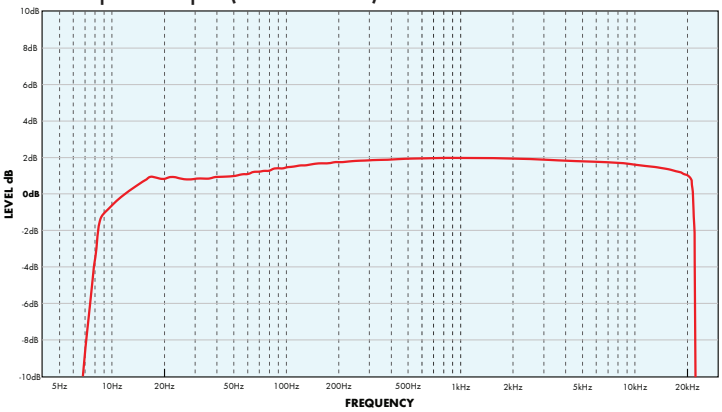


M808A MIC IN, And DI FR Response Curves

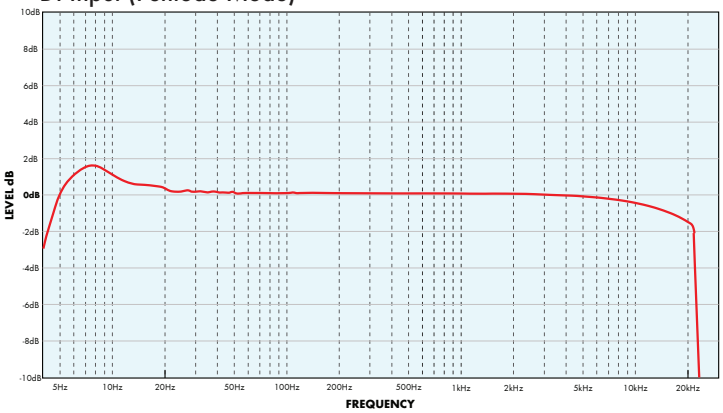
Microphone Input (Pentode Mode)



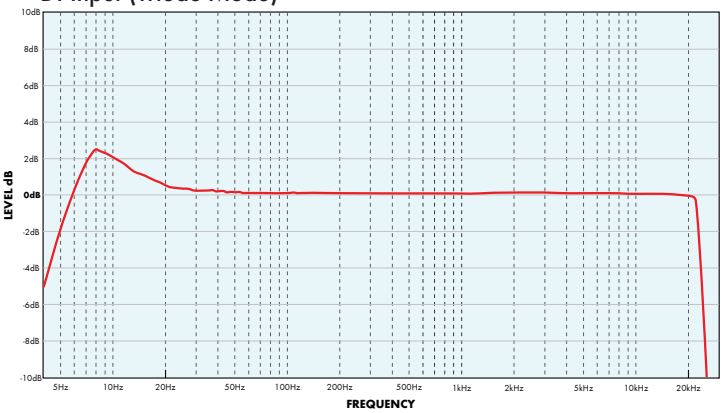
Microphone Input (Triode Mode)



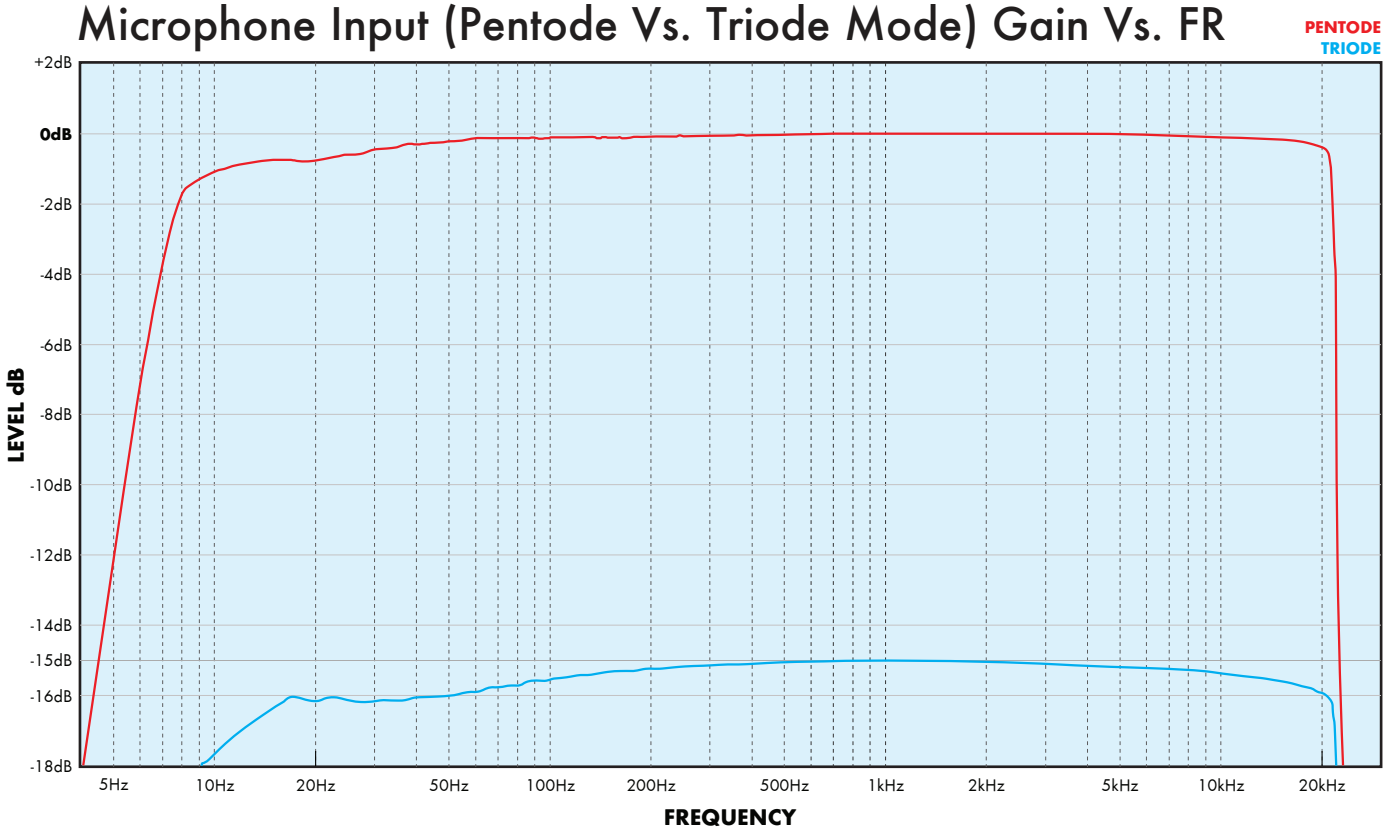
DI Input (Pentode Mode)



DI Input (Triode Mode)



Microphone Input (Pentode Vs. Triode Mode) Gain Vs. FR



Warranty & Product Registration

WARRANTY

An initial warranty for a period of ninety (90) days is granted to the original purchaser, which warrants the M808A against defects in parts and craftsmanship, except valves. However an additional two years warranty will be granted to the original purchaser upon registration of ownership within 30 days of purchase.

The original purchaser may register ownership via the Service & Support tab on our website.

We will require:

- Copy of the original sales receipt/invoice.
- Dealer's name, date of purchase, and price paid.
- The name, address, and email address of the purchaser.
- The date of purchase.
- The serial number of the unit.

Visit our website www.MysteryMagicians.com for more information.

In the unlikely event of a defect, the original purchaser shall contact Mystery Magicians to arrange a return of the M808A to the factory to be serviced.

Under the terms of the initial and extended warranties, all defects in parts, materials, and craftsmanship will be repaired or replaced free of charge.

All warranties shall become void in the event of damage caused by misuse, accident, neglect, unauthorized modification, or tampering.

Mystery Magicians Company assumes no liability for property damage or any other incidental or consequential damage whatsoever which may result from the failure of this product.

Mystery Magicians Company makes no other warranties, expressed or implied, including any implied warranty of merchantability and fitness for a particular purpose.

Upon request matched input and output tubes can be purchased from us directly by contacting us via our website www.MysteryMagicians.com

Mystery Magicians Co. Reserves the right to make changes in design or make additions to or improvements upon this product without any obligation to install the same on products previously manufactured.

SERVICE

In the unlikely event that the M808A develops a problem, follow the instructions below:

For North American users, contact Mystery Magicians Co. Via our website, under Support & Service. If it is determined that the M808A requires servicing, the unit will need to be returned to the factory. Contact us for instructions.

For users outside of North America, contact the dealer from which you purchased the M808A for instructions.

MYSYERY MAGICIANS®

M808A

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