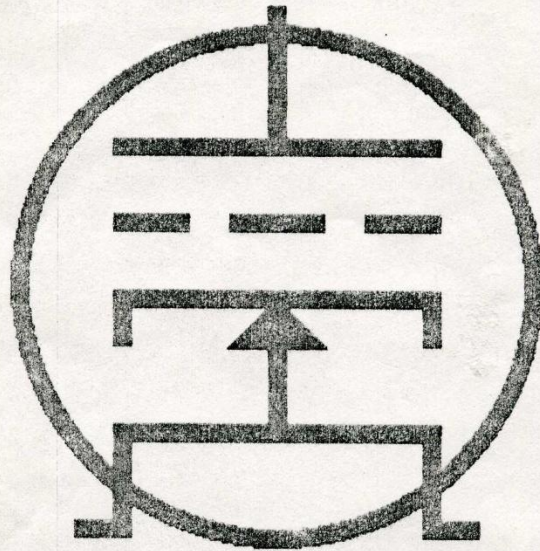


MOSCODETM MINUET
HI-GAIN PREAMPLIFIER
INSTRUCTION MANUAL



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MINUET INSTRUCTIONS

Unpacking: The Minuet preamplifier comes packed ready to go out of the box. Save all packing material in case you encounter problems and need to send the unit back to the factory for service. The serial number is located on the back of the unit. Be sure to make a record of it for your insurance and any correspondence regarding your preamplifier.

Initial hookup: Plug your Minuet into any 115 volt AC outlet. The power supply is of sophisticated 2 stage design and is regulated to withstand voltage variations from 100 to 130 volts.

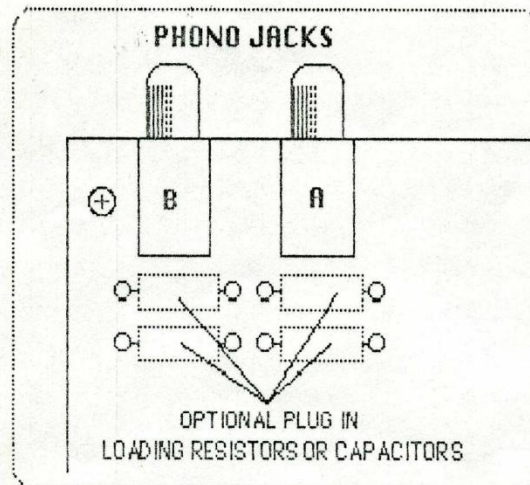
Tuning the unit on: Push in the "Power" switch on the lower right hand side of the Minuet. The RED LED marked "WAIT" will glow indicating the unit is warming up. During this period both tape and main outputs are muted preventing any unwanted warm up transients from driving your amplifiers, speakers, tape recorders, and processors. After about 45-55 seconds you'll hear a relay click and the GREEN LED marked READY will glow. The **MUTE** function mutes only the output to your amplifiers and speakers leaving the tape and processor loops unaffected. **Both LEDs** will glow indicating the mute function is activated.

CAUTION: THE PREAMP USES DANGEROUSLY HIGH VOLTAGES. DO NOT ATTEMPT ANY ADJUSTMENTS OR MODIFICATIONS WHILE THE PREAMP IS PLUGGED IN. **DISCONNECT FROM AC MAINS WHEN SERVICING******

Inputs and outputs: When viewed from the back, the phono inputs are located on the right and the two pair of parallel output jacks are located on the left. You may use the extra jacks to drive your subwoofer amplifier or any additional amplifiers you may own. The line (Tuner, CD, Processor, Tape) input/output jacks are in the middle and are divided between Channel A and Channel B for minimum crosstalk.

Processor and Tape Loops: Your Minuet is equipped with a Processor Loop for equalizers or a second Tape Machine and a Tape Loop. The loop is activated when the appropriate button is depressed. The order of the Signal chain is Source (Tuner, CD, Phono) to Processor Loop to Tape Loop to Mono Switch to Balance to Volume Control to Line Amp. You may copy tapes by plugging the "Source" Tape machine into the Processor loop and plugging your "Destination" Tape machine into the Tape Loop.

Phono operation: The Minuet Phono Stage features optional input loading and two types of gain control. These provide continuous adjustment of gain or sensitivity of the phono stages and permit introduction of negative feedback into the first stage to prevent input overloading. The input loading is accomplished by inserting any combination of resistors and capacitors into the gold plated component jacks located behind the phonograph input jacks. The maximum lead diameter is .025 inch which will accommodate most 1/4 or 1/2 watt resistors and many types of low value/low voltage capacitors. Lead spacing is 1/2 inch. You may choose the combination that works best with your particular cartridge. See your dealer for help in determining what value is appropriate for your cartridge.



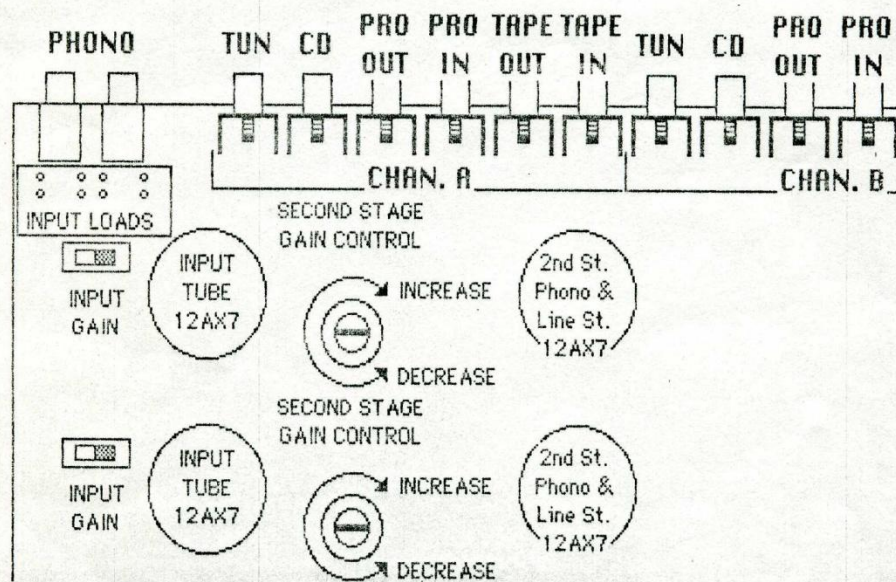
The default input loading is 47k ohms and capacitance is dominated by your phono interconnects. All additional resistors are in parallel with 47 k ohms. You may use the formula $1/[R_{final}] = 1/47,000 + 1/[R_{optional}]$ to determine the final value of the loading. For optional loading resistors under 1,000 ohms the new value is dominated by optional load resistor.

To figure the total capacitance your cartridge "sees" just add the value of the cable capacitance and the optional load capacitor you select. The following chart is provided to help you select the correct resistor.

CARTRIDGE LOADING CHART-RESISTORS:

DESIRED LOAD	EXACT RESISTANCE	NEAREST AVAILABLE VALUE
47,000	OPEN	OPEN
40,000	268,571	270,000
35,000	137,083	130,000
30,000	82,941	82,000
25,000	53,409	51,000
20,000	34,815	33,000
15,000	22,031	22,000
10,000	12,703	12,000
5,000	5,595	5,600
1,000	1,022	1,000
470	475	470
120	120	120
50	50	51
30	30	30
20	20	20
10	10	10

Gain Adjustment: The gain of the phono stage is totally adjustable from 80 db down to nothing by means of the adjustable gain control pot. (Please see diagram) The switch (S8-GAIN) reduces the gain of the input stage by 8 DB and extends the overload point of that stage. We recomend that unless you need the extra gain for a very low output moving coil cartridge you start with the switch set in the LO position. If further gain reduction is needed then adjust the gain pots counterclockwise until you reach a comfortable listening level with the volume control where you want it. The line level inputs are set and are not adjustable. Refer to the diagram on the next page.



MICRO-HTMPS: Hookup for the MICRO-HTMPS external Tube Regulator is a 9-Pin connector located on the rear right of the circuit board (as viewed from the front). Instructions regarding hookup are included with the MICRO-HTMPS.

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TECHNICAL SPECIFICATIONS and CIRCUIT DESCRIPTION:

<u>Frequency response:</u>	<u>Maximum output:</u>
<u>20-20khz. +/- .5 db</u>	<u>30 Volts RMS</u>
<u>THD:</u>	<u>IM:</u>
<u>Less than .1%</u>	<u>Less than .1%</u>
<u>Phono sensitivity:</u>	<u>Line Sensitivity:</u>
<u>.25 mv. for .5v output</u>	<u>100 mv.</u>
<u>Tubes:</u>	<u>Semiconductors:</u>
<u>(4) 12AX7 selected</u>	<u>8 Mosfets, 5 IC's.</u>
<u>Power Requirements:</u>	<u>2 Transistors</u>
<u>100-130 volts 60 hz AC.</u>	<u>Shipping Weight:</u>
<u>40 Watts</u>	<u>11 lbs.</u>
<u>Dimensions (including Knobs):</u>	
<u>8"D x 16"W x 4"H</u>	

THE AUDIO CIRCUIT:

The Moscode Minuet preamplifier audio circuit is comprised of a 12AX7 CASCODE (1st stage) capacitively coupled to a selectable attenuator, and passive RIAA equalization network. The next stage of gain is a common cathode 12AX7 gain stage direct coupled to a MOSFET source follower. The output of this stage is coupled through a 2 Mfd. polypropylene capacitor that drives the tape/processor loops and the volume controls. It should be noted that this output is muted during turn-on/off to prevent large transients from damaging tape recorders.

Inputs are: Tuner/CD; Phono/Line; Processor loop; Tape loop. There is a Mono switch that mixes the two channels together before the Balance and Volume controls. All unused inputs are shorted to ground to prevent bleed-through and cross-talk from unwanted signals. There is an isolation resistor in series with each input to prevent overloading the unused signal source.

The line output stage is 1/2 12AX7 direct coupled to a MOSFET SOURCE FOLLOWER followed by another 2mfd. polypropylene capacitor that provides up to 27 db of gain and also features turn on/off muting and is controllable from a front panel muting switch.

One very interesting and valuable feature of the circuit is a special cross coupling network that reduces crosstalk at high frequencies by 15 db and also dramatically reduces plate to plate coupling in the 12AX7 tubes. This "PHASE PRESERVATION" network is responsible for the very broad sound stage and detailed imaging characteristics.

MINUET POWER SUPPLY DESIGN:

The Minuet utilizes either a Mosfet regulator or an optional dual tube regulator as the basis of the power supply.

The high voltage (350 volt) power supply is made up of a voltage doubler providing 450 unregulated volts of raw dc at nominal line voltage with 1600 mfd of filter capacitors. The output is fed to the first stage of regulation which is a high voltage MOSFET regulator chip with overvoltage protection. Alternately an external dual channel tube regulated power supply may be

plugged in bypassing the internal 1st stage of regulation. These remove all traces of power supply ripple.

The output of the first stage of regulation (internal-Mosfet) is fed to a second stage buffer/regulator which keeps the plate supply for the tubes rock stable and removes any trace of audio signal. This stage is made up of an op amp and a MOSFET (two for each channel) which compares the output voltage to a very quiet reference voltage and provides correction as needed. The bandwidth of this regulator stage is several MHZ. When the optional external DUAL TUBE regulator is used the 2 outputs from this DUAL TUBE regulator are fed independently to each buffer stage regulator. The two stages of regulation provide well over 100 db of line or load isolation.

FILAMENT AND TIMER CIRCUITS:

12 volts of regulated DC is provided for the filament circuit.

The turn on delay is accomplished with a 555 timer chip. The power switch instantly releases the muting relays when power is turned off. There are LED status indicators on the front panel to indicate warm-up, ready and mute.

MINUET REPRESENTATIVE SCHEMATIC DIAGRAM

