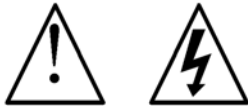




Piccolo

Moving Coil Headamp Kit Manual





Warnings

This product does not use any dangerous voltages. Power is supplied by a 12V wall-wart. The instructions in this manual are a suggested guide only and no liability is assumed by Hagerman Technology LLC.

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1 Before You Begin

Description

Congratulations! You have just purchased one of the highest performance-per-dollar audiophile products available. The Piccolo MC headamp fits between your MC cartridge and your MM phono stage providing the necessary increase in gain. The world-class circuit design employs low noise discrete matched JFET pairs for a very neutral and linear gain stage. No feedback is used. Both gain and input loading are independently adjustable. This flexibility allows perfect matching for any cartridge.

The half-kit contains a circuit board with the surface mount JFETs pre-installed and a few nuts and bolts. All remaining components can be purchased from DigiKey.

Features

- Discrete JFET zero-feedback circuit design
- Adjustable loading
- Adjustable gain
- Super low noise operation
- Internal battery or AC power operation

Tools

You will need a few basic shop tools (screwdriver, pliers, wire cutters, etc.) and a fine-tip soldering iron to build this kit. The delicate and difficult to install surface mount components have been pre-installed for your convenience.

2 Parts to Buy

Parts List

Parts can be ordered directly from www.digikey.com. A few screws, nuts, and miscellaneous have been included in the half-kit for your convenience.

Component	Qty	DigiKey	Reference Designators
100uF 25V	13	P12924	C20, C21, C3, C4, C5, C6, C7, C8, C9, C12, C13, C14, C15
100nF polyprop	6	P12092	C10, C11, C16, C17, C1
BAT47(3)	3	497-2492-1	D4, D2, D3
LM2941	1	LM2941CT	U2
ICL7660S	1	TC7660SCPA	U1
LED	1	67-1116	D1
Switch, 4 pos	1	CKC7005	S2
Switch 6 pos	1	CKC7003	S1
RCA jack	4	CP-1424	J1x, J2x
DC jack	1	SC1047	J3
10R0 1/4W 1%	5	10.0XBK	R12, R13, R14, R15, L1
22R1	10*	22.1XBK	R3x, R4x, R2x
47R5	5*	47.5XBK	R1x
100	10*	100XBK	R17, R18, R19, R20, R1x
221	10*	221XBK	R1x, R2x, R11x
232	5*	232XBK	R10x
475	10*	475XBK	R1x, R7x, R8x
1k00	5*	1.00KXBK	R1x, R2x, R22
3k32	5*	3.32KXBK	R21
4k75	10*	4.75KXBK	R2x, R5x, R6x, R16x
47k5	5*	47.5KXBK	R1x
221k	5*	221KXBK	R9x
Battery Holder	1	2477K	
Knob	2	226-4126	
Box	1	HM366	
Power Supply	1**	750-00008	

* Minimum order quantity.

** Use T974-P5P for 240Vac.

3 Assembly

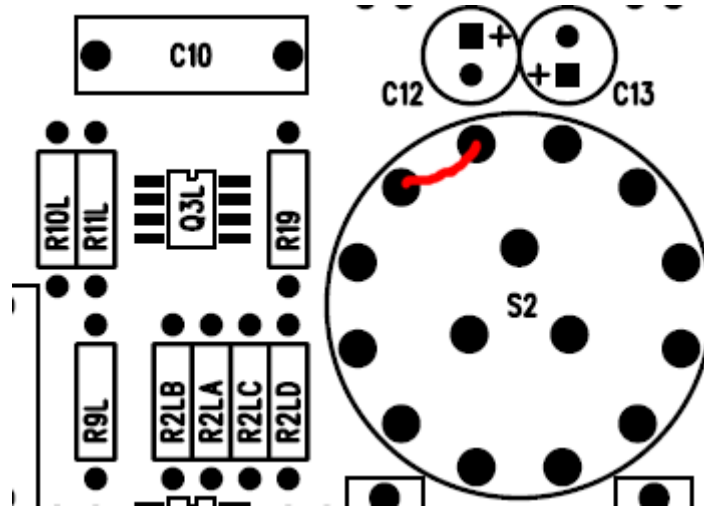
Circuit Board

Assemble in the specified order, soldering and clipping leads before continuing. The surface mount JFETS have been pre-installed for your convenience. Beware of component polarity! Not all diodes or electrolytics are lined up the same way. The square hole is the positive lead.



- ❑ Install all resistors. Use the guide in the back of this manual. For dc offset reduction, change R10 to 232 ohms. Use a 10 ohm resistor for L1.
- ❑ Install diodes.
- ❑ Install ICL7660S (add jumper from pins 1 to 8).
- ❑ Install terminal shields (wings facing outwards).
- ❑ Install LED.
- ❑ Install LM2941 regulator
- ❑ Install RCA jacks.
- ❑ Install electrolytics.
- ❑ Install remaining capacitors.

If you want the Piccolo to be permanently on (not recommended for battery operation), then you can add a jumper as shown to S2. This converts the originally “off” position to a 0dB gain setting.



- ❑ Install rotary switches with the alignment stub toward the bottom. Cut stub off.

Remove the nuts from the rotary switches and line up circuit board onto top panel. Insert the dc jack such that it fits onto circuit board and into panel hole. Add nut. This sets the proper mounting height of jack. Solder in place. Remove panel. Put nuts back onto switches to make sure the lock rings do not fall off.

- ❑ Add battery holder on backside with two #6 screws and washer standoffs. The screws form threads in the plastic. Do not over tighten. Solder leads.
- ❑ Add the #6 x 1" screw in the central ground hole (near loading switch) facing upwards. Secure in place with a nut. Add another nut loosely about 1/2" up.

Testing

The circuit board is now complete and ready to mount in the chassis. But first, plug it in and turn it on. The LED should light. If you have test equipment, apply a small input signal (below 0.1V) and measure the output.

Final Assembly

Mount the LED dome to top panel. Secure with plastic ring. Remove nuts from rotary switches and mount circuit board onto top plate. Secure in place with switch and dc jack nuts. Underneath, rotate the #6 nut so that it touches the plate. Add #6 knurled knob on

topside. This forms the turntable ground lug. Add knobs. Insert batteries and mount cover plate to box with four #6 screws.

4 Installation and Use

Testing

First do a visual check to insure all components have been installed and in the proper orientation. With batteries installed, turning the gain knob away from the off position will turn the amplifier on. LED should light up.

Installation

Connect the Piccolo between your turntable and MM phonostage. Connect the turntable ground wire to the knurled ground lug. Set the gain to accommodate your cartridge's output level. Adjust resistive loading to taste.

Cartridge	Gain
<0.2mV	26dB
0.2mV – 0.6mV	20dB
0.6mV – 2mV	12dB

Hum

The Piccolo is very quiet on it's own. However, in rare cases an installation environment might be noisy with stray fields. If you are experiencing hum, check for broken grounds, unshielded interconnects, nearby power transformers, etc.

Pops and Thumps

Sorry about this, but turn the volume down on your audio system when changing gain. Turning the gain switch can add a loud noise as it changes contacts. This also happens with loading, but not as noticeable.

5 Specifications

The following specifications are subject to change without notice.

Item	Specification
Gain	12dB, 20dB, 26dB
Input Impedance	47, 100, 220, 470, 1k, 47k ohm
Output Impedance	<300 ohms
Bandwidth (-3dB)	10Hz to 1MHz
Distortion	<0.01% @ 1kHz
SNR (phono)	85dB ref 5mV A-weighted
Overload	140mV @ 1kHz @ 26dB
Size	3" x 5" x 2"
Power	6Vdc to 24Vdc @ 15mA
Battery Life	4 alkaline AA, 200 hours

6 Warranty & Service

Warranty

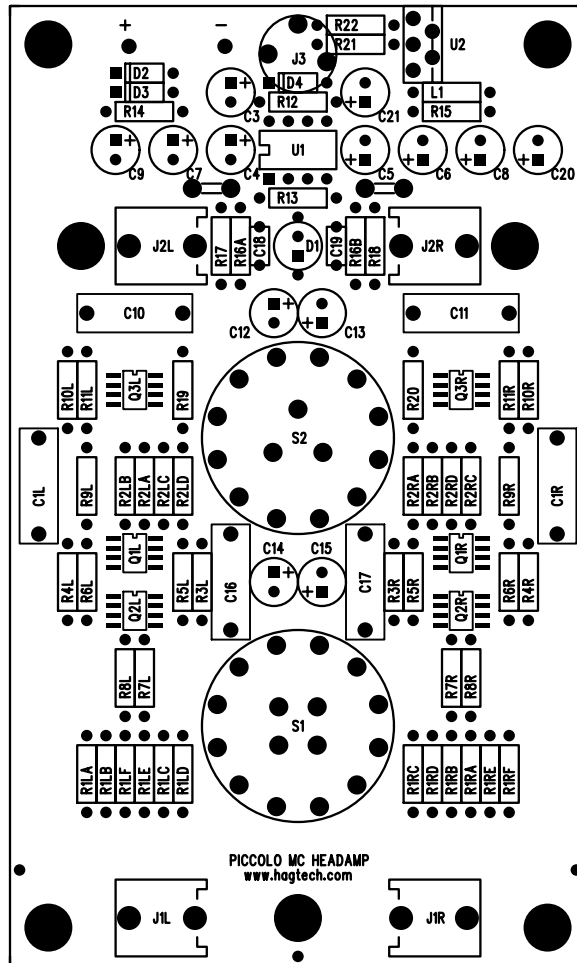
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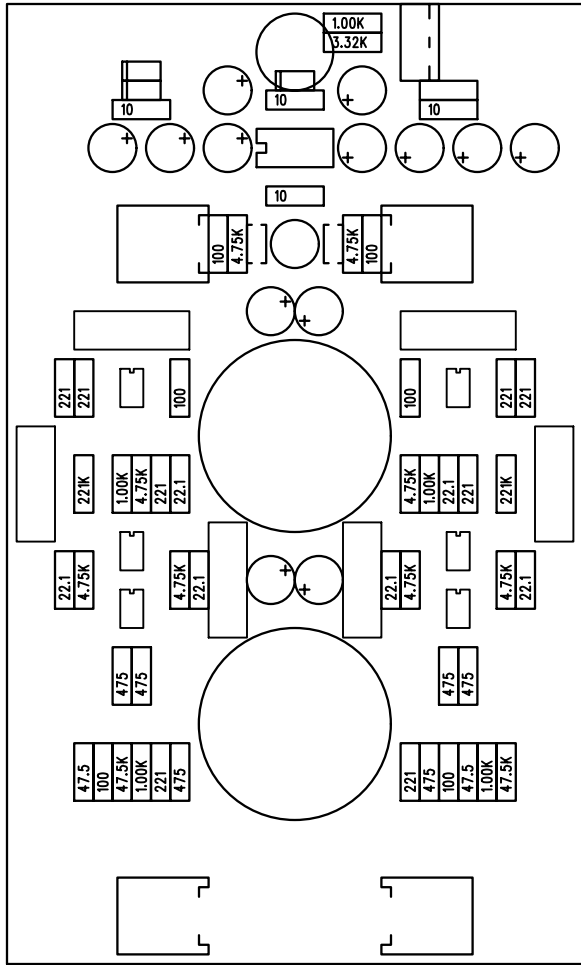
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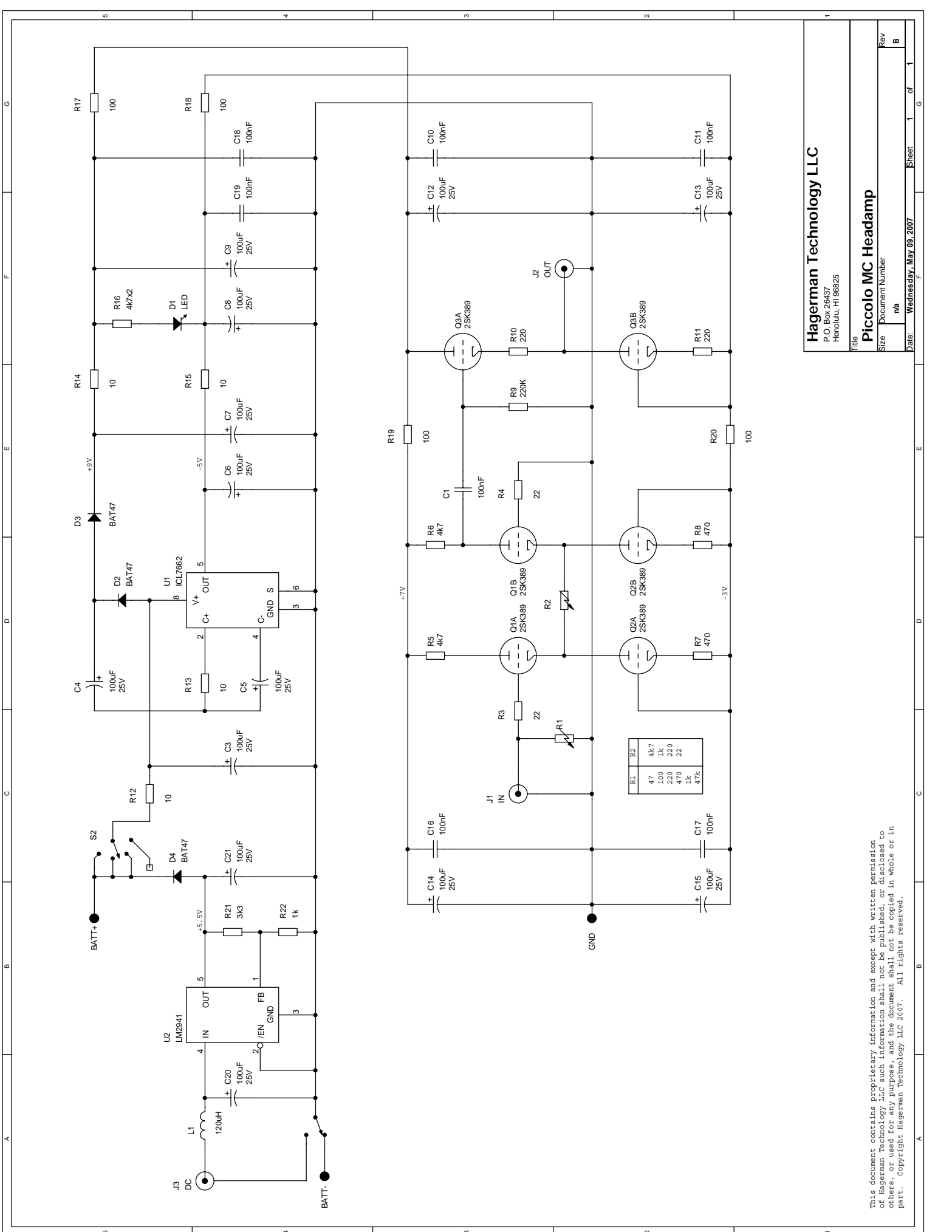
Service

Refer to Chapter 4 for troubleshooting information. If the problem persists, contact Hagerman Technology for service at <http://www.hagtech.com>.

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Piccolo MC Headamp

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