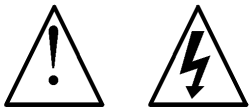
HAGERMAN
TECHNOLOGY

Oboe Pro

Preamplifier Kit



Warnings

This product uses dangerous and potentially lethal voltages. Extreme care must be taken while assembling this amplifier and should only be attempted by a skilled technician. The instructions in this manual are a suggested guide only and no liability is assumed by Hagerman Technology LLC.

Copyrights & Trademarks

Disclaimer

The information contained in this document is subject to change without notice. Hagerman Technology LLC shall not be liable for errors contained herein or for consequential damages in connection with the furnishing, performance, or use of this material. See Chapter 6 for warranty information.

1 Before You Begin

Description

Congratulations! You have just purchased one of the highest performance-per-dollar audiophile products available. The Oboe Pro is designed for extreme simplicity of assembly (no wires), yet maintain a high level of sonics. Built around the popular Bugle phonostage, the Oboe adds a linestage section and ac power supply for a complete and compact solution. The circuitry uses passive equalization, simple opamp gain stages, and high quality polypropylene capacitors. Phono gain can be set to accommodate any cartridge.

The Oboe Pro half-kit comprises a blank circuit board, two professionally cut and screened chassis panels, and these instructions. To complete, you must purchase the remaining components from Digi-Key (**www.digikey.com**).

Features

- Three inputs
- Phono section
- Built-in power supply
- Headphone jack
- Clean, quiet solid-state design
- Quality components

Tools

You will need a few basic shop tools (screwdriver, pliers, wire cutters, etc.) and a fine-tip soldering iron to build this kit.

2 Parts to Buy

Parts List

Order components directly from **www.digikey.com**. You will also need a five #4 x 1/4" screws, two #4 nuts, two #6 x 3/8" screws and two #6 nuts.

Component	Qty	DigiKey	Reference Designators
4700uF 25V	4	P5159-ND	C1, C2, C6, C7
470uF 25V	4	P5155-ND	C3, C5, C8, C10
100nF	5	P4525-ND	C4, C16, C9, C17
220nF	8	P3224-ND	C12, C11, C14, C15
10nF	2	P3103-ND	C13
Diode	4	MBR1100-ND	D1, D2, D4, D5
LED	1	160-1609-ND	D3
OPA2134	5	OPA2134PA-ND	U3, U4, U5, U6, U7
LM7815	1	MC78M15CTOS	U1
LM7915	1	MC79M15CTOS	U2
RCA single	1	CP-1435-ND	J5
RCA triple	1	CP-1441-ND	J2
RCA lug	1	576K-ND	
Ground jack	1	J587-ND	
AC input	1	Q218-ND	J1
Headphone jack	1	SC1121-ND	J3
Fuse	5	F965-ND	F1
Fuse Holder	1	WK0011-ND	
Power cord	1	Q120-ND	
Heat sink	2	HS224-ND	
Transformer	1	MT1122-ND	T1
Socket	5	A400-ND	
Knob	3	451-1121-ND	
Box	1	377-1152-ND	
Switch select	1	GH7106-ND	S2
Switch power	1	EG1026-ND	S1
Switch cap	1	EG1098-ND	
Pot balance	1	P2R1503-ND	R36
Pot volume	1	P2T3503-ND	R43
1.0 5%	5	1.0QBK-ND	R35
10 5%	5	10QBK-ND	R3, R5

316 1%	10	316XBK-ND	R29, R22, R42
1.00k 1%	10	1.00KXBK-ND	R27, R26, R24, R44
1.30k 1%	5*	1.30KXBK-ND	R20, R18
1.43k 1%	10	1.43KXBK-ND	R28, R16, R37
4.75k 1%	5	4.75KXBK-ND	R41
8.45k 1%	5	8.45KXBK-ND	R23
13.0k 1%	15	13.0KXBK-ND	R21, R25, R19, R17, R38, R33, R34
47.5k 1%	10	47.5KXBK-ND	R31, R32, R39
1.0 1W	4	1.0W-1-ND	R7, R8, R1, R13
10 1W	2	10W-1-ND	R2, R14
1k 1W	4	1.0KW-1-ND	R5, R10, R4, R12
10k 1W	2	10KW-1-ND	R6, R11

* Depends on gain! Use 392 ohm for 60dB, 681 ohm for 50dB.

3 Assembly

Step by Step

Please follow this systematic procedure for assembling the amplifier. Make sure you have purchased all necessary components before you begin.

Circuit Board

Use the schematic and stuffing guide in the back of this manual for assembly reference.

- ❑ Start by installing resistors R7, R8, or R9 on BOTTOM side of circuit board. For 115V operation, use only R7 and R8. For 230V, R9 only. Cut leads short.
- ❑ Install all other resistors on top (component) side.
- ❑ Install sockets.
- ❑ Install diodes.
- ❑ Install capacitors.
- ❑ Mount regulators to heat sinks using #4 hardware. Solder in place.
- ❑ Install fuse holder.
- ❑ Install transformer.

The rotary select switch requires the variable stop positions to be set. Turn shaft so that flat is at 1:30 clock position. Insert pins at locations 6:00 and 9:00. Apply decal.

- ❑ Install rotary switch. Insure that shaft is parallel to board.
- ❑ Install balance and volume controls (balance has center-detent).
- ❑ Install power switch.
- ❑ Install headphone jack.
- ❑ Install RCA connectors.
- ❑ Install ac input connector, use two #6 screws to secure in place.
- ❑ Install LED (long lead positive) with about ½ inch lead length. LED has to bend to fit hole in chassis.

You can now optionally clean solder flux from the board. Do this by soaking in 99% isopropyl alcohol for about half an hour. Use a soft paintbrush to scrub. Rinse with clean alcohol and blow dry.

- ❑ Install opamps.
- ❑ Install fuse.

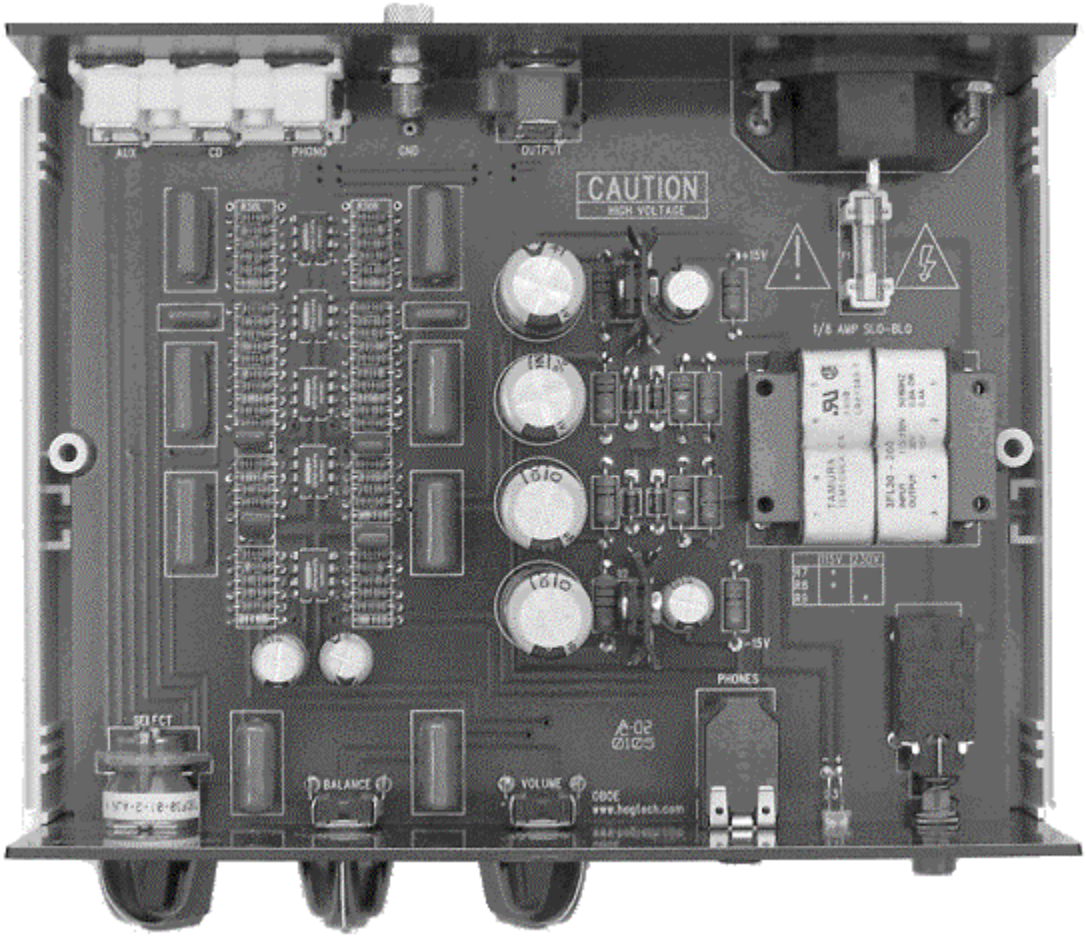


Figure 1. Internal view of assembly.

Chassis

The circuit board is not mounted on standoffs, but rather directly to the front and rear chassis panels.

- Solder a short piece of wire (resistor lead) to the ground lug on spare RCA jack.
- Install ground lug to rear chassis panel. Use the ground lug as a washer, with lead facing downwards.
- Apply rear chassis panel to circuit board, with ground lead inserting into circuit board ground hole. Use the #6 hardware to fasten at ac input connector. Add #4 screws to RCA connectors. Solder ground lead to circuit board.
- Install pushbutton switch cap.
- Apply front chassis panel. Bend LED so it fits snugly in place.

- Secure front panel in place with rotary switch, potentiometer, and headphone jack washers and nuts.
- Set rotary switch to middle position. Add knobs.

Figure 2. View of back panel.

- Install rubber feet onto chassis bottom (the one with screw holes).
- Install circuit board assembly into bottom chassis.
- Add side panels and cover. Secure in place with supplied screws.

4 Testing & Installation

Testing

Performance testing is possible if you have access to laboratory test equipment, but is typically unnecessary. You can do a basic test with a DVM by checking supply voltages on the opamps and insuring there is no dc offset at the outputs.

Connections

Connect the Oboe Pro just like any other audio preamplifier. Close proximity to large electric or magnetic fields may induce hum or buzz into the signal.

5 Specifications

The following specifications are subject to change without notice. Values given are for stock components at 40dB gain.

Item	Specification
Gain	40dB to 60dB phono, 16dB line
Input Impedance	47k phono, 100k line
Output Impedance	330 ohms
RIAA Response	+/-0.5dB from 40Hz to 40kHz
Bandwidth (-3dB)	17Hz to 300kHz (minimum)
Distortion	0.05% @1kHz
SNR	66dBA ref 5mV phono, 102dBA line
Overload	55mV @1kHz
Fuse	0.125 amps
Size	8 x 7 x 3.5 inches

6 Warranty & Service

Warranty

Hagerman Technology LLC warrants this product free of defects in materials and workmanship for 10 years. If you discover a defect, Hagerman Technology LLC will, at its option, repair or replace the product at no charge to you provided you return it during the warranty period, transportation charges prepaid to Hagerman Technology LLC. This warranty does not apply if the product has been damaged by negligence, accident, abuse or misuse or misapplication, has been damaged because it has been improperly connected to other equipment or has been modified without the express written permission of Hagerman Technology LLC. This warranty is limited to the replacement or repair of this product and not to damage to equipment of other manufacturers.

Any applicable implied warranties, including warranty of merchantability, are limited in duration to a period of the express warranty as provided herein beginning with the original date of purchase and no warranties, whether express or implied shall apply to the product thereafter.

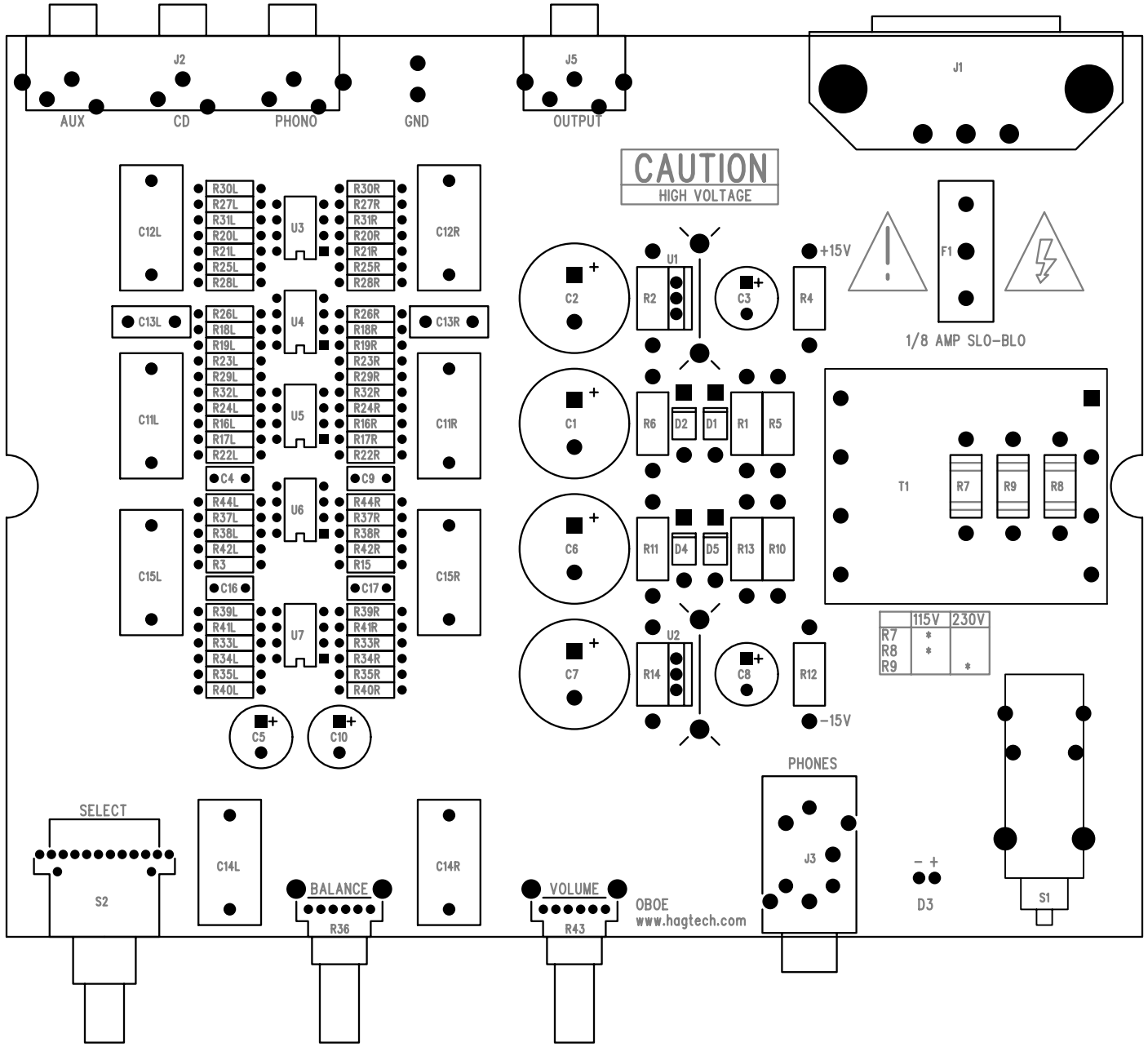
Under no circumstances shall Hagerman Technology LLC be liable for any loss, direct, indirect, incidental, special, or consequential damage arising out of or in connection with the use of this product.

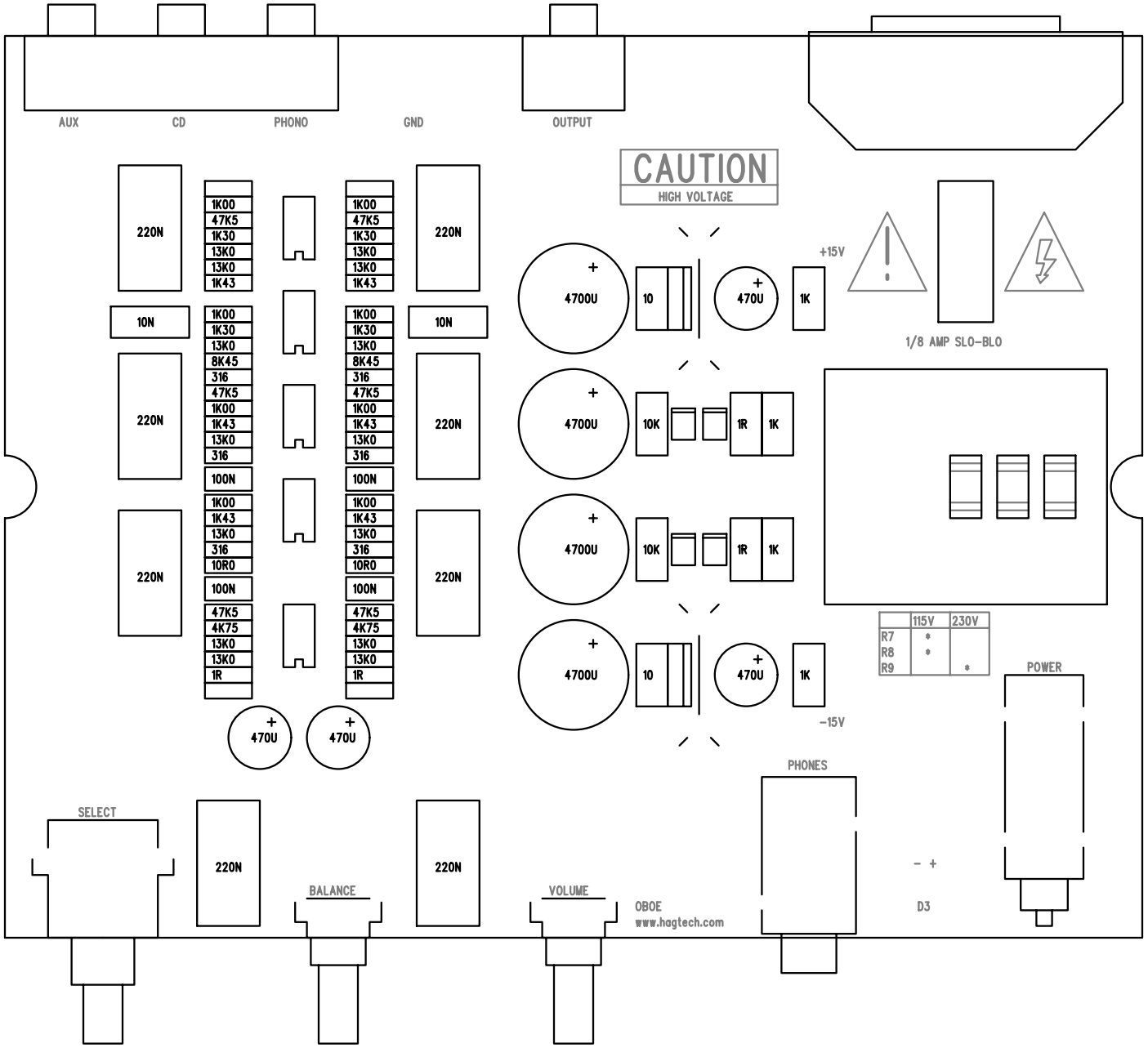
Service

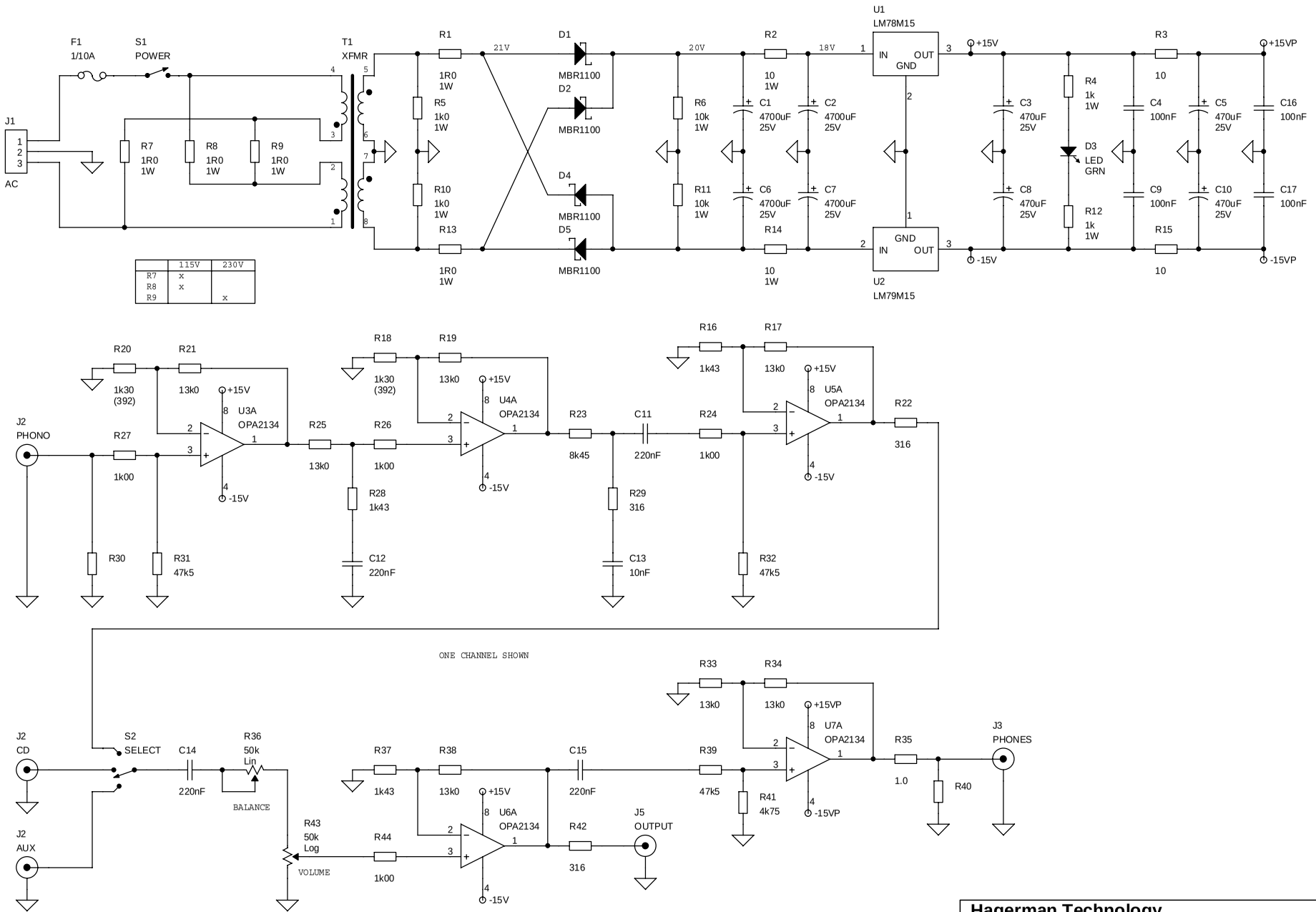
Refer to Chapter 4 for troubleshooting information. If the problem persists, contact Hagerman Technology for service at **service@hagtech.com**.

Hagerman Technology LLC
PO Box 26437
Honolulu, HI 96825 USA

808-383-2704 (voice)
808-394-6076 (fax)


J2
AUX
CD
PHONO
GND
J5
OUTPUT
J1
CAUTION
HIGH VOLTAGE
1/8 AMP SLO-BLO
F1
+15V
-15V
U1
U2
U3
U4
U5
U6
U7
C12L
C12R
C13L
C13R
C11L
C11R
C15L
C15R
C14L
C14R
C1
C2
C3
C4
C5
C6
C7
C8
C9
C10
R1
R2
R3
R4
R5
R6
R7
R8
R9
R10
R11
R12
R13
R14
R15
R36
R43
D1
D2
D3
D4
D5
T1
S1
S2
J3
PHONES
SELECT
BALANCE
VOLUME
OBOE
www.hagtech.com
115V
230V


AUX
CD
PHONO
GND
OUTPUT
CAUTION
HIGH VOLTAGE
1/8 AMP SLO-BLO
+15V
-15V
220N
10N
1K00
47K5
1K30
13K0
8K45
316
100N
4K75
10R0
1R
4700U
470U
10
10K
1K
115V
230V
R7
R8
R9
POWER
PHONES
SELECT
BALANCE
VOLUME
OBOE
www.hagtech.com
D3



Hagerman Technology
P.O. Box 26437
Honolulu, HI 96825

Title
Oboe: Preamplifier

Size	Document Number	Rev
	n/a	A

Date: Wednesday, February 23, 2005 Sheet 1 of 1