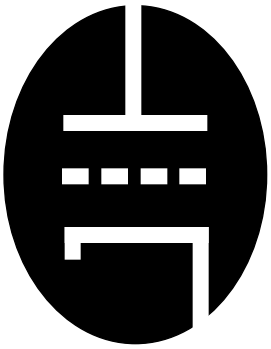
MANLEY

LABORATORIES, INC.

Neo-Classic 250 & 500 WATT AMPLIFIERS OWNER'S MANUAL

TUBES  RULE

brought to you by the clever folks at:

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INTRODUCTION

Tried and true: The Manley Neo-Classic 250 and 500 Watt Monoblocks have been refined over years and years of development. Reliability that you can depend on combined with musical accuracy and emotional authority is what these amplifiers promise and deliver. They are able to switch operation modes allowing the listener to choose between the sonically seductive qualities of triode and the more powerful tetrode configuration. We use big, beefy reservoir capacitors in the high voltage supplies giving plenty of instant energy for dynamic performance of transient peaks and bass impact and weight which often exceeds that of rival solid-state amplifiers. We run high voltages on the plates of the output tubes but operate them at lower current which will result in their longer life. Although each output tube has its own bias-adjust, we carefully fit each amplifier with computer-batched tubes for best performance. The bias adjustment pots and measuring points are conveniently located behind the oval front panel insert on the faceplate.

To avoid a heavy power drain when the cold amplifier is first switched on, we conceived a “Soft-Start” mode which also functions as an “Ever-Warm” position allowing the amplifiers to be always warmed up for pleasurable listening. Each amplifier only consumes 30 watts of power in Ever-Warm mode. A blinking green LED reminds the user that the amplifier is in warm-up mode because as all the power supplies are at half-voltage, the amplifier will still play tunes (albeit not-so-great-sounding-tunes) when the Ever-Warm mode is engaged.

We added a front-panel mute switch and created a new angled-back chassis to make it easier to hook up the interconnects, speaker cables, and IEC power cord. In our own in-house magnetics department, our R&D team completely redesigned all of our output transformers in 1998 with the goal to reclaim that luscious rich mid-range of our vintage designs. In 2000 the amplifiers were completely overhauled once again. We also specifically set out to achieve a deeper bottom register at higher power with lower distortion. Hours and hours of listening tests, measurements, and fine-tuning brought an exciting and stunning result to our ears. We hope you will agree.

Please read over this entertaining and enjoyable owner's manual carefully as it contains information essential to the proper operation and maximum enjoyment of this precision audio instrument.

Thank you again, and please enjoy your new amplifiers! (and the clever Owner's Manual.)

UNPACKING: Unpack the units carefully and make sure that all supplied accessories are present. Carefully examine all items for any possibility of shipping damage. **All the output tubes are proteced by a grey foam surround and this must be removed before you turn on these amplifiers!** Remove the tube cage/covers, then extract the grey protective shipping foam. Replace the cages or you can leave them off. Whatever you like. After doing this, the tubes should be standing at attention in their sockets, and should show no signs of distress such as chipped glass, loose internal components or obvious breakage. If the amplifier is damaged or fails to operate, notify the shipper or your dealer or us or your local authorities immediately. Or if you suspect The Shipping People threw it off the airplane and onto your front porch whilst flying overhead at 30,000 feet, notify the shipping company without delay and complain to them as we only guarantee these amps to be able to survive a drop of 23,487 feet or less.

Your amplifiers were packed by Manny Q. with extreme love. The sturdy box includes an assortment of protective foam pieces, several superfluous plastic baggies, the amplifier chassis, and the following components and accessories:

a) 1 each, 6 foot IEC 3-conductor power cable appropriate for the voltage system in your country (that you will probably replace with an expensive audiophile cord anyway.)

b) 1 each, Owner’s Manual (that we hope you will keep reading.)

c) 1 each, little cheapo Multi-Meter. (So you can set your bias. We saved you a trip to Radio Shack. We figured you spent all this money on the amps, we might as well throw in a little multimeter for ya...)

d) "a couple" each, spare B+ fuses...just in case absolute power corrupts absolutely.

It is prudent to retain the shipping materials for future use, as they are custom-formed for the amp and will greatly minimize the chance of shipping-related damage should you ever need to put your precious 250's or 500's in the careless hands of The Shipping People again.

MAINS CONNECTIONS

Your 250's or 500's have been factory set to the correct mains voltage for your country (well, that is what we intended to do when we knew where it would be initially shipped). There is NO voltage changeover switch inside! The serial number sticker badge will proclaim the voltage we initially set when the unit first shipped from the factory. Additionally there might be a yellow 120V sticker or a red 230V sticker placed near the IEC power inlet. Check the sticker and the serial number voltage indication for proper mains voltage and confirm that agrees with what comes out of your wall. THIS IS IMPORTANT. Failure to properly comply with mains voltage requirements can cause extensive damage to the system, which of course would not be covered by the warranty. If you relocate from, say, a 120V country to a 240V country, you will need to re-wire the power transformer primaries to agree with new new mains voltage and you will also need replace the mains fuse value with the proper value for the new operating voltage. Or you can ignore all this and use a step-up (or step-down) outboard converting transformer to power the unit from. But he had better be BIG for these huge amps...

ALWAYS DISCONNECT THE IEC MAINS CABLE BEFORE OPENING THE UNIT AND ALWAYS ALLOW 30 MINUTES TO ALLOW THE CAPACITORS TO DISCHARGE FOR SAFETY'S SAKE SO YOU DO NOT HAVE A SHOCKING EXPERIENCE. THOSE EXPERIENCES ARE NOT EVEN A LITTLE FUN.

The mains fuse may be checked by first disconnecting the IEC mains cord from the power supply's power inlet plug. Then grab the knob cap and gently pull out the fuseholder retainer cover. The fuse and cap should spring outward toward your fingers. Inspect the fuse for the proper rating; change if necessary. The B+ fuse cap cover is to be rotated counter clockwise with a 1/4" flat screwdriver to release it from its housing.

Refer to the fuse rating charts in the **specifications** section of this manual. If you do not know what a blown fuse looks like, you may measure for continuity across the fuse ends with a multimeter set to read resistance, ohms, or the omega symbol. If your meter reads "OL" when you measure across the fuse, that means "Open Leads" and that would mean the fuse is blown. A blown fuse usually indicates A Very Bad Thing occurred. If this has happened to you, try to figure out why it may have happened. (Using a Fast Blow fuse when we have specified a SLO-BLO fuse is one reason...) If you have no idea why a fuse might have just blown on its own, you might want to consult with Manley Labs or your dealer for further advice as to what Very Bad Thing might have occured, like the power transformer might have decided to retire early or protest its oppressive conditions.

One way this could happen is by running the wrong mains voltage into the unit. Be sure not to do that.

If you live in a strange place...

Export units for certain markets have a moulded mains plug fitted to comply with local requirements. If your unit does not have a plug fitted the coloured wires should be connected to the appropriate plug terminals in accordance with the following code.

GREEN/YELLOW	EARTH terminal
BLUE	NEUTRAL terminal
BROWN	LIVE terminal

As the colours of the wires in the mains lead may not correspond with the coloured marking identifying the terminals in your plug proceed as follows:
The wire which is coloured GREEN/YELLOW must be connected to the terminal in the plug which is marked by the letter E or by the safety earth symbol or coloured GREEN or GREEN and YELLOW.

The BLUE coloured wire must be connected to the terminal in the plug which is marked by the letter N or coloured BLACK.

The BROWN coloured wire must be connected to the terminal in the plug which is marked by the letter L or coloured RED.

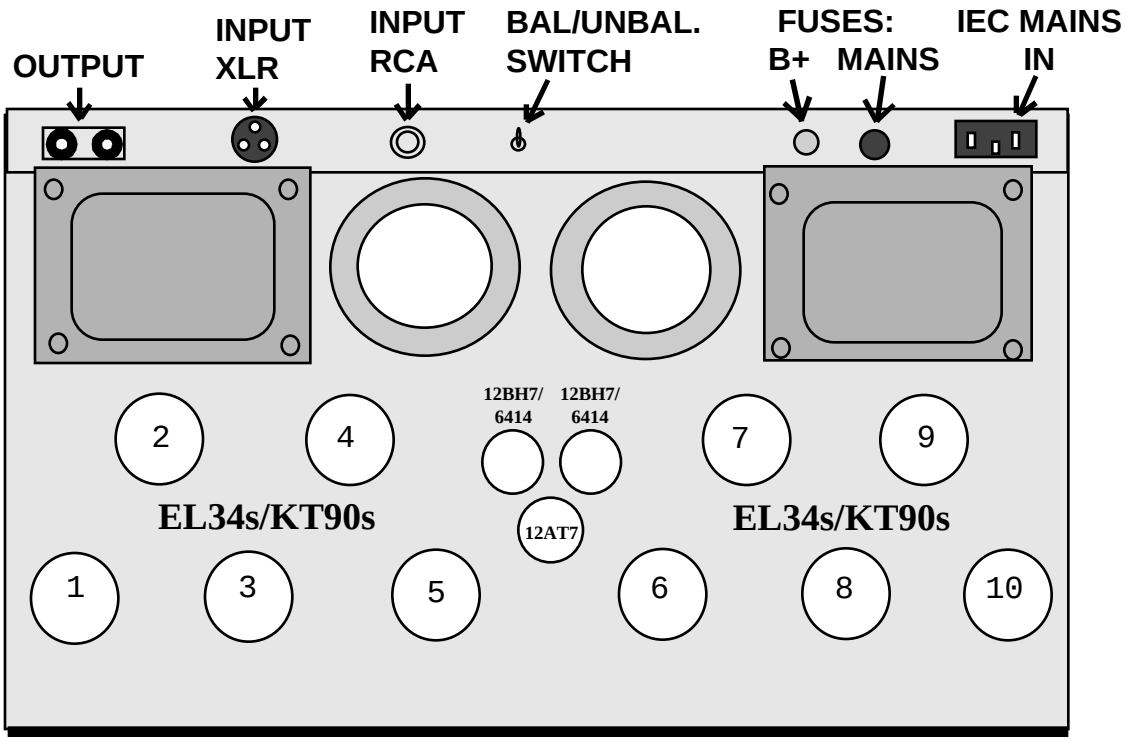
DO NOT CONNECT OR SWITCH ON THE MAINS SUPPLY UNTIL ALL OTHER CONNECTIONS HAVE BEEN MADE. (...or else...)

CONNECTING YOUR AMPLIFIER

Setting up your amplifiers is rather easy.

1. Connect all source components (turntable, CD, Tuner, Tape DAT, etc.) to your preamplifier.
2. Connect the interconnects from the output of the preamplifier or switching center to the RCA input on the top rear of the amplifiers. IF your source has a truly BALANCED output, connect TO the XLR input and select the balanced input on the switch. If using a standard UNBALANCED source, select and use the unbalanced RCA connector. This amplifier will not function properly if you are using the wrong input for your application. The XLR inputs signals are transformer balanced and floating. Pinout is Pin 1: Ground; Pin 2: POSITIVE (+); Pin 3: NEGATIVE (-). The XLR input can be driven by balanced or unbalanced outputs on preamps and is particularly useful if ground loops and hum is a problem or long lines are being driven. Pin 1 is ground which can be cut for a true isolated output which can sometimes cure some ground loops. If using an unbalanced device to drive the transformer-coupled XLR input, you may GROUND Pin 3, but do not float it. Both legs of the trannie must be connected to something when you are using the XLR input.
3. Be sure to select XLR or RCA input depending on which one you are using. No tunes will get into the amplifier if you have the wrong input selected.
4. Connect the hot or "+" speaker cable to the red binding post and the common or "-" speaker cable to the white binding post (See diagram 2). Ensure that the other end of the cable is connected correctly to the speaker. Tighten the binding posts by hand. If you use a nut-driver or wrench, do not over-tighten the posts or you may break them.
5. Ensure that the "mains" switch on the front panel is DOWN in the "off" or "0" position and the OPERATE / STANDBY switch is also down in the STANDBY mode.
6. Turn on Preamplifier and all the source components you plan to use.
7. Plug amplifier into wall outlet.
8. Switch the black right-most mains power switch UP to the ON position and allow the amplifier a minute or so to 'warm up'. The blinking LED will indicate that the amplifier is in STANDBY / SOFT-START mode.
9. Engage the soft-start switch UP to the OPERATE position. The blinking standby LED will extinguish.
10. Turn up the volume on your preamp and enjoy the glorious tunes. If you don't hear tunes, make sure you do not have the amplifiers MUTED... hit that MUTE switch.
11. After your listening session, if you wish to leave the amplifier in the energy-saving and 'EVER-WARM' STANDBY mode, engage the OPERATE/STANDBY switch to the STANDBY position. The standby blinking LED will remind you that the amplifier is in STANDBY mode.

OVERHEAD VIEW



Tube Location & Type

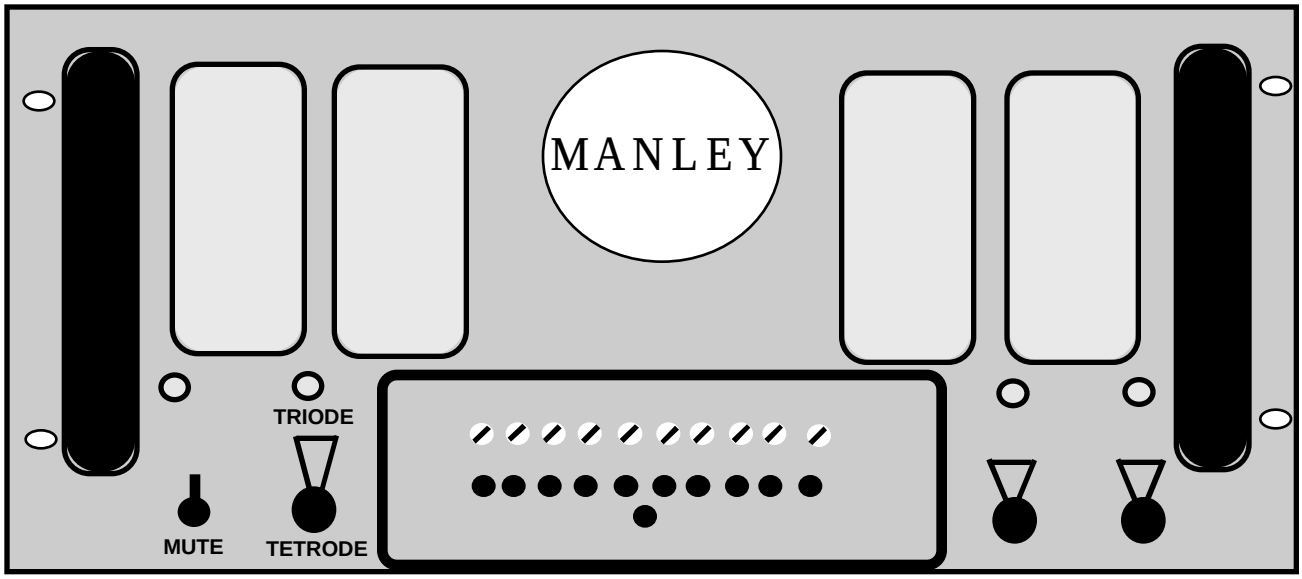
OUTPUT TUBES: 10 x EL34 (250W) or 10 x KT90 (500W): The EL34 types we recommend are the Sovtek EL34G, EL34G+, EL34WXT, Electro-Harmonix EL34EH or the JJ EL34GT as supplied to us by our pals at Groove Tubes. For the 500W model, we recommend using the KT90EH by Electro-Harmonix. These have been proven to be the most rugged, reliable, and best sounding for these amplifers and we strongly emphasize that only these types should be used in these amplifiers. The MANLEY NEO-CLASSIC 250 & 500W MONOBLOCKS have been thoroughly optimised around these tubes. Use of unapproved tube types can and will void your warranty. We have selected the tubes for equality of current draw in our custom-built computerized tube tester for each of your monoblocks . Although each tube bias can be individually adjusted, "matched" tubes as we have selected are thouroughly beneficial to the amplifier's performance.

DRIVER TUBES: 2 x 12BH7A (250W) or 2 x 6414 (500W): We use the Yugoslavian Ei 12BH7 for the driver tubes in the 250s these days. They seem a little better than the more easily available Russian Electro-Harmonix 12BH7EH's. Good luck trying to find any American 12BH7A NOS these days.... For the 500W model, we use 6414W tubes made by GE. In both models, each tube handles a phase and each tube's dual triodes are paralleled up. So selecting for triode-to-triode matching on each of these driver tubes is completely unneccessary.

INPUT TUBE: 12AT7WA (250W/500W): The 12AT7WA has several equivalent numbers: 12AT7, 12AT7A, 6201, ECC81, etc. Any of these types may be used. We have selected this 12AT7WA very carefully for noise, microphonics, and constancy. We like the large plate Ei Yugoslavian tubes for this application. The two triodes are paralleled so matching of the two triodes is not necessary. Just select for low noise examples.

Replacement tubes of premium quality tested for best performance in this amplifier are always available from MANLEY LABORATORIES. Fill out the PARTS ORDER FORM on our website if you'd like to order some spare tubes or fuses.

FRONT VIEW



1 2 3 4 5 6 7 8 9 10

GROUND

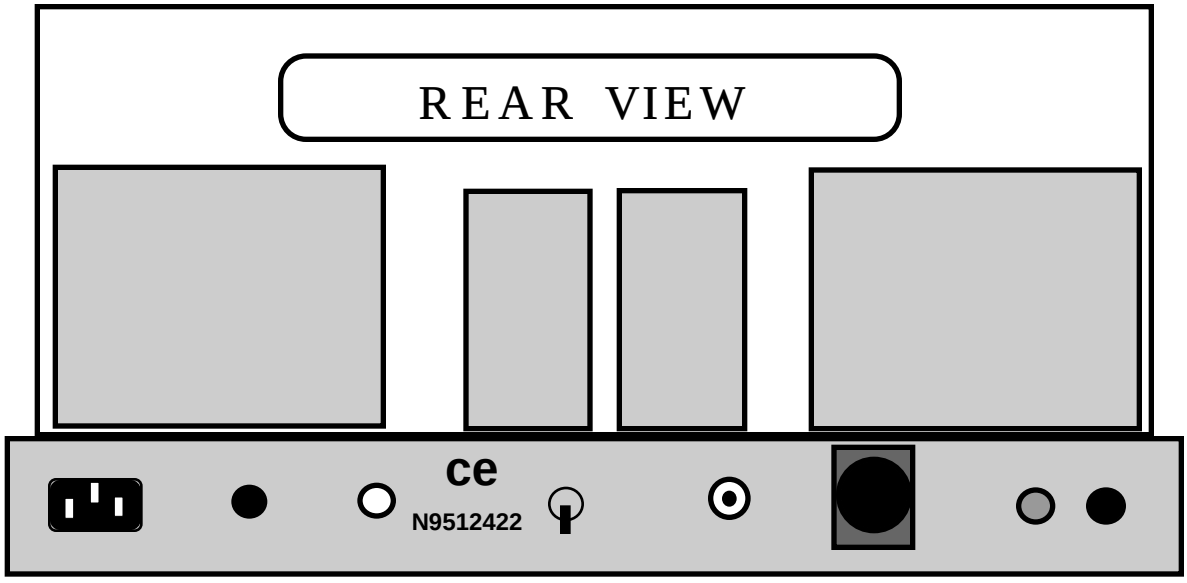
FRONT VIEW OF AMPLIFIER
WITH INSERT REMOVED

OPERATE
STANDBY
EVER-WARM
SOFT START
SWITCH

MAINS
POWER
ON / OFF
SWITCH

SHOWING BIAS MEASUREMENT POINTS
AND BIAS ADJUST POINTS

REAR VIEW



MAINS IN
IEC

MAINS
FUSE
SLO-BLO

B+ FUSE
SLO-BLO

BALANCED/
UNBALANCED
SWITCH

RCA
INPUT

XLR
BALANCED
INPUT

SPEAKER
OUTPUT
BINDING
POSTS

OPERATIONAL NOTES

SWITCHING ON -- SOFT START

The MANLEY NEO-CLASSIC 250's & 500's are equipped with a SOFT-START circuit which reduces the cold-start current draw which makes things easier for your house breakers and the poor tubes and capacitors in the amps. We recommend that you use this soft start turn-on feature sequence whenever you turn the amplifier on and especially when you turn it on from cold.

1. Ensure that the right-most "mains" switch on the front panel is in the "off" or "0" or DOWN position and the OPERATE / STANDBY switch is also DOWN in the STANDBY mode.
2. Turn on preamplifiers and all your source components and let them warm up for a minute.
3. Switch the right-hand mains power switch to the ON position and allow the amplifier a minute or so to 'warm up'. The blinking LED will indicate that the amplifier is in STANDBY mode.
4. After a minute or so, or more if you like, engage the soft-start switch UP to the OPERATE position. The blinking standby LED will extinguish.
5. The MUTE switch just prevents tunes coming into the amplifier. It grounds them out. UN-MUTE this switch if you had it on, turn up the volume on your preamp and enjoy.
6. To shut the amps off, you can flip the mains power switch down first, which will shut off power to the amplifier.

THE EVER-WARM MODE

After your listening session, if you wish to leave the amplifier in the energy-saving and 'EVER-WARM' STANDBY mode, engage the OPERATE/STANDBY switch to the STANDBY position. The standby blinking LED will remind you that the amplifier is in STANDBY mode. The amplifier will draw only 400mA (30 watts @120VAC) from the mains outlet-- certainly an energy saving way to keep your amplifiers warmed up and always ready to listen to!

TRIODE / TETRODE OPERATION:

With the TRIODE / TETRODE switch, the amplifier may be set for TRIODE or TETRODE operation. When the switch is in the lower position, the amplifier is in TETRODE mode which will produce just over 250 watts in the 250 model, and, as you might expect, just over 500 watts in the 500 model. When the switch is in the upper position, the amplifier is in TRIODE mode which will produce about half the power of TETRODE operation. For some more demanding energetic music, large rooms, or for power hungry inefficient loadspeakers, you might find you will need the extra power of tetrode operation. Other times and other situations will find you very well satisfied with the sweet and seductive triode mode. One major rule applies for switching between triode and tetrode:

THE AMPLIFIER MUST BE TURNED OFF BEFORE SWITCHING BETWEEN TRIODE AND TETRODE!!!!

Follow turn on SOFT START procedure above when re-powering up the unit. Do not ever flip rapidly back and forth between triode and tetrode or you'll probably blow something up. Set it. And forget it.

TUBE LIFE

You should expect extended life from the tubes in your MANLEY 250's & 500's if you adhere to the procedures described above and check your bias at least once every 2-3 months.

FUSES

The fuses used in your amplifier are standard 1/4" x 1 1/4" SLO-BLO Ceramic types. The correctly rated fuse has been installed at the factory for your country's voltage. If replacing a fuse, always unplug the amplifier's power cord from the wall outlet and always use the exact same type and ampere rating fuse as the one you are replacing. Failure to do so will void your warranty and can be a dangerous fire hazard. NEVER replace a fuse with thick wire, tin foil, gum wrappers, or anything else other than the correct fuse!

BIAS PROCEDURE

The Manley 250 & 500 watt Amplifiers use a fixed bias system that requires very little attention. The term "bias" as used here refers to an externally adjustable voltage applied to each of the output tubes grids. This voltage sets the correct current draw for each output tube. Proper adjustment ensures the best sonic performance and longest tube life. We recommend that you check the bias upon initial receipt of the amps, and every 2 or 3 months thereafter.
For this procedure you will need a voltmeter (a hand held autoranging DMM digital multimeter is the easiest), a 3/32" allen key, and a small 1/8" flat screwdriver.

1. Using the 3/32" allen key, remove the two silver hex cap head screws which secure the black oval insert to the faceplate. On page 8, which shows the FRONT panel of the amplifier, you can see 10 red tip jacks plus the black ground point that are hiding underneath the oval insert.
2. To measure the current draw of each output tube place the POSITIVE meter probe into the first red tip jack. (If you read a negative reading reverse the meter probes, no harm will be done.) Set the meter to read 'millivolts' DC (direct current) Voltage. You'll be reading less than one volt.
3. Each of the ten output tubes can have its own bias adjusted by adjusting its own bias adjust potentiometer. Above the measurement tip jacks you can see each tube's blue bias adjust pot.
4. The first step to setting the bias is to turn on the amplifier in triode mode and ensure that there is zero signal input by engaging the Input MUTE switch. Also, you MUST leave your loudspeakers connected as these provide an ideal load on the output. DO NOT EVER OPERATE YOUR AMPLIFIER WITHOUT SPEAKERS CONNECTED! Leave the amplifier on long enough to ensure that the tubes have reached their stable current draw, at least 1/2 hour is recommended.
5. Place the meter probes in the first red tip jack to read output tube #1. Adjust the first bias trim pot slowly until you measure 275-285 mVDC (0.275V to 0.285VDC). Since you are measuring across a 10 ohm cathode resistor, this would correspond to a 27 to 28 mA current draw for each tube by Ohm's law. A reading of 0mV can indicate a failed tube, or an open cathode resistor. A reading of 0mV on ALL tubes (powered on condition) can mean the B+ fuse has blown. The cause of this should be investigated before simply putting a new fuse in. You probably lost a tube and it blew the fuse. Have a look at the tubes to see if something looks weird.
6. If an individual tube cannot be adjusted to at least 250mV, or it cannot be adjusted below 300mV, then you should replace that tube (also see "Troubleshooting").
7. Follow step five with the remaining tubes, switching to the next tube point and adjusting the next trim pot each time. After you have adjusted all the output tubes, recheck and repeat the procedure as they will drift a little bit during adjustment. Once they are all set, your amplifier should be in perfect operation. (BIAS IN TETRODE MODE SHOULD READ 270mV TO 310mV. THERE IS A MASTER BIAS ADJUSTMENT TRIMPOT INSIDE THE UNIT, THIS TRIMPOT IS FACTORY SET).

REPLACING TUBES

(Also refer to page 6)

How long will these tubes last? We can't say for sure. Some die prematurely and some tubes last more than 30 years. The average for the tubes in the 250's & 500's seems to be 4 to 5 years depending on usage. As with all tubes, their quality degrades with age. This is due to decreasing cathode emission, a natural process found in all tubes. One day that cathose will just not have any more electrons left to emit!

How can I tell when I need to replace them? Most problems relating to the output tubes will show up while performing the bias procedure (see page 9). Tubes that cannot be adjusted within the specified range or have a very unstable reading are candidates for replacement. If the tube's plate (the metal rectangular boxlike part most visible from the outside) is glowing cherry red or orange, then the tube is severely overheated. Check its bias immediately; if unable to adjust, then turn off the amplifier right away and replace the tube. The preamp and driver tubes can become noisy (hiss) or the amplifier may exhibit audible distortion; substituting known good tubes is the best way find the bad one. All tubes are "microphonic" to some extent- that is, they will make ringing noises through the speakers when tapped or vibrated. Here again, substitution will detrmine which one is excessively noisey. But don't be hammering on your tubes while they are hot or you'll just be looking for problems. Obviously, any tube that is totally dark inside while powered up or is cold to the touch (careful!) is defective. Most tubes have a silvery coating deposited on some area inside the glass bottle. If this has turned white (compare to another tube), then the tube has lost vacuum (or gained air!) and is definitely bad. Replace at once- don't turn the amp on.

Do I need to replace them all at once? No, at least not with these amps. Some tube amps do require that if one tube has to be replaced that a complete matched set put in. All Manley amps use individual bias trims for each output tube which allows a single tube to be replaced. Absolute best performance is achieved when the tubes are most similar. We batch them and label each tube so that in the event of a replacement you can get one from Manley of similar characteristics as the others in your amp. We need that hand written number on the top of the tube (output tubes only).

Does the "sound" of the amp change as the tube ages? Yes, but not very much. It is just the tubes and they can be replaced. It is not like big guitar amps where tubes are replaced every 6 months for reasons of "tone". We run the tubes quite conservatively which allows a very long life and less change between old and new tubes. This is where that 4 to 5 years of use comes from. You may notice an improvement between tubes this old and new tubes depending on how critical you are. Keep in mind the sound of new tubes changes most in the first weeks of use before they can be considered "broken in". At first the sound may be a little "tight" and "direct" (like some people we know?).

Is it difficult to replace a tube? Yes, if you have trouble replacing light bulbs. Otherwise, it is super easy. Turn off the power. Just let the amp cool a few minutes so that you don't burn your pinkies. It helps to wiggle the tube gently rather than pulling it out straight. Even if you don't consider yourself "technical" you probably have more technical ability than your parents and they used to fix the family TV set by taking out the tubes and putting them on the tube tester at the local pharmacy. It is almost as easy to re-insert a tube. Just make sure it is correctly lined up with the socket and you dont bend a pin. You can wiggle it in too. If you had a solid state amp, it would be an unlikely repair. You would have to open it up, diagnose the bad transistors and burnt resistors, de-solder, find replacements (good luck) re-solder, and hold your breath as you turn it on. Or you could send it back, be without music for a few weeks, pay for service by the hour and get real upset when it fries again. If one transistor goes the system is dead; not so with power tubes. No death, just limping. If you need a tube or set of tubes Manley will be happy to sell you some (matched) at a good price and if you prefer to send the unit back for repair or adjustment, get hold of our Tech Support Department by filling in the Service Form on our website and book an appointment.

TROUBLESHOOTING

It is rare that any of these problems occur but if they do here are some things to try.

HUM - Try a mains ground adapter if they are legal in your country. They are also called 3 pin to 2 pin adapters or "cheaters" and are available in hardware stores. There should be one ground in your system and only one. If two or more pieces of gear have 3 pin AC cables a ground loop can occur which will usually cause hum. The preamplifier is probably the best grounded single piece as it is the center of your system.

HISS - Throw the MUTE switch and listen. Did the hiss stop? If so, then the source of the hiss is UPSTREAM from the amplifiers, being generated by your preamps or source components. Some amount of hiss is to be expected from any gear that is amplifying. If the noise level stayed the same when you engaged the MUTE switch, and it is too hissy for you, then try replacing the 12AT7 input tube with a quieter one.

BALANCE - The two speakers sound different - It may be the CD or source and the way it was recorded. First try a different source. Next try swapping the inputs. MUTE your amps and swap left and right inputs. If it is the source, then the problem will "follow" the swap. Return them to normal (L=L). Power down the amps and next try swapping the speaker connections by putting the left speaker wire in the right terminals and right wires into the left terminals. If the problem switched sides then one monoblock is suspect; if the problem stayed on the same side it is probably a damaged or fatigued speaker.

NO SOUND, NO PILOT LIGHT, TUBES DARK- Check AC Mains fuse on back panel. Check AC power cord. Is the amp plugged into a working electrical outlet? (this has happened to everyone at least once).

NO SOUND , PILOT LIGHT ON, TUBES LIT- Check speaker connection and input connection (exchange with the other channel). Take a bias measurement- do all bias test points read zero volts? If so, the B+ fuse is blown. CAREFULLY INSPECT ALL OUTPUT TUBES BEFORE REPLACING FUSE. (See also "Replacing Tubes").

ONE OUTPUT TUBE WILL NOT BIAS- If the bias voltage one one tube will not adjust at all or reads zero volts, first replace the tube. If the reading still is way off or reads zero, turn the amplifier off. Set your multimeter to "ohms" instead of "DC volts". Now measure the bias test point- it should read approximately 10 ohms. If it reads very high or not at all, then the 10 ohm cathode resistor connected to the tube is burned open.This resistor is the final safety valve in case of a shorted output tube, and prevents damage to the rest of the amplifier should this occur. Replacing this resistor can be done by anyone with adequate soldering skills; we recommend contacting our service department here at the factory for specific instructions.

SPECIFICATIONS (250W)

ALL-TUBE monoblock design: uses 10 x EL34JJ output tubes
Driver Stage: High current double 12BH7EH (x2)
Input Tube: 12AT7WA Ei large plate
BALANCED & UNBALANCED inputs: RCA and XLR jacks (switchable)
MUTE switch: on front panel
TRIODE / TETRODE switching: on front panel
SOFT-START turn on mode: minimizes in-rush current by first powering up amplifier to half voltages
EVER-WARM mode: for standby keeps tubes warmed up at half voltages
MANLEY Precision Output Transformer: designed and wound at Manley Labs
Front panel bias measurement and adjust: Concealed under the black oval insert
Output Tube Standing Current: 27.5mA
Set Bias for: 275mVDC measured across each bias tip jack to ground
Large filter / reservoir capacitors: 3800uF x 2
Angled rear of chassis: provides for easy connections
WBT binding posts: CE compliant for European models
Input Sensitivity: 1V for full power
Input Sensitivity Triode: 174mV for 1 watt into 8 ohms
Input Sensitivity Tetrode: 146mV for 1 watt into 8 ohms
Gain Triode: 30dB
Gain Tetrode: 32dB
Input Impedance RCA: 116 Kohm @ 1KHz
Input Impedance XLR: 270 Kohm @ 1KHz; 20Kohms @ 20KHz; 38Kohm @ 20Hz
Actual Output Impedance Triode: 0.538 ohm
Actual Output Impedance Tetrode: 0.465 ohm
Optimum Speaker Load: 5 ohms
Damping Factor Triode: 14.8
Damping Factor Tetrode: 17.2
S/N Ratio Ref 1W into 8 ohms: -80 dB; -90dB A-WGT
Dynamic Range: 93dB
FLAT frequency response: 10 Hz - 30 KHz continuous
Full Power Tetrode: 250W @ 1.5% THD into 5 ohms
Full Power Triode: 100W @ 1.5% THD into 5 ohms
Power Consumption: 30 Watts in "EVER-WARM" mode
Maximum Power Consumption: 815 Watts at full power
Operating Mains Voltage: Factory set for 100V, 120V or 220-240VAC operation for original destination country's mains voltage.
Operating Mains Voltage: changeable with power transformer re-wiring and fuse value change.
Mains Voltage Frequency: 50~ 60Hz
Mains Fuse 100-120VAC operation: MDA 10 Amp SLO-BLO Ceramic Time-Delay fuse
Mains Fuse 220-240VAC operation: MDA 8 Amp SLO-BLO Ceramic Time-Delay fuse
B+ Fuse: MDA 1 1/2A SLO-BLO Ceramic Time-Delay fuse
Badge Illumination: Units produced before 4/2003 use 8V, 0.3A "Fuse-Lamp" 1/4" X 1 1/4"
Serial numbers after N250188 use LED illumination which probably won't burn out
Power Cord: Detachable IEC standard. Appropriate power cord supplied for destination country
Dimensions: W=19" x D=13" x H=9"
Shipping Weight: 73 Lbs. each

SPECIFICATIONS (500W)

ALL-TUBE monoblock design 10 x KT90 or 6550C output tubes
High current double 6414W driver stage
12AT7EH large plate Electro-Harmonix Russian input tube
BALANCED & UNBALANCED inputs
MUTE switch
TRIODE / TETRODE switching
S0FT-START/ EVER-WARM standby mode
MANLEY Precision output transformer
Factory set for 5 ohms nominal
Front panel bias measurement and adjust (hiding under the black insert)
Large filter / reservoir capacitors 3800uF x 2
Angled rear of chassis provides for easy connections
WBT binding posts
Input sensitivity: 1V
Gain: 32dB tetrode; 30dB in triode
Input Impedance RCA: 116 Kohm @ 1KHz
Input Impedance XLR: 270Kohm @ 1KHz; 20Kohms @ 20KHz; 38Kohm @ 20Hz
S/N Ratio: -80 dB
Dynamic Range: 96dB
FLAT frequency response: 10 Hz - 30 KHz continuous
Power Consumption: 30 Watts in "EVER-WARM"
Full power (tetrode): 500W
Full power (triode): 275W
Operating Mains Voltage: Factory set for 100V, 120V, or 220-240VAC operation; changeable with power transformer re-wiring and fuse value change.
Mains Voltage Frequency: 50~60Hz
Mains Fuse 100-120VAC operation: MDA 10 Amp SLO-BLO Ceramic Time-Delay fuse
Mains Fuse 220-240VAC operation: MDA 8 Amp SLO-BLO Ceramic Time-Delay fuse
B+ Fuse: MDA 1 1/2A SLO-BLO Ceramic Time-Delay fuse
Dims: W=19", D=13", H=9"
Shipping weight: 82 lbs. each

Manley Laboratories, Inc. WARRANTY STATEMENT effective 1/2006

All Manley Laboratories equipment is covered by a limited warranty against defects in materials and workmanship for a period of 90 days from date of purchase to the original purchaser only. A further optional limited 5 year transferrable warranty is available upon proper registration of ownership within 30 days of date of first purchase.

Proper registration is made by filling out and returning to the factory the warranty card attached to this general warranty statement, along with a copy of the original sales receipt as proof of the original date of purchase, or registration can be made online in the Tech Support section of www.manleylabs.com.

This warranty is provided by the dealer where the unit was purchased, and by Manley Laboratories, Inc. Under the terms of the warranty defective parts will be repaired or replaced without charge, excepting the cost of tubes. Vacuum tubes and meter or badge lamps are warranted for six months provided the warranty registration is completed as outlined above.

If a Manley Laboratories product fails to meet the above warranty, then the purchaser's sole remedy shall be to first obtain a Repair Authorisation from Manley Laboratories and return the product to Manley Laboratories, where the defect will be repaired without charge for parts and labour. All returns to Manley Laboratories must be in the original packing, accompanied by the Repair Authorisation, and must be shipped to Manley Laboratories via insured freight at the customer's own expense. Factory original packaging can be ordered from Manley Labs. Customer will be charged for new factory original packaging if customer fails to ship product to Manley Labs in the original factory packaging. After repair, the product will then be returned to customer via prepaid, insured freight, method and carrier to be determined solely by Manley Laboratories. Manley Laboratories will not pay for express or overnight freight service nor will Manley Laboratories pay for shipments to locations outside the USA. Charges for unauthorized service and transportation costs are not reimbursable under this warranty, and all warrantees, express or implied, become null and void where the product has been damaged by misuse, accident, neglect, modification, tampering or unauthorized alteration by anyone other than Manley Laboratories. If a unit is received for warranty repair, and after complete examination and testing no problem is found with the unit, customer will be charged for one hour of labor plus return shipping costs, presuming initial user error falsely caused the unit to be determined faulty.

The warrantor assumes no liability for property damage or any other incidental or consequential damage whatsoever which may result from failure of this product. Any and all warrantees of merchantability and fitness implied by law are limited to the duration of the expressed warranty. All warrantees apply only to Manley Laboratories products purchased and used in the USA. All warrantees apply only to Manley Laboratories products originally purchased from an authorised Manley dealer. Warranties for Manley Laboratories products purchased outside the USA will be covered by the Manley Importer for that specific country or region. **"Grey Market" purchases are not covered by any warranty.** In the case that a Manley Laboratories product must be returned to the factory from outside the USA, customer shall adhere to specific shipping, customs, and commercial invoicing instructions given with the Return Authorisation as Manley Laboratories will not be responsible for transportation costs or customs fees related to any importation or re-exportation charges whatsoever.

Some states do not allow limitations on how long an implied warranty lasts, so the above limitations may not apply to you. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above exclusion may not apply to you. This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

For Tech Support and Repair Authorisation, please contact:

MANLEY LABORATORIES, INC.
13880 MAGNOLIA AVE.
CHINO, CA. 91710 USA
TEL: (909) 627-4256
FAX: (909) 628-2482

WWW.MANLEYLABS.COM
SERVICE EMAIL FORM IN THE TECH SUPPORT SECTION OF THE WEBSITE

WARRANTY REGISTRATION

We ask, grovel and beg that you please fill out this registration form and send the bottom half to:

MANLEY LABORATORIES
REGISTRATION DEPARTMENT
13880 MAGNOLIA AVE.
CHINO CA, 91710 USA

Or you may FAX this form in to: +1 (909) 628-2482 **or** you may fill in the online warranty registration form found in the Tech Support section of our website www.manleylabs.com **or** you can be really diligent and register your warranty three times to see if we get confused!

Registration entitles you to product support, full warranty benefits, and notice of product enhancements and upgrades, even though it doesn't necessarily mean that you will get them (Just kidding!) You MUST complete and return the following to validate your warranty and registration. Thank you again for choosing Manley gear and reading all the way through The Owner's Manual. (We really mean that sincerely, the bit about thanking you for choosing our gear. THANK YOU!!!)

MODEL _____ SERIAL #_____

PURCHASE DATE _____ SUPPLIER _____

PLEASE DETACH THIS PORTION AND SEND IT TO MANLEY LABORATORIES

MODEL _____ SERIAL #_____

PURCHASE DATE _____ SUPPLIER _____

NAME OF OWNER _____

ADDRESS _____

CITY, STATE, ZIP _____

EMAIL: _____

TELEPHONE NUMBER_____

COMMENTS OR SUGGESTIONS?_____

_____

PACKAGING

Amplifier Pre-packing Instructions:

Step 1: Remove the perforated top cover. Use a #2 Phillips screwdriver to remove nine philips 6-32 screws: Three per side, two on the top, and one in the back of the cage, in front of the two big B+ capacitors.

Step 2: Install the protective soft grey foam that surrounds the output tubes, one piece per bank of five tubes, two per amplifier. Do not install this foam if the tubes are hot. Make sure they are cool or you will have a mess of melted foam. The input and driver tubes do not need protective foam.

Step 3: Replace the top perforated cover and screw it back in place. It is a good idea to tape a note to the top of the amps so that the recipient is aware that there is foam to remove around the tubes before they turn it on.

(Really!)

Amplifier Re-packing Instructions:

Step 1: Reassemble the box if it has been knocked flat. Use sturdy packing tape to tape up the long bottom seam with a few strips of tape, then two strips per each bottom side.

Step 2: Place the solid piece of rectangular foam "A" in the bottom of the box.

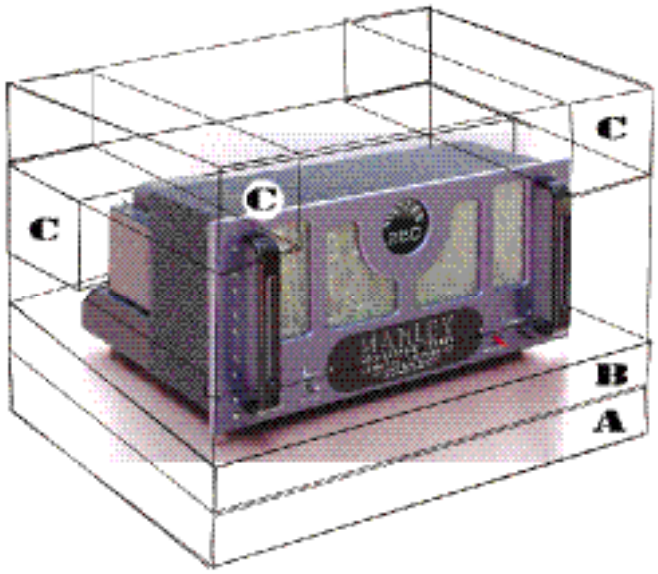
Step 3: Place the amplifier die-cut foam "B" into the box on top of the solid piece.

Step 4: Place the amplifier into the die-cut foam, being careful about the switches, and your back. Use your legs, not your back.

Step 5: Slide one of the three foam blocks "C" behind the transformers.

Step 6: Place the other two foam blocks "C" on top of the amplifier, over each side of the amplifier. These hold the amplifier down.

Step 7: Seal the box with sturdy packing tape using a few strips to seal the long seam, and two strips to seal each side.



"A" "B" "C" X 3