MANLEY
LABORATORIES, INC.

OWNER'S MANUAL

MANLEY NEO-CLASSIC SE / PP 300B AMPLIFIER

MANLEY LABORATORIES, INC.
13880 MAGNOLIA AVE.
CHINO, CA. 91710
TEL: (909) 627-4256
WWW.MANLEY.COM

CONTENTS

INTRODUCTION

THANK YOU!...
for choosing the Manley Neo-Classic SE / PP 300B Monoblock Amplifiers. The Manley Neo-Classic SE / PP 300B Amplifiers use only the best available components, with the shortest and cleanest signal path possible. These amps have the unique ability to switch from Single ended to Push-Pull topologies and the ability to adjust the amount of negative feedback in 1 dB steps. This amp is designed to provide our customers with a versatile little amplifier that can do it all.

Let us start out by stating our opinions about amplifier topologies. Historically, we have been manufacturing very highly regarded tube amplifiers since before tubes were considered the best option for hi-fi music lovers. We have manufactured a very wide range of amplifiers with power ranging from 15 watts to 800 watts and with a corresponding variety of tubes. This is not our first amp to feature 300Bs nor our first single ended triode amp. We build a $15,000 70+ watt single ended amp on a custom basis. In our experience, the more power an amplifier is capable of - the better it will be at providing acceptable low frequency quality. It is not easy to produce a very powerful amp with highs of the same quality as the lows. To do that we had to start manufacturing our own transformers. This is the major development that allowed us to produce an amplifier that could switch from single-ended to push-pull. We had to design and build a very unusual transformer first.

When several other manufacturers started selling single-ended amps with 5 to 9 watts of power, we understood subjectively and objectively the good part of the story - the superb mid range - the delicate transient detail - the inherent simplicity. The bad news was that there were almost no speakers efficient enough to be a dynamic viable system. The worse news was that either these single-ended amps cost more than the condo or they had specs that could only be a joke. As the triode fans increased, more efficient speakers became available and several fanatics began to dismiss push-pull as a bad thing to be avoided at all costs. We objected to such blanket generalities and stressed that the push-pull done right with truly balanced transformers, quality parts throughout and a well designed circuit has proven to be a superb technique. We also like single ended amps, but few and far between, mostly because we prefer a flat frequency response and low distortion. We knew could do it better.

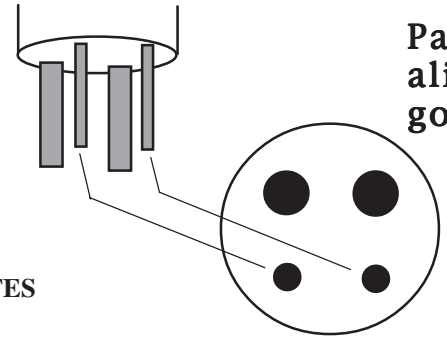
We set out to design an amplifier that would appeal to us and to you and to the critics. It would be single-ended with more power than most for fans of that topology. It would be switchable to push-pull for fans of that school and for those who want it both ways - to compare for themselves, and to use each mode depending on the music. We decided to further extend our own feature of variable negative feedback to a greater range - from none to 10 dB. Some prefer zero negative feedback and some prefer more. The advantage of a little negative feedback is better specifications in general. Williamson, in 1947, not only described the advantages but described the loss of some transient information with greater than 20 dBof feedback. We typically use 3 to 6 dB in other amps. Even with zero negative feedback, this amp is cleaner and flatter than any single-ended amp we know of. One interesting aspect of negative feedback is it gives a higher damping factor. Conventional wisdom would have us think that the higher the damping factor - the better. Our experience is that the optimum damping factor is not infinity and that it depends on the speaker, the room, and the taste of the listener. In other words, the optimum is variability, and this we provide. This amp satisfies us as long time amplifier builders, amazes the critics in several well known magazines and is bound to satisfy the you with the ability to fit into your system and your expectations.

READ THIS PAGE BEFORE YOU SET UP THE AMPS, PLEASE

IMPORTANT Never operate this amp without a speaker or load connected. Never drive this amp into a short circuit. Most solid state amps can be operated without a load or speaker and some can drive a short circuit because of protection circuitry. These are different - Like most tube amps the output power is less affected by changing the load impedance within the range of 4 to 16 ohms, however extremes like a short or open circuit are to be avoided. The result could be damage to transformers or tubes. The warranty does not cover this damage if it occurs.

INSERTING TUBES

We ship these amplifiers with the 300B tubes boxed separately because they are fragile and expensive. You will have to insert these before turning the amplifier on. Carefully upack the 300B tubes from their box and ensure they have not been physically damaged. We have labelled each tube and its corresponding socket. Notice that there are two thick pins and two thinner pins on the base of the 300B. The two thick pins MUST be alligned and oriented to go into the two larger holes in the socket. It is possible to plug this tube in the wrong way - so pay careful attention to the pin alignment on these tubes. Now plug the right tube into the right socket the right way. This is easy but important.



Pay special attention to pin alignment ! The 2 small pins must go into the 2 small socket holes. The tubes must be inserted carefully and speakers connected before turning the amp on.

GENERAL NOTES

LOCATION & VENTILATION

The Manley SE/PP 300B Monoblock Amplifiers must be installed in a stable location with ample ventilation. Allow a minimum of 2 inches of clearance on the top and sides of the amplifiers, such that a constant flow of air can flow. Do not place amplifiers directly on high pile carpet or any other surface that will block the ventilation vents underneath the amplifiers. If you have small children or pets, you should consider placing the amplifiers out of reach to prevent damage to the amplifier or damage to your small children or pets by the amplifier as the tubes do run with high envelope temperatures.

WATER & MOISTURE

As with any electrical equipment, these amplifiers should not be used near water or moisture. If liquid enters the amplifier, it must be immediately returned to your dealer for servicing.

SERVICING

The user should not attempt to service the amplifier beyond that described in the owner's manual. Refer all servicing other than biasing and tube replacement to Manley Laboratories

SPECIAL NOTES

Before turning the amps on - Connect your preamp to the amp inputs then turn the preamp on. Tubes may become loose during transit. Straighten and press down each tube before plugging the amplifier into the mains socket. Furthermore, do not touch the tubes after the amplifier has been switched on, as the tubes become very hot during operation and should only be handled after the power has been turned off and the tubes have cooled.

HUM

As with most monoblock amps with the 3 pin IEC power connectors, you may need one or two "3 pin to 2 pin" power adapters or "cheaters". This will stop ground loop related hum. Usually only one amp will need this.

WARNING!

TO PREVENT THE RISK OF ELECTRIC SHOCK DO NOT OPEN THE CABINET. REFER SERVICING TO QUALIFIED PERSONEL.

MAINS CONNECTIONS

Your amplifier has been factory set to the correct mains voltage for your country. The voltage setting is marked on the serial badge, located on the rear panel. Check that this complies with your local supply.

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

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

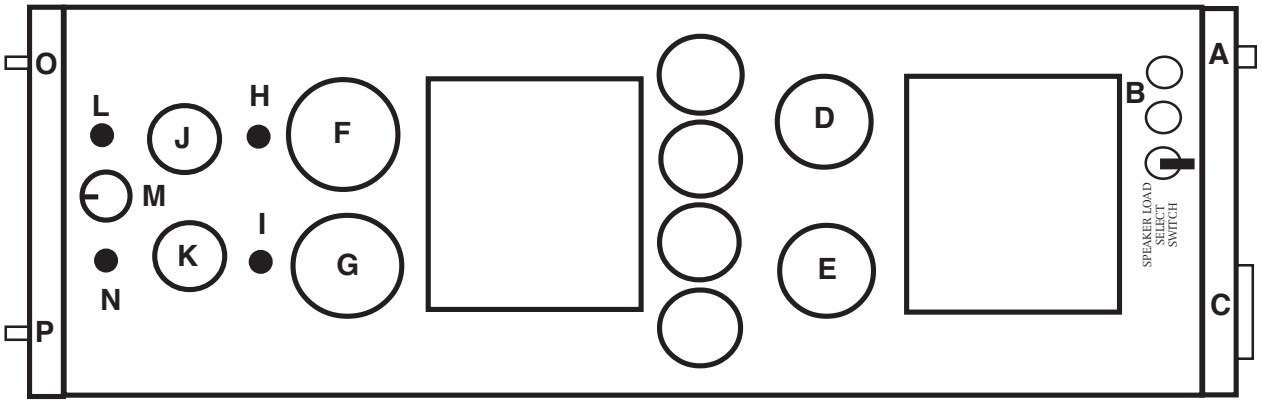
DO NOT CONNECT/SWITCH ON THE MAINS SUPPLY UNTIL ALL OTHER CONNECTIONS HAVE BEEN MADE.

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.
3. Connect the hot or "+" speaker cable to the red binding post and the common or "-" speaker cable to the black binding post (See diagarm 2). Ensure that the other end of the cable is connected correctly to the speaker. Tighten the binding posts by hand.
4. Ensure that the "mains" switch on the rear mains input module is in the "off" or "0" position. If the 300Bs are not inserted - do it now - the instructions are on page 4.
5. Turn on Preamplifier and any source components you plan to use.
6. Plug Amplifiers into wall outlets.
7. Set both amps up at the same settings. A good place to start is both amps set to S / E 11 WATTS and 3 dB of FEEDBACK.
8. Switch the mains power switch to the ON or "1" position and allow the amplifier a minute or so to 'warm up'. The glowing panel badge and glowing tube filaments will indicate that the amplifier is on.
9. Turn up the volume on the preamp and enjoy. If something is "humming" don't panic. All you need to do is use a "3 pin to 2 pin AC adapter" or "cheater". If you don't have one they are available at most hardware stores for about a dollar. Usually one amp will need it but sometimes both. This is because a ground loop exists in the system. Too many grounds - You should only have one.
10. Now, while music is playing, try switching to PUSH / PULL. The difference may or may not be subtle. Choose the mode you like best with this music. Turn the FEEDBACK switch to 10. The volume has become quieter so compensate for the difference at the preamp. Listen a bit until you are used to this, then turn down the volume and turn back the FEEDBACK to 0. Adjust the preamp for the same volume as the previous test. Now, you should have a reasonable opinion of the effects of the FEEDBACK. You can turn this control step by step to the position that best matches your speakers and tastes. We suggest also experimenting with speaker placement now that the "system" has changed. Another very important area for experimentation is acoustic treatment. All too often a good system will sound mediocre due to surface treatment compromises. Usually a mix of a little broadband absorbtion and diffusion is a major improvement. Carpet and other thin treatments only absorb highs and can "unbalance" a system.

MANLEY SE / PP 300B TRIODE MONOBLOCK AMPLIFIER



Amplifier Overhead View

A **RCA Input Jack**
B **Speaker Terminals**
C **Mains input IEC/Switch module**
Mains fuse - Replace only with same type and value
Power Switch
D **Tube 5U4 Rectifier**
E **Tube 5U4 Rectifier**
F **Power Tube 300B**
G **Power Tube 300B**
H **Bias trimmer (for F & L)**
I **Bias trimmer (for G & N)**
J **Input Tube 6SL7**
K **Driver Tube 6SN7**
L **Bias test point for 300B (F)**
M **Variable Feedback Switch**
N **Bias test point for 300B (G)**
O **Single-Ended / Push- Pull Switch**
P **Signal Mute**

OPERATIONAL NOTES

SWITCHING SINGLE-ENDED 11 / PUSH-PULL 24: This amplifier has the unique feature of being able to choose between two circuit topologies. You are able to switch between each mode while the amplifier is turned on and playing music. In SINGLE-ENDED mode the amplifier uses both 300Bs in parallel. The advantage is a minimalist circuit requiring no "phase splitter",The disadvantage is a less efficient circuit that produces a fraction of the power of PUSH-PULL. In PUSH-PULL mode each tube works in opposite phase to the other and relies on the output transformer to make the polarities work together. This has advantages in efficiency and in the distortion and noise cancellation properties of a balanced circuit. Both ways are operated in "Class A" bias throughout and both are PURE TRIODE and both modes have a similar short signal path.

SWITCHING VARIABLE FEEDBACK: The variable feedback can be changed in 1 dB steps from zero to 10 dB above minimun. The most obvious effect of changing the amount of negative feedback is the gain change. The more feedback - the less gain but also less distortion and a flatter frequency response. You should be able to hear that with less feedback, the tonality is more aggresive but the imaging may have greater detail. As you increase feedback, the amp gets smoother and softer and slightly brighter. Towards the maximum amount of feedback, the amp may begin to sound like a good solid state amp. Virtually all solid state amps need large amounts of feedback in order to sound acceptable. Maximum feedback also corresponds to maximum damping factor. This control not only affects the tonality of the amp but also of the speaker. The optimum setting depends on the speaker, the room, and your tastes. Experimentation will be necessary but also fun and educational.

ADJUSTING BIAS : Please read the entire procedure before performing adjustments.
Bias on the 300B tubes should be checked inmediatly upon receipt of the amplifier, and once a month thereafter. The bias was factory set on this amplifier, and the tube locations noted.Variation between the line voltage at the factory and the final installation location can cause variation in the tube's bias. Therefore, it is important to check this upon receipt of the amplifiers, or any time the units change location (other than witin the same building). Proper biasing ensures longest tube life; improper biasing can cause damage to the tubes, amplifier or both. You will need a D.C. voltmeter (digital readout preferred) and a small straight-blade screwdriver.

1.) Attach the voltmeter black or (-) probe to the amp chassis or the black speaker terminal. Attach the red or (+) probe to the **"Read Bias"** test jack (corresponding to the left 300B tube).

2.) Switch the amp to **"Push-Pull"** mode, place amplifier's mute switch to the mute position, and turn the power switch to "on".

3.) Allow the amp to warm up for two minutes, and use the screwdriver to turn the left "bias adjust" trimmer for a reading of 500 mVDC (0.5 VDC). Turning the bias controls counter-clockwise will increase the standing current. A reading of 490-510 mVDC will be within specs. **IF** the trimmer will not adjust the bias to this reading then switch the red probe of the meter to the right side "read bias" test jack and adjust the right bias trimmer to the read 500 mVDC . The bias adjusment are somewhat interactive. It may be necessary to go back and forth between the two adjusments in order to attain correct and matching output tube standing currents.

4.) Now let the amp continue to warm up for another 20-30 minutes and reset each tube for 500mVDC.

5.) The correct bias reading in **"Single-Ended"** mode is 550 mVDC. A reading of 540-560mVDC will be within specs. The bias in single-ended mode was set at the factory.
If, however, the S-E bias reading is out of spec after warm up, the bias may be adjusted as follows:
6.) Carefully turn the amp on it's left side, Be sure to brace the amp so as to prevent roll over.
7.) Locate the 1/4" round hole in the bottom cover, near the front group of ventilation slots.
8.) Make sure the amp is in S-E mode, warmed up, muted and with voltemeter attached. Then insert a 1/8" - 3/16" slot screwdriver through the hole. Rotate the screwdriver until properly seated. The control is about 2 inches below the cover plane. A screwdriver guard is provided to prevent accidental contact with other components.
9.) Slowly rotate the screwdriver while watching the meter reading. The meter may be in either "read bias" tip jack. Clockwise increases S-E standing current. Adjust standing current until meter reads 550 mVDC.

TUBE REPLACEMENT:
Should the 300B tubes require replacement (or the originals are not returned to their proper sockets), make sure both bias adjust trimmers are turned fully clockwise before applying power to the amp. Then follow the bias procedure outlined above. The bias should be checked daily on a new set of tubes for the first week of operation. Remember to let the amp warm up for 20-30 minutes before making final adjusments. The 5U4G, 6SN7 and 6SL7 require no adjusments.

FUSES
There are two fuses in the amplifier. One is the mains fuse located in the AC input module on the rear panel. The other is a P-C board mounted B+ fuse inside the amplifier. The fuses used in your amplifier are standard 1/4" x 1 1/4" SLO-BLO 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. For 117 volts mains correct fuse size is 3A slow/blow 3AG. For 240 volts the correct fuse is a 1.5A slow/blow MDL 1.5A for the mains.
The internal B+ fuse is a 400mA 3AG ceramic body type unit. If this fuse blows, the tube filaments and badge lamp will ligth up, but no sound will be heard since the high voltage will be absent. If this fuse fails, it indicates trouble which will generally require technical attention. Contact your dealer or Manley Laboratories if this problem should develop.
Caution ! High voltages and high energy storage makes opening the amplifier enclosure hazardous for any uninformed person ! Call us or your dealer for specific instructions or for answers to any questions.

SPECIFICATIONS

Vacuum Tubes:	2 x 300B (Output), 1 x 6SN7 (Driver), 1 x 6SL7 (Input) 2 x 5U4 (Rectifier)
Output Power @ 1Khz	SINGLE-ENDED: 5 dB FB - 11 Watts @ 3% THD. PUSH-PULL: 5 dB FB - 24 Watts @ 1.5% THD.
Frequency Response +/- .5 dB (measured at 5 watts)	SINGLE-ENDED: 5 dB FB - 15 Hz - 15 Khz PUSH-PULL: 5 dB FB - 10 Hz - 20 Khz
Input Sensitivity @ 5db FB	SINGLE ENDED: 700mV. PUSH-PULL: 450mV.
S/N Ratio	SINGLE ENDED: 83.5dB Ref. 1W; 2.83v//8 ohms,20Khz BW; 5dB FB. PUSH-PULL: 85.4dB Ref. 1W; 2.83v//8 ohms; 20Khz BW; 5dB FB.
Dynamic Range	SINGLE ENDED: 94dB Ref. 3% THD; 20KHz BW; 5dB FB. PUSH-PULL: 99.5dB Ref. 1.5% THD; 20KHz BW; 5dB FB.
Input Impedance	1 M Ohm, direct coupled.
Load Impedance	4 to 12 Ohm appropriate for 4 & 8 ohm speakers 12 to 20 Ohm appropriate for 16 ohm speakers
Power Consumption	240 Watts
Mains Fuse	100, 110, 120V 3 A (Slo-Blo) 220, 240 V 1.5 A (Slo-Blo)
B+ Fuse	400 mA, (Slo-Blo) Ceramic Body.
Lamp	1/4" X 1 1/4" Linear lamp - 8 volt, 0.3 amp
Dimensions	W= 8.5, D= 11, H= 9 inches, Including projecting controls & parts.
Shipping Weight	41 lbs. Each.