

91E

INTEGRATED AMPLIFIER



END USER GUIDE



WARNING

RISK OF ELECTRIC SHOCK
DO NOT OPEN



AVIS

RISQUE DE CHOC ELECTRIQUE
NE PAS OUVRIR

To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.

Pour réduire les risques d'incendie ou de choc électrique, ne pas exposer cet appareil à la pluie ou à l'humidité.

CAUTION

To reduce the risk of electric shock, do not remove exterior panels. No user-serviceable parts inside. For servicing, refer to qualified personnel only.

Pour réduire le risque de choc électrique, ne retirez pas les panneaux extérieurs. Aucune pièce réparable par l'utilisateur à l'intérieur. Pour l'entretien, s'adresser uniquement à du personnel qualifié.



This symbol is intended to alert the user to the presence of dangerous voltage within the amplifier enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

Ce symbole est destiné à alerter l'utilisateur de la présence d'une tension dangereuse à l'intérieur du boîtier de l'amplificateur qui peut être d'une amplitude suffisante pour constituer un risque de choc électrique pour les personnes.



This symbol is intended to alert the user to the presence of important operating and maintenance instructions in the literature accompanying the amplifier product.

Ce symbole est destiné à alerter l'utilisateur de la présence d'instructions de fonctionnement et d'entretien importantes dans la documentation accompagnant le produit amplificateur.



This symbol is intended to alert the user to the presence of heat sensitive surfaces. Avoid contact with electron tubes during amplifier operation and for at least thirty (30) minutes after shut down.

Ce symbole est destiné à alerter l'utilisateur de la présence de surfaces sensibles à la chaleur. Évitez tout contact avec les tubes électroniques pendant le fonctionnement de l'amplificateur et pendant au moins trente (30) minutes après l'arrêt.



This symbol is intended to alert the user to the presence of Phono Ground option when connecting phono turntable systems.

Ce symbole est destiné à alerter l'utilisateur de la présence de l'option Phono Ground lors de la connexion de systèmes de tourne-disque.

Western Electric[®]

MAKER OF ELECTRON TUBES & HIGH FIDELITY

Founded in 1869, we're an American manufacturer with an enduring relationship with quality. Today we make stunning listening experiences through innovative audio equipment and legacy hi-fi like the 300B vacuum tube.



To ensure optimal amplifier performance, please carefully review this End User Guide. If at any point during operation you are not satisfied with the quality of this product, email support@westernelectric.com, call +1 (404) 352-2000, or post a letter to the address below. We believe quality products should come with quality service.

Western Electric
PO Box 10
Rossville, GA 30741
USA



TYPE 91E
INTEGRATED AMPLIFIER

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WARRANTY & SERVICE

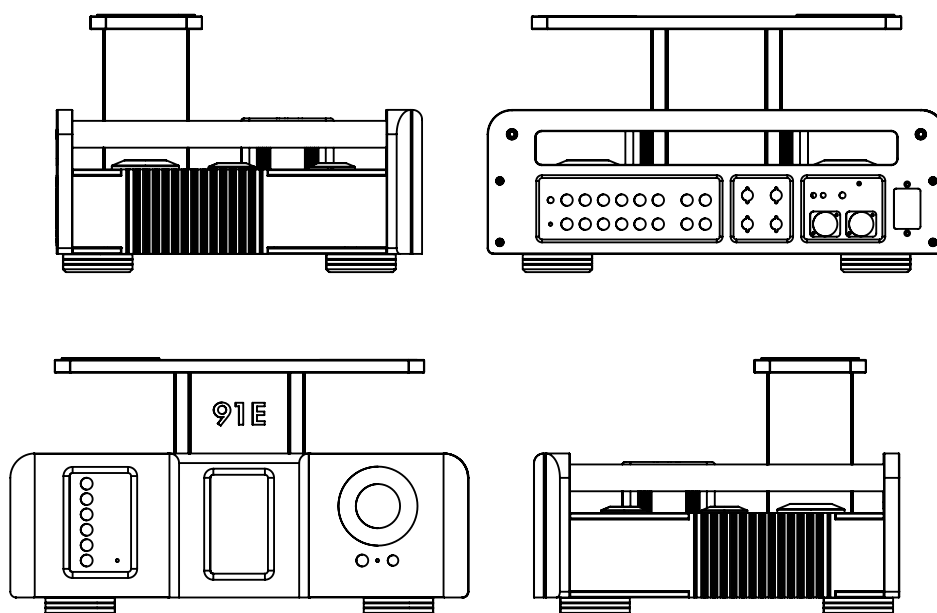
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INTRODUCTION

TYPE 91E INTEGRATED AMPLIFIER

The Western Electric Type 91E is a Class A, single-ended (SE), integrated amplifier for high-fidelity audio reproduction. Listeners take advantage of more than double the conventional output power of the Western Electric Type 300B tube. This powerful innovation was made possible by patented SE circuit topology. The 91E was made for the Western Electric 300B to provide end users the highest possible performance and quality.



IMPORTANT: INSTALLATION OF REPLICA 300B TUBES

The 91E was designed for operation with Western Electric manufactured 300B electron tubes. The application of non-original or replica type 300B tubes may result in weakened performance, distorted sound, or unexpected behavior, potentially harming both the amplifier and the tubes.

Western Electric takes no responsibility for damage caused by the application of replica 300B electron tubes during operation. If, during an open customer service or repair case, damage caused by the application of non-original 300B electron tubes is discovered by Western Electric or is disclosed to Western Electric by the end user, the case will be determined closed and the product warranty shall be vitiated. Such determinations are final. See page 21 for full warranty policy.

PATENTED STEERED CURRENT SOURCE TECHNOLOGY

The 91E is the result of years of research and effort by Western Electric engineers to provide listeners with the absolute finest in SE tube sound. This achievement is made possible by a patented (U.S. Patent Office 10256776) steered current source (SCS) circuit, explained below.

The circuitry embodies an enhanced parallel feed design, wherein the load (primary winding of the output transformer with the secondary winding connected to the loudspeaker) is AC coupled to the plate of the 300B tube. DC bias is removed from the transformer and allows for smaller, simpler transformer designs with no need for a gap in the core. The welcome side effect is the absence of unsymmetrical magnetic distortions caused by DC current through the transformer. The circuit topology also strengthens the coupling between tube and load.

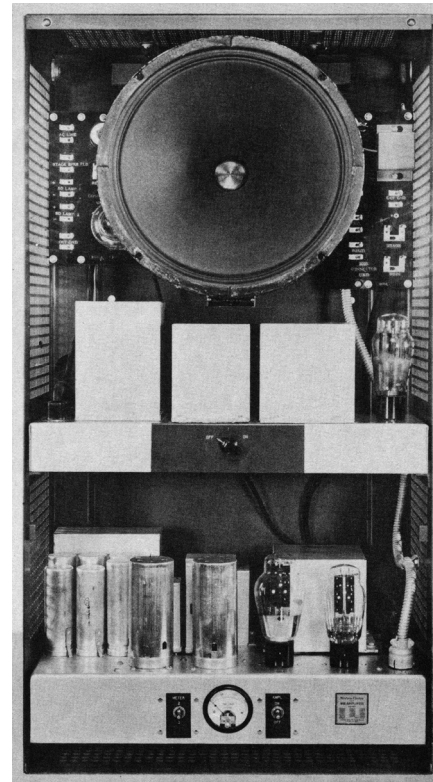
Unlike traditional parallel feed topologies, the tube and output transformer are supplied current by the SCS. Working in Class A mode, and with the transformer AC-coupled, the SCS provides a constant idle current for the tube's plate, ensuring a very stable operating point for the tube.

With the reduction of tube current comes decreased AC power dissipation, providing more power to the load without overstressing the tube. Additionally, the SCS design can achieve an output power of more than double the conventional 8-10 watts.

TYPE 91 - FAMILY HISTORY

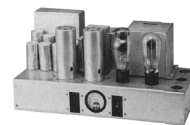
In 1936, under its film sound subsidiary Electrical Research Products Incorporated (ERPI), Western Electric commissioned the 91A amplifier for use in the wall-mounted Type 500A amplifier set (cabinet pictured right). Amplifier sets like the 500A combined with projectors, loudspeakers, and other tube amplifiers to make up “Wide Range” and subsequent “Mirrophonic” sound systems in the 1930s. Western Electric manufactured, installed, and maintained these early sound systems, thus introducing a burgeoning Hollywood movie industry and moviegoers worldwide to the magical, yet naturalistic wonder of high-fidelity sound reproduction. Even small-to-midsized hometown theaters, for which the 91A was designed, could be equipped with lifelike, synchronized sound for motion pictures.

The 91E continues the legacy of Western Electric sound. Its proud place in the Type 91 lineage is rooted in an idea—What is the best possible 300B amplifier?



NOTES FROM THE MANUFACTURER

Light years beyond the vacuum tube era, the 300B remains the triode of choice for serious music lovers worldwide. The 91A's output stage used the 300A (the 300B's almost identical predecessor) to effortlessly reproduce film soundtracks in a large room, but at only 8 watts max. 8-10 watts has long been the standard range for 300B amplifiers manufactured over the years. The Western Electric 91E, with its patented steered current source technology (SCS), unleashes the 300B to perform at more than double the power. The best possible design allows the 300B to truly sing. We trust listeners will find just that as Western Electric sound fills their listening rooms.



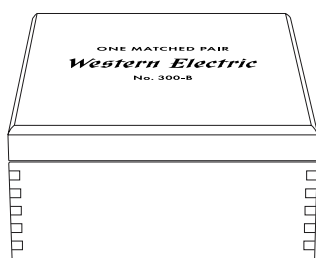
The 91E also elevates the listener's experience with unforgettable industrial design. Liberated from the 91A's stock chassis and cabinetry, the 91E is a showpiece that balances rugged retro features, like nickel-plated handles and an oversized attenuator knob, with stylish glass tube caging and an easy-to-read LCD screen for an overall modern elegance.



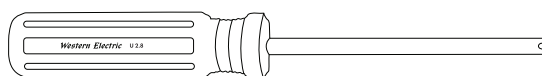
Experience a powerful new classic from the maker of the original 300B

IN THE BOX

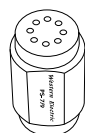
- 91E Integrated Amplifier
- 1x Matched Pair 300B
- 2x ECC81 (pre-installed)
- Remote Control
- Power Cord
- BT Antenna
- Pin Straightener
- Spanner Tool (for 300B access)
- Spanner Tool (for transformer access)
- White Safety Gloves
- Warranty Registration Card
- End User Guide



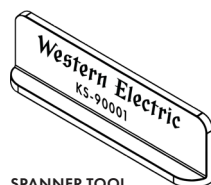
MATCHED PAIR 300B ELECTRON TUBES



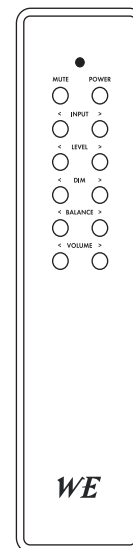
SPANNER TOOL FOR
OUTPUT TRANSFORMER ACCESS



PIN STRAIGHTENER



SPANNER TOOL
FOR 300B ACCESS



REMOTE CONTROL

FEATURES OVERVIEW

Single-Ended (SE) Topology

This product is implemented with single-ended (SE) tube amplifier technology. This allows for the most authentic listening experience possible, compared to push-pull configurations.

Steered Current Source Technology (SCS)

Experience double the traditional output power with advanced, SE circuit design. This new level of performance is reached by using a fully linear, steered current source controlled exclusively by the tube's output voltage (US Patent 10256776). Lush detail in the midrange and masterfully articulated upper and lower frequencies are revealed. For details see page 2.

Logarithmic Attenuator

A logarithmic attenuator is used to mimic the response of human hearing. The attenuator consists of only discrete resistors in a ladder configuration that are switched in and out of circuit with relays to produce a logarithmic attenuation of the output signal.

Interchangeable Output Transformer Block

Common output transformers are large and excessive. The 91E has smaller, interchangeable transformer block add-ons that allow users to match loudspeaker impedance. The result? Lower hysteresis, lower distortion, and a lush, black-background soundstage. For instructions on output transformer block installation and handling, see page 14.

FEATURES & SPECIFICATIONS

LCD Screen

A bright and easy-to-read color display shows the selected input, attenuator level, VU meter, and system status messages. The display also shows settings which can be adjusted by the included remote control. For full LCD screen functionality, see page 16.

Remote Control

The included infrared remote control allows for quick adjustment of amplifier settings such as input levels, balance, and LCD screen dimming. For details on remote control operation, see page 17.

Six Audio Inputs

Connect up to six (6) source devices. For a diagram of the amplifier's rear panel see page 11.

Auto-Bias

Microprocessors automatically bias the 300B tube complement each time the amplifier is powered on. No manual adjustment is necessary. For more details on the auto-bias function, see page 13.

Wireless Connectivity

Connect a device to stream audio wirelessly. This is a convenient option for iOS and Android users. For instructions on how to connect a device, see page 14.

AMPLIFIER DATA

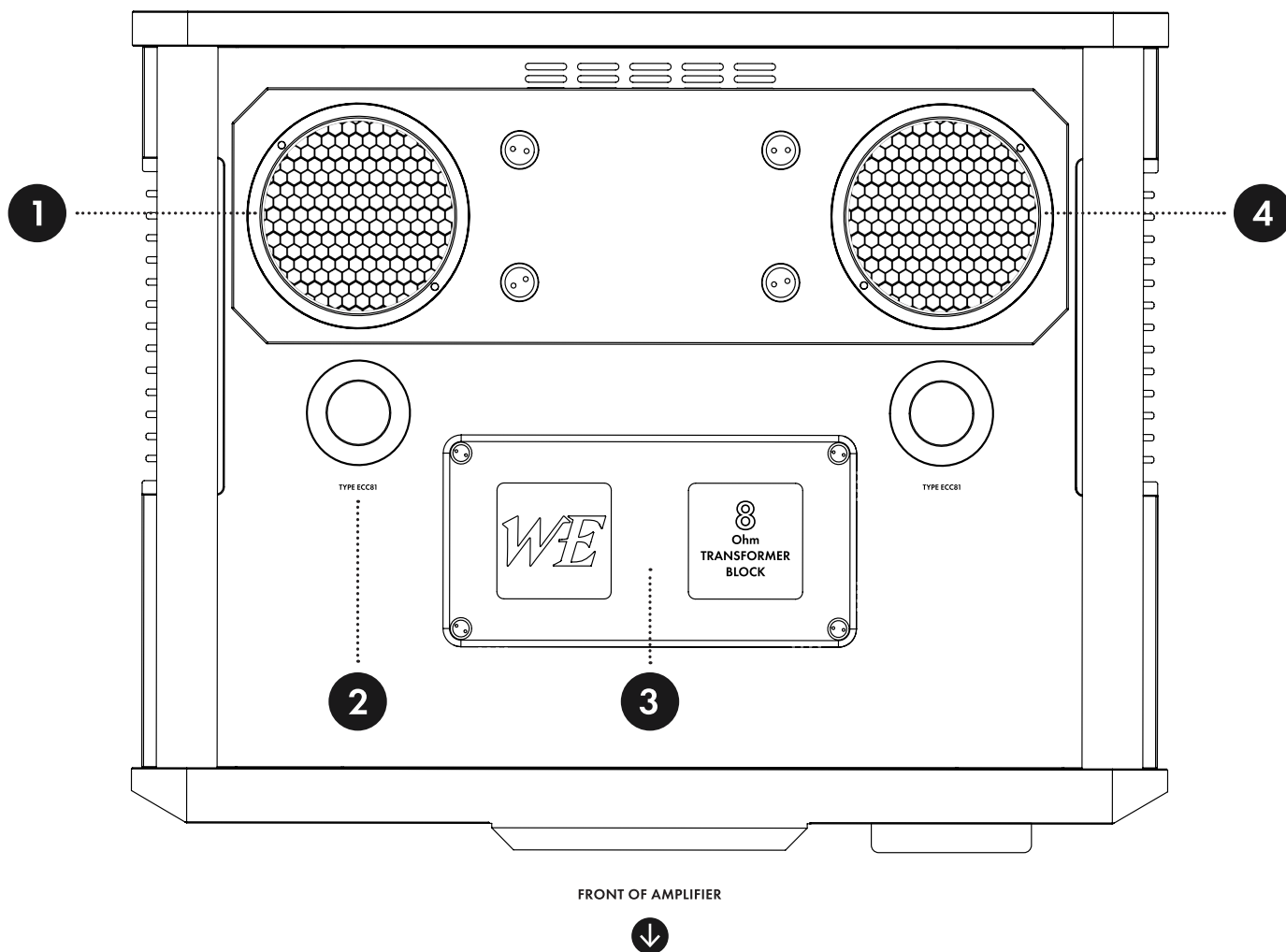
Weight	49lbs / 22.2 kg
Dimensions	18.9 x 15 x 11.1" / 48 x 38 x 28cm
Chassis	Machined Aluminum
Colors	Nickel, Gold, Black
Operating Voltage	100V~ / 115V~ / 230V~ / 50-60Hz / 150 W
Power Consumption (Operation / Standby)	10W / 0.3W
Operating Temperature (Indoor)	18-32° C / 64-89° F
Operating Altitude	2000m or less
Mains Fuse	2A slow-blow
Electron Tube Complement	1x Matched Pair WE 300B, 2x ECC81
Phono MM Sensitivity (10W / 4Ω)	0.75mV
Phono MC Sensitivity (10W / 4Ω)	70μV
CD Sensitivity (10W / 4Ω)	0.27V

CD Input Impedance	20k Ω
Phono MM Input Impedance	47k Ω 100 pF
SNR MM (10W / 4 Ω , input 5mV)	83 dB(A)
SNR MC (10W / 4 Ω , input 0.5mV)	73 dB(A)
SNR CD (10W / 4 Ω , input 0.5V)	101 dB(A)
CD Frequency Response	15 Hz - 32 kHz (-3 dB)
Phono Frequency Response	30 Hz - 20 kHz (RIAA within +/- 0.5 dB)
Headphone Output Impedance	100 Ω
Output Power / 4 Ω / THD 10%	2 x 20 watts
Output Power / 4 Ω / THD 5%	2 x 16 watts
Output Power / 4 Ω / THD 3%	2 x 14 watts
Output Power / 8 Ω / THD 10%	2 x 20 watts
Output Power / 8 Ω / THD 5%	2 x 16 watts
Output Power / 8 Ω / THD 3%	2 x 14 watts
BT* Standard	v4.2
BT Codecs	BC, MP3, AAC, FastStream, APTX
BT Sample Rate (adaptive)	Up to 96kHz / 16-bit
BT frequency response	20 Hz - 20 kHz
BT SNR	96dB

*BT wireless connectivity

TOP PANEL

The diagram below shows key features of the top panel. For electron tube installation and access instructions, see next page. For transformer block installation instructions, see page 14.

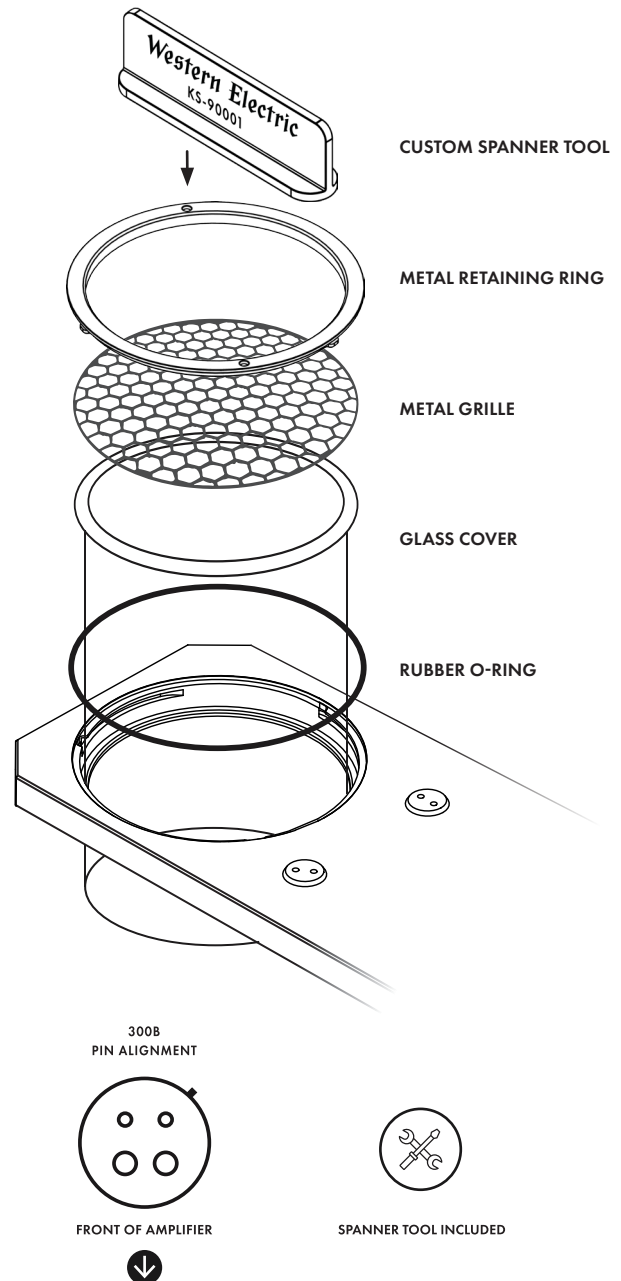


- 1 300B Electron Tube (Left Channel Access) - See next page for installation instructions.
- 2 ECC81 Electron Tube (pre-installed)
- 3 Output Transformer Block - See page 14 for handling and instructions.
- 4 300B Electron Tube (Right Channel Access)

ELECTRON TUBE INSTALLATION

Before powering on the amplifier, you must install the included matched pair of 300B electron tubes. Review the section titled “Electron Tube Safety” on page 19 before proceeding.

- 1 Using the included custom spanner tool (Part No. KS-90001), rotate the metal retaining ring counterclockwise to loosen it. Remove the retaining ring by lifting upward.
 - 2 Carefully remove the protective metal grille, protective glass cover, and rubber o-ring.
 - 3 Insert the first 300B, aligning the two large pins with the two large holes in the socket. Do not force the tube into the socket without ensuring the correct pin orientation.
- Notice your 300B electron tubes may have been pre-assigned to one channel (L or R).
- 4 Reinstall the glass cover and metal grille, making sure the O-ring seats properly. Mount the metal retaining ring and rotate clockwise until tight.
 - 5 Repeat steps 1-4 to install the second 300B in the opposite channel.



ELECTRON TUBE ACCESS

After extended use, it may become necessary to access the 300Bs for cleaning or replacement. To access them, first complete steps 1-2 above.

Next, remove the 300B by gripping the base and slowly pulling upwards while moving it in a slight, side-to-side wiggling motion. Work slowly until the tube is removed. Using excessive force may cause the tube to suddenly dislodge from the socket, resulting in damage to the tube and amplifier. To reinstall a 300B, follow steps 3-4 above.

DO NOT OPERATE AMPLIFIER WITHOUT GLASS COVER AND METAL GRILLE PROPERLY INSTALLED

(continued from previous page)

300B Electron Tube Replacement

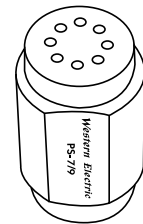
To ensure optimal performance, each 91E Integrated Amplifier is tuned with its included matched pair of Western Electric 300B electron tubes during final testing and inspection. If either tube (or both) is replaced, slight electrical parameter changes may occur, as compared to when the amplifier was originally tested. In the event that 300B replacement is required, we recommend contacting Western Electric to provide an optimized matched pair.

ECC81 Electron Tube Replacement

With the amplifier disconnected from the mains, the ECC81 tubes may be unplugged by holding the glass and gently pulling up while slightly moving the tube side-to-side. Excessive force should not be used. To reinstall ECC81's, align the pins with the socket and slowly push down while slightly moving the tube side-to-side.

Pin Straightening

To prevent breakage of the ECC81 tube pair, a pin-straightener (Part No. PS-7/9) has been included with your amplifier purchase. If tube pins are bent and misaligned while being inserted into a socket, the tension and strain can cause the glass to break. Tension increases over time as the tube is heated and cooled. Using a pin straightener before inserting the tube in the socket helps minimize the chance of breakage.



To use the straightener, slowly and firmly insert the ECC81 with pins aligned and then remove.

Protective Glass Covers

The 91E's cylindrical tube covers:

1. Prevent skin burns during tube operation
2. Prevent electric shock during tube operation
3. Create a chimney effect to cool the tubes

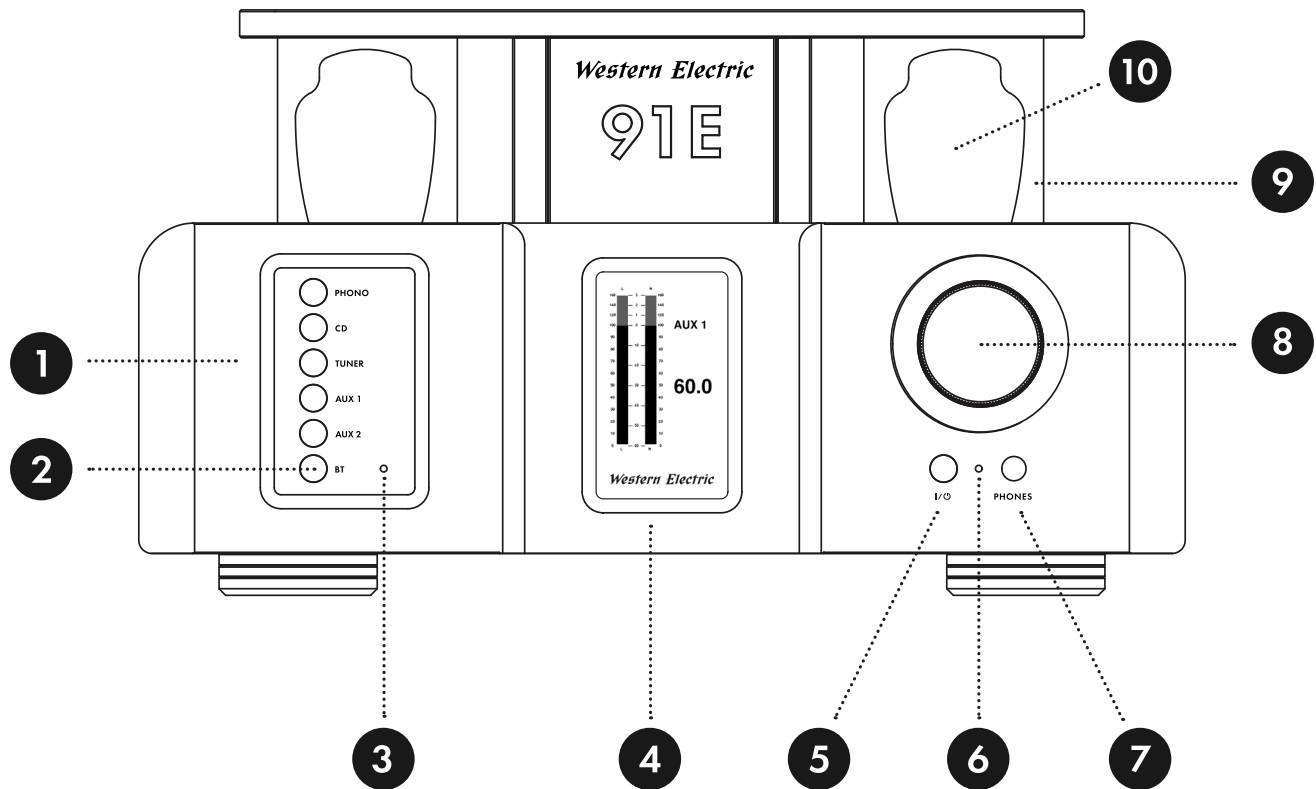
WARNING

The tubes and tube sockets should never be touched while the amplifier is connected to mains power. When preparing to replace the tube ensure that the mains cable is **DISCONNECTED** from the amplifier. The amplifier should never be powered on without tubes installed. Please also be aware of hot surfaces. Avoid bare skin contact with electron tube surfaces during operation and for thirty minutes after your amplifier is shut off.

Gloves should be worn for the best protection.

FRONT PANEL

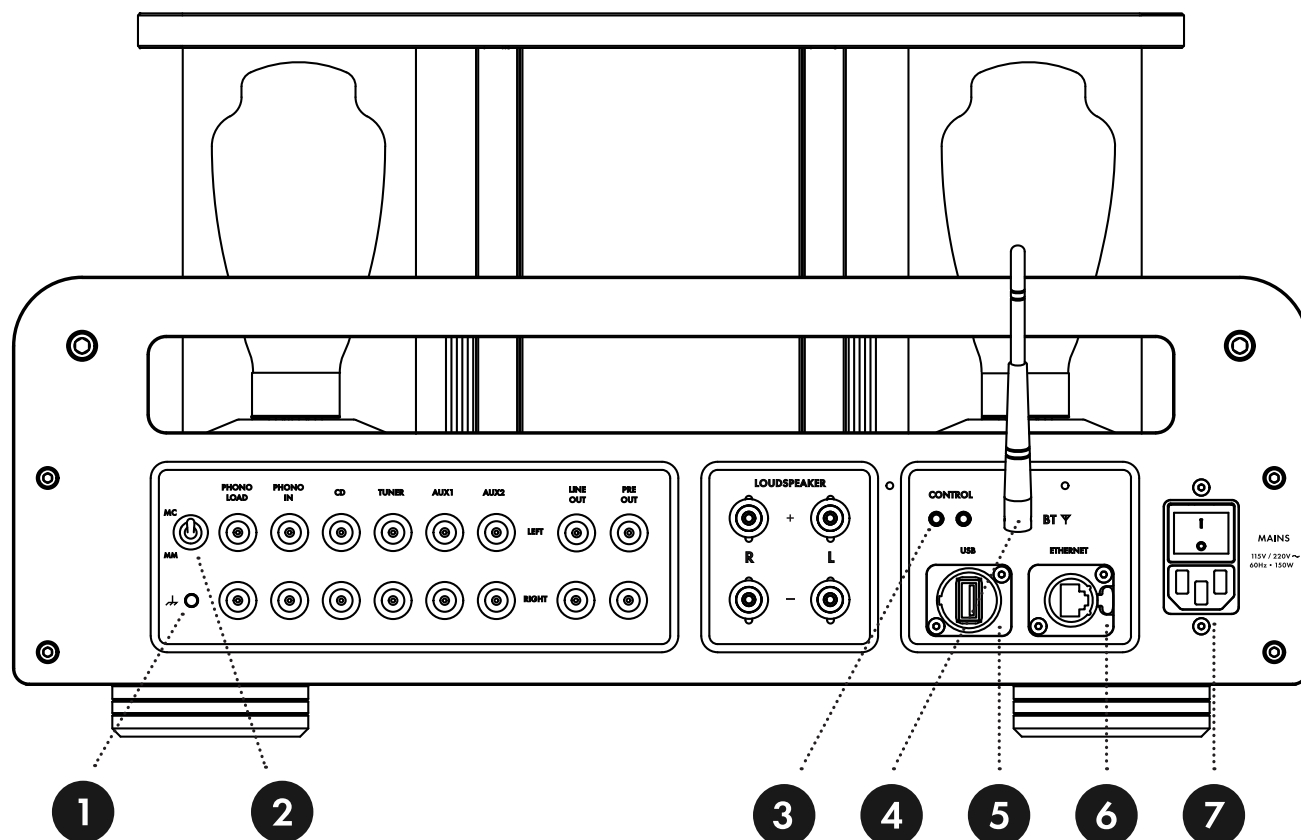
Front panel features and controls shown below.



- | | |
|--|---|
| 1 Input Selectors | 6 Power On / Standby Indicator |
| 2 BT Wireless Connectivity- <i>See page 14 for setup</i> | 7 Headphone Output |
| 3 Infrared Receiver | 8 Attenuator (Volume Control) |
| 4 LCD Screen | 9 Glass Tube Cover - <i>See page 8 for handling</i> |
| 5 Power On / Standby | 10 300B Electron Tube |

REAR PANEL

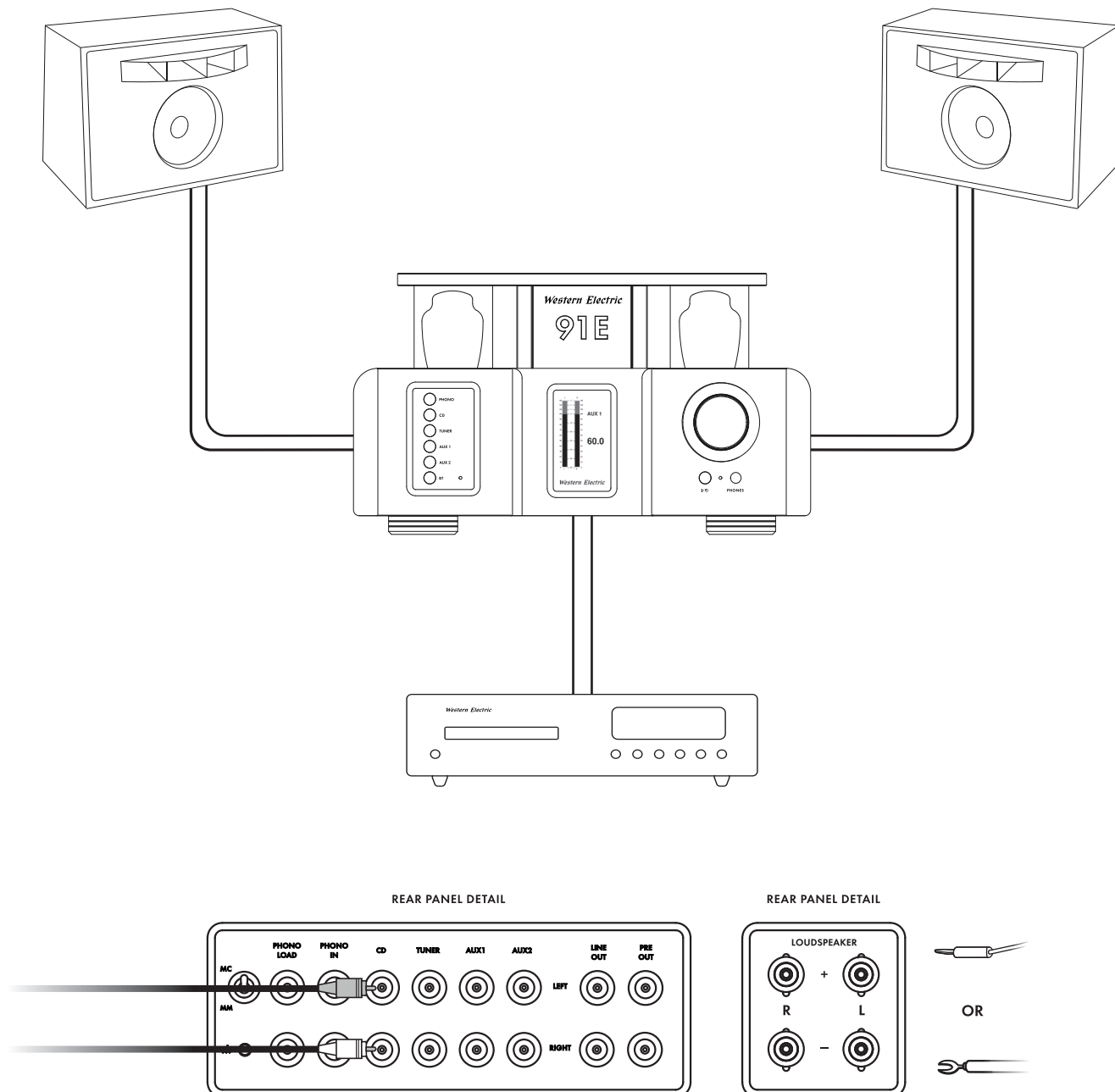
The rear panel features five RCA inputs and a phono load option, as shown below. Capacitive and resistive phono termination plugs can be purchased from westernelectric.com in a variety of values. For more information on how phono termination plugs are used, see page 17.



- 1 Phono Ground
- 2 Phono Toggle Switch - *Moving Coil / Moving Magnet*
- 3 Control Ports (3.5mm) - *For interfacing with other audio equipment. When amplifier is on, control ports output +5V.*
- 4 BT Antenna - *For wireless connectivity - See page 14 for setup*
- 5 USB - *Service Access Only*
- 6 Ethernet - *Service Access Only*
- 7 Mains Switch / Power

BASIC HOOKUP

The diagram below shows a common configuration with source device and loudspeakers. To learn what happens during amplifier power on and startup, see next page.



Mains Connection

When plugging in the mains power cable, ensure the mains switch is in the off or “O” position. Keep the mains switch in the off position while connecting or disconnecting external equipment to the amplifier. In order to power on the amplifier, the mains cable must be plugged in with the mains switch on or in the “I” position. With the mains switch on, the LED status light will glow blue while the amplifier is in standby mode.

Power On and Startup

With 300B electron tubes properly installed (*see page 8 for electron tube installation instructions*) and the rear panel mains switch in the on or “I” position, press the front panel power button. As the amplifier powers on, the LED status light will flash blue. After approximately ten (10) seconds an image of the Western Electric mascot will appear shortly after power up. The amplifier then goes through a warm-up period and auto-bias period each lasting thirty (30) seconds.

Tube Auto-Bias

During the thirty (30) second auto-bias, the 300B tube anode voltage is turned on and a processor measures anode voltage and sets the grid bias operating point. This is repeated once every second for thirty (30) seconds to ensure a stable operating point. Because the bias value of a 300B can change over its lifetime, the 91E performs this automatic bias process each time the amplifier is powered on. Additionally, the filament polarity of each 300B is reversed during this startup period to further optimize tube performance. For tube bias troubleshooting, go to page 24.

Post-Startup

Once the amplifier is completely powered up and out of standby mode it is ready for use. Your source device and loudspeaker hookup cables can be connected to the rear panel, accordingly. For a detailed diagram of the rear panel, refer to page 11. Select the correct input and enjoy the music. Attenuation can be adjusted in 0.5dB increments by rotating the volume knob or via remote control.

Auto-Standby

By default, the 91E has auto-standby enabled. Auto-standby enables standby mode after no audio signal has been detected for twenty (20) minutes. The purpose of auto-standby is to save power when the amplifier is not in use. If auto-standby is triggered, you must press the power button to power on and resume normal operation.

DISABLE AUTO-STANDBY

To disable auto-standby, first make sure the rear panel mains switch is in the off position then press and hold the power button. With the power button still depressed, switch the mains switch to the on position. The LED status light will flash on for 100ms and off for 900ms (short flash), indicating auto-standby is disabled.

To re-enable auto-standby, repeat the same procedure described above. This time, the LED status light will flash on for 500ms and off for 500ms (long flash), indicating that auto-standby is re-enabled. After either disabling or re-enabling auto-standby, the power button can be pressed to power on the amplifier.

Wireless Connectivity

Wireless connectivity is a convenient option for many listeners using an iOS device, Android device, or computer for digital streaming. Before connecting a device, you must attach the included BT antenna to the RP-SMA port on the back of the amplifier. See rear panel diagram on page 11.

After attaching the BT antenna, you may proceed with connecting a wireless device. Press the BT input button on the front panel of the amplifier. A red antenna logo will appear on the LCD screen, meaning no devices are paired with the amplifier. On the device to be paired, search for available BT connections nearby. Select “**WE 91-E BT**” to pair. Once paired, the antenna logo will change from red to white, indicating the amplifier is ready to stream audio wirelessly. When a different input is selected, the amplifier will automatically disconnect from the paired device.

Headphones

A ¼” (6.3mm) jack is located on the front panel for use with headphones with 100-ohm output impedance. The amplifier automatically adjusts output level for low-resistance and high-resistance headphones.

Line Out & Pre-Out

In addition to standard binding posts for loudspeaker output, there are output options labeled “Line Out” and “Pre-Out.” The **line out option** is used to pass a fixed signal from the amplifier to an external device (e.g., tape recorder). The line out signal is not influenced by attenuator output (volume control). Output remains enabled when headphones are connected.

The **pre-out option** is used to pass a variable signal to an external device. The pre out signal follows attenuator output (volume control) and is commonly used for connecting subwoofers or a second power amplifier, also known as bi-amping. Output is disabled when headphones are connected.

Break-In Period

The sound and performance of power tubes can change over time. Components within the amplifier may also require time to fully stabilize. Most of the change occurs in the first 100 hours of listening. Please allow for a 100-hour break-in period for the tubes and amplifier components to stabilize and truly perform. In some cases, the Western Electric 300B requires up to 500 hours to properly break-in. This is also known as “burn-in.”

Phono Input & Terminations

The phono input is for connecting turntable systems to your amplifier. The phono inputs are very sensitive due to the small signal level output of turntables. The phono input supports both moving magnet (MM) and moving coil (MC) settings with a clearly labeled toggle switch on the rear panel. It is important to make sure the MM/MC setting on the 91E matches your turntable.

There are also RCA inputs for phono loads. Your turntable may require an additional capacitive or resistive load to have the correct frequency response. Typically, MM turntables may require more capacitive load and MC turntables may require more resistive load. Both capacitive and resistive RCA load plugs can be purchased from Western Electric in a variety of values. Visit westernelectric.com for more information.

Output Transformer Block

The 91E has a pre-installed 8-ohm output transformer block optimized for most 4 ohm to 8-ohm loudspeakers. You may exchange the default 8-ohm transformer block with 4-ohm, 16-ohm, and 24-ohm options to further optimize your loudspeaker pairing. Visit westernelectric.com or contact your authorized dealer to purchase this add-on feature.

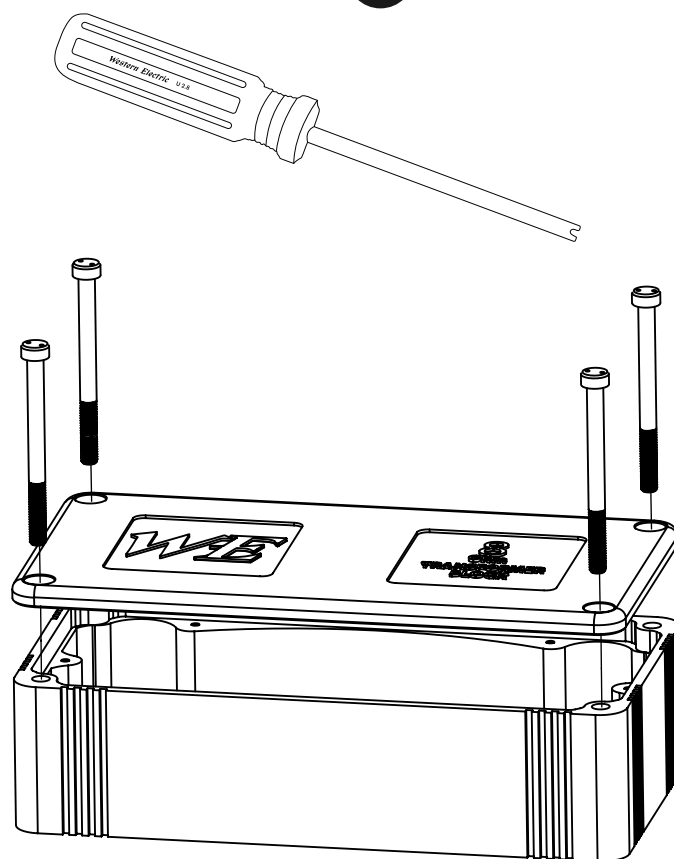
How to Switch Output Transformers

If you have an additional output transformer option, use the following instructions to easily self-install it.

- 1 Switch mains power off and unplug the unit from its power source.
- 2 Remove the the four (4) bolts holding the transformer block housing in place using the included spanner tool (M2.8 or #10). Gently remove the engraved lid to reveal the output transformer circuit board inside. Set lid aside.
- 3 Grip the sides of the transformer block housing and slowly pull up to detach it from the amplifier's top panel.
- 4 Remove the six (6) 2mm hex screws that hold the circuit board in place and switch the board with your desired option. Replace the six (6) 2mm hex screws.
- 5 Re-attach the transformer block housing by carefully pushing the block down into the connectors (female) on the top panel of the amplifier.
- 6 Replace lid and four bolts.



SPANNER TOOL INCLUDED



OUTPUT TRANSFORMER BLOCK HOUSING

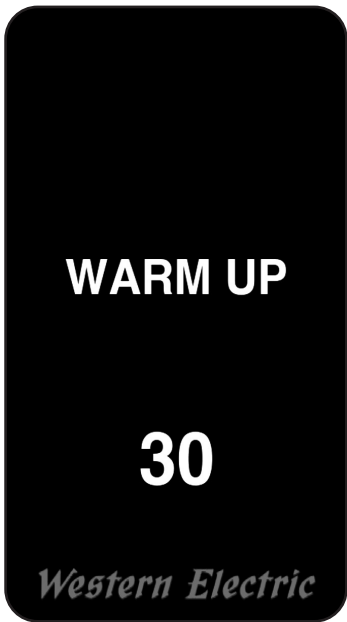
You may now power the unit back on and operate as normal. If you have questions about this unique amplifier feature, contact our service and support team (westernelectric.com/support).

LCD Display Functionality

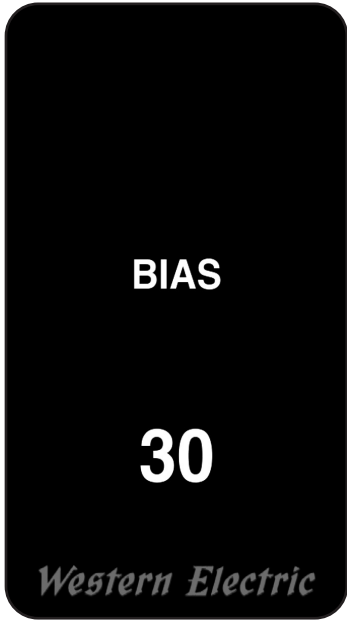
The 91E Integrated Amplifier is equipped with an easy-to-read LCD readout screen that allows the user to control and monitor the amplifier.



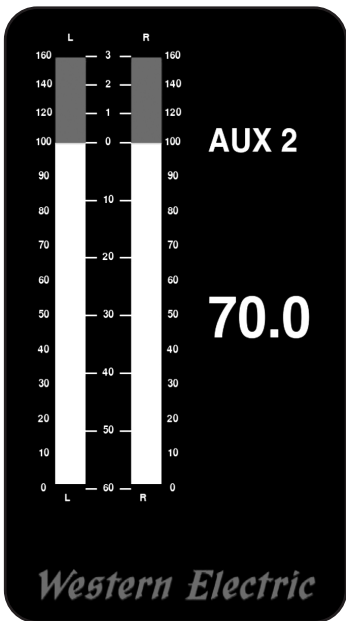
Western Electric Mascot
(startup image)



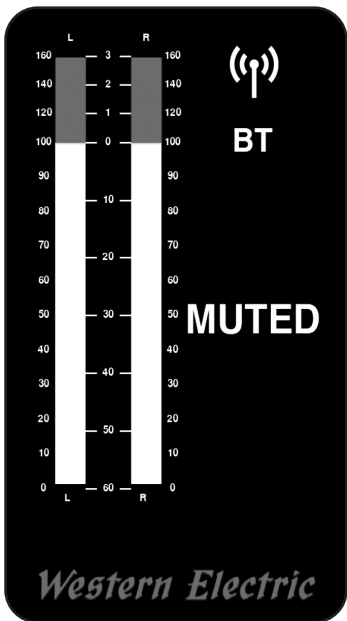
Warm Up Countdown



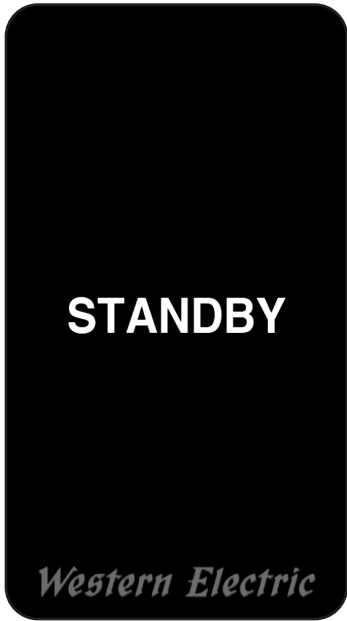
Tube Bias Countdown



Input Selection, Attenuator
Level, and VU Meter



Mute Enabled



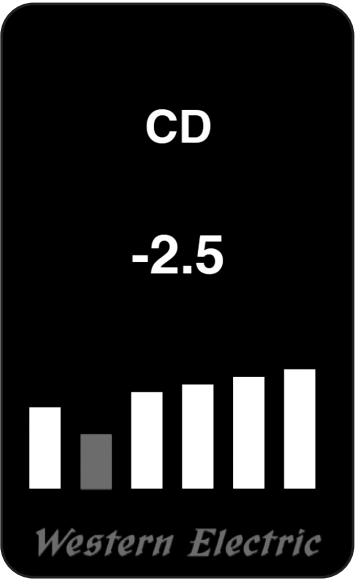
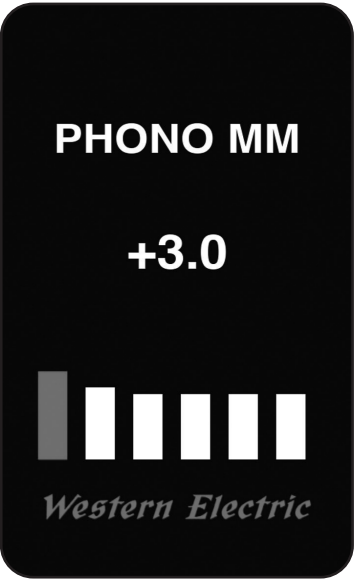
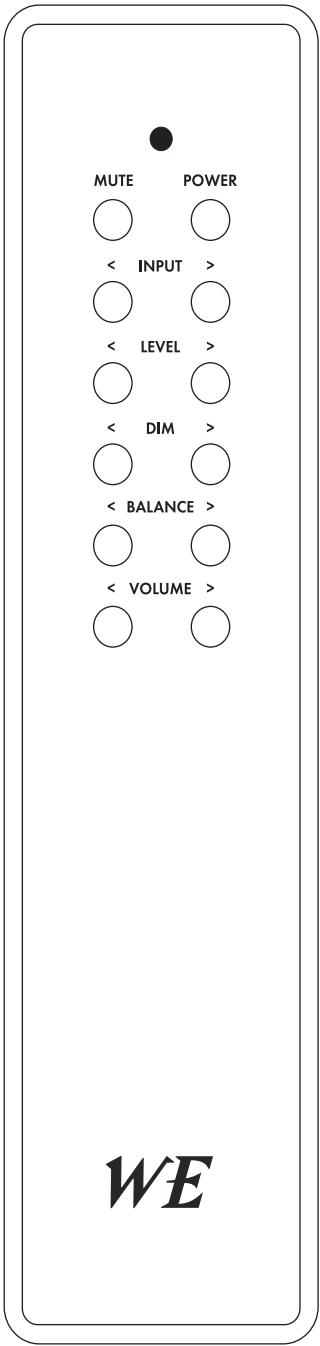
Standby Enabled

REMOTE CONTROL OPERATION

The 91E Integrated Amplifier includes an infrared remote control that allows the user to adjust any of the front panel functions from a distance. Settings that can only be adjusted with the remote control include input level adjustment, left-right balance, LCD screen dimming, and mute. Remote control options are pictured at right.

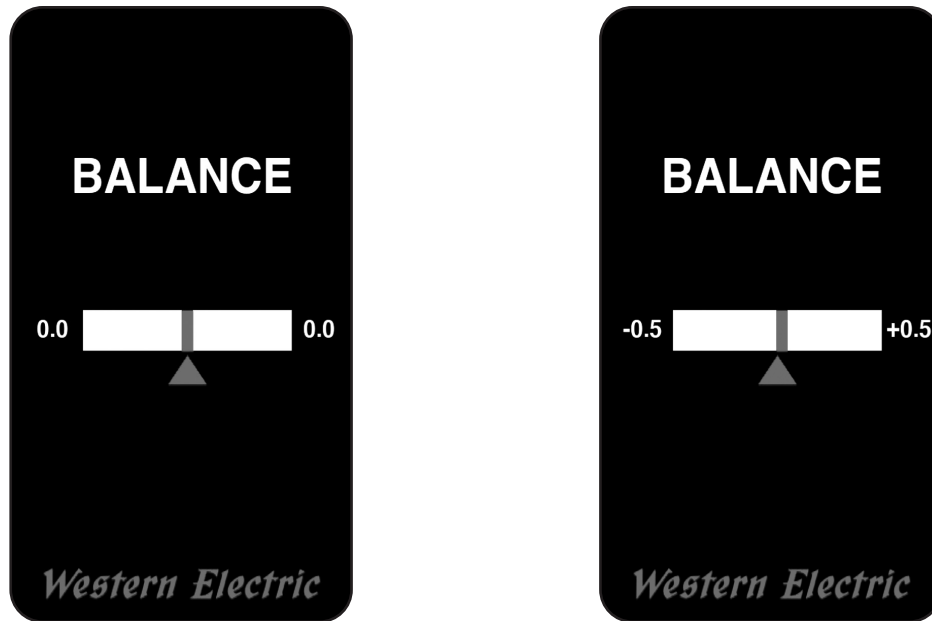
Level Adjustment

Level adjustment allows the user to adjust the volume levels of individual inputs relative to one another. To adjust the level of an input, select the input by pressing the front panel button or remote button. Then use the level buttons on the remote to adjust the level of the input. The adjustment range is -9.5dB to 9.5dB with default setting of 0.0dB. The level adjustment settings are stored when the amplifier is put in standby mode or mains power is disconnected.



Balance Adjustment

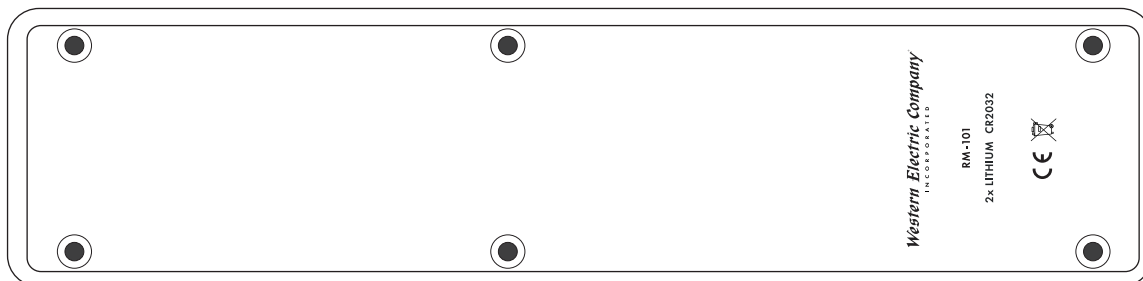
Balance adjustment is used to balance the signal level of the left and right loudspeaker channels. Use the balance buttons on the remote to adjust output from the amplifier to suit your needs.



Remote Control Battery Replacement

Two (2) CR2032 lithium batteries are required. To replace the batteries in the remote control, remove the six screws on the back panel of the remote. When replacing the batteries, ensure that the “+” symbol is facing upwards toward the metal battery holder to avoid damage to the remote.

2X



REMOTE CONTROL BACK PANEL

AMPLIFIER SAFETY

To ensure your own safety and proper operation of this product please read the following instructions carefully. Do not attempt to service the product yourself.

The 91E was designed to operate at a normal room temperature and normal humidity (<60%). Do not expose the amplifier to wet areas, high humidity, or liquid spills. Do not install near heat sources or near flammable materials or vapors. Install on a stable, firm surface that allows airflow for cooling.

IMPORTANT

Never plug your device into a power source without first switching device power to OFF (“O”). Failing to follow this instruction may result in a hazardous electric shock and destroy connected electron tubes or other amplifier components. During the amplifier startup cycle, the electron tubes are switched on and automatically biased.

- Disconnect the mains cable if the amplifier will not be used for long periods of time. In standby mode the amplifier is still vulnerable to lightning strikes and power glitches
- Do not operate without tubes installed
- Disconnect mains power before replacing tubes
- Only operate the amplifier with a grounded outlet
- Clean only with dry cloth
- Never remove exterior panels to access interior components

ELECTRON TUBE SAFETY

This amplifier’s output stage is driven by two (2) Western Electric type 300B electron tubes. The pre-stage is driven by (2) nine-pin type ECC81 electron tubes.

The following information is provided to help you and anyone else who may come into contact with your amplifier safely handle its electron tube pairs. For more detailed information on your matched pair of 300Bs, refer to its end user guide.

WARNING

ELECTRON TUBES CAN BE HEALTH HAZARDS IF IMPROPERLY HANDLED

Handle electron tubes ONLY in accordance with the information included under the section titled “ELECTRON TUBE SAFETY” and any additional information and precautions contained in this document. Western Electric assumes no responsibility for injury or for damage resulting from operating or handling your electron tubes.

Operating and/or handling your electron tubes may involve one or more of the following hazards:

HOT SURFACES

The glass and base surfaces of electron tubes reach high temperatures during operation and may remain hot for some time after power is shut off. To prevent possible serious burns, avoid bare skin contact with electron tube surfaces during operation and for thirty (30) minutes after your amplifier is shut off. Gloves should be worn for the best protection.

HIGH VOLTAGE

Electron tubes require high voltage in excess of 400V to operate. Before attempting to insert or remove this electron tube from your equipment, it is recommended that you unplug your equipment, ground all circuits, and ensure that all power switches are shut off.

BROKEN GLASS

Glass is a brittle material and accidental breakage can occur at any time when handling electron tubes. Breakage will result in flying glass fragments. Gloves and safety glasses should be worn for the best protection.

WARRANTY POLICY

IMPORTANT

For customers outside the United States, the authorized importing dealer or distributor has accepted the responsibility for warranty fulfillment Western Electric amplifier products they sell. The specific terms and remedies for fulfillment of both the Limited Warranty and Extended Warranty may vary from country to country. Warranty service should be initiated first with the importing dealer or distributor from which the product was purchased.

This electron tube was built to the highest standards of Western Electric products and carries a Limited Warranty against manufacturing defects for a period of 90 days to the End User. The Limited Warranty period begins on the day this amplifier is purchased by the End User as an individual item directly from Western Electric or from an Authorized Dealer.

THIS WARRANTY IS NON-TRANSFERABLE. YOU MUST KEEP YOUR ORIGINAL PURCHASE RECEIPT FOR VERIFICATION SHOULD YOU REQUIRE WARRANTY SERVICE.

Western Electric will extend the time period of the Limited Warranty up to three (3) years from date of purchase.

IN ORDER TO RECEIVE AN EXTENSION TO THE TIME PERIOD OF THE LIMITED WARRANTY, THE INCLUDED WARRANTY REGISTRATION CARD MUST BE COMPLETELY FILLED OUT AND SENT TO WESTERN ELECTRIC.

There are two options for sending your warranty card for registration:

OPTION 1: Send a high-resolution color photograph of your filled warranty card to warranty@westernelectric.com. To ensure maximum legibility, please write in print (English) using black or blue ink. Please also include valid proof of purchase.

OPTION 2: Send your filled warranty card via post to the address below:

PO Box 10
Rossville, GA 30741
United States

In this case, returning the physical warranty card is not necessary. After your card is received by email (or by post), we will contact you regarding successful registration of your Extended Warranty.

NOTE

Western Electric 300B electron tubes carry a Limited Warranty period of ninety (90) days to the end user. To receive the Extended Warranty of five (5) years, the physical warranty cards must be returned to Western Electric by post. Please refer to the End User Guide included with your electron tubes for further instructions.

IMPORTANT

This Warranty does NOT cover:

- a) An amplifier that has been damaged by negligence, misuse, accident, modification, or failure to follow instructions. This Warranty does not include amplifiers that are damaged in shipment.
- b) Damage to an amplifier that has been improperly connected to the equipment of other manufacturers.
- c) Costs incurred in the shipping of amplifiers to Western Electric for evaluation and repair. Any return shipments must be prepaid.

This Warranty does not extend to owners of the product subsequent to the original purchaser. This Warranty is expressly made in lieu of all other warranties, expressed or implied, including without limitation warranties of merchantability and fitness for a particular use or purpose and are limited in duration to a period of ninety (90) days from the date of original purchase. Determination of applicability of the Warranty will be made by Western Electric and such determination shall be final.

WESTERN ELECTRIC'S LIABILITY IS LIMITED TO THE REPLACEMENT OF THE AMPLIFIER DETERMINED TO HAVE A MANUFACTURING DEFECT AND SHALL IN NO EVENT INCLUDE INCIDENTAL OR CONSEQUENTIAL COMMERCIAL OR PROPERTY DAMAGES OF ANY KIND.

ALL WARRANTIES ARE NULL AND VOID IF THIS AMPLIFIER WAS PURCHASED THROUGH A DEALER WHO IS NOT AN AUTHORIZED WESTERN ELECTRIC PRODUCT DEALER OR A MANUFACTURER OF AUDIO EQUIPMENT WHO IS NOT AN AUTHORIZED WESTERN ELECTRIC PRODUCT DEALER. All authorized dealers and audio equipment manufacturers are registered with Western Electric and have a certificate of authorization that will be made available to you upon request. (NOTE: Authorized Western Electric dealers can be identified by a Western Electric Authorized Dealer decal displayed in the store or dealership.)

Should this product fail and the reason for failure is determined to be a manufacturing defect, Western Electric will replace this product at no cost to the consumer, PROVIDED the product is returned in its original Western Electric carton along with a copy of your purchase receipt to our headquarters. Visit westernelectric.com for up-to-date information on warranty and repair.

Reasonable care must be taken to protect the product by returning it within its original carton AND placing the carton within a protective container appropriately marked with the warnings,

WARRANTY & SERVICE

“FRAGILE” and “GLASS.”

In returning an amplifier for test and inspection, you are giving Western Electric the right to disassemble it, if such a procedure is deemed necessary, for a complete examination to determine whether failure was caused by a manufacturing defect. Moreover, you agree that in the event such a procedure is necessary you will NOT hold Western Electric liable for the return of the amplifier so disassembled.

Upon returning this carton for the first time, please examine the product for any sign of damage that may be attributed to shipment. MECHANICAL DEFECTS SUCH AS LOOSE, SHORTED, OR OPEN ELEMENTS, SCRATCHES, CRACKED OR BROKEN GLASS, ETC., ARE INDICATIVE OF MISHANDLING IN SHIPMENT. Any sign of damage, visible or otherwise, to the carton and/or its contents must be reported immediately to your dealer or audio product manufacturer and you must file a damage claim immediately with the transportation company. The amplifier and its shipping container should be held in exactly the condition received pending instructions from the transportation company.

IMPORTANT FOR YOUR PROTECTION:

Under US shipping regulations, damage claims must be collected by the consignee. In case of damage, please notify the transportation company at once to call and examine the amplifier, regardless of the external condition of the box. In case of concealed damage, the transportation company must be notified within 15 days after delivery. DO NOT DISPOSE OF OR PART WITH THE PACKING MATERIAL OR BOX UNTIL THE TRANSPORTATION COMPANY'S AGENT HAS EXAMINED THEM.

PRODUCT SERVICE POLICY & RMA PROCESS

We believe quality products should come with quality service. In the event that your amplifier product requires service under warranty, you must first review the full contents of this policy. You may also visit westernelectric.com/support for the latest information regarding product support.

Before returning any Western Electric product you must first obtain a Return Materials Authorization (RMA) number. All returns received at our facility without an RMA number assignment will be rejected and returned to the sender. To get started, contact us by calling +1 (404) 352-2000 or by emailing support@westernelectric.com.

IMPORTANT

You will receive full return shipping instructions with your RMA number assignment. Western Electric is responsible for inbound and outbound shipping costs for approved RMA returns within the first ninety (90) days of amplifier purchase. Beyond the initial ninety (90) day period, costs associated with inbound shipping (to Western Electric) are the responsibility of the customer and Western Electric is responsible for outbound shipping (to customer).

Due to the complex nature of amplifier manufacturing, our service and support team is NOT able to provide price quotes for repair before fully diagnosing your product. The Western Electric amplifier service labor rate is \$175.00 hourly.

For customers outside the United States, the authorized importing dealer or distributor has accepted the responsibility for warranty fulfillment Western Electric amplifier products they sell. The specific terms and remedies for fulfillment of both the Limited Warranty and Extended Warranty may vary from country to country. Warranty service should normally be initiated first with the importing dealer or distributor from whom the product was purchased.

TROUBLESHOOTING

PROBLEM	SOLUTION
Blue LED status light not glowing in standby	<ul style="list-style-type: none"> Rear panel mains power switch is in the off position. Mains power cable is disconnected.
Amplifier is powered on but there is no audio output from loudspeakers or headphones	<ul style="list-style-type: none"> Mute is enabled or volume is at zero. There is no input signal—check source device. Speakers are disconnected or not connected properly. Tubes are installed incorrectly.
Audible hum during operation	<ul style="list-style-type: none"> Phono input is experiencing electrical interference. Try distancing from other cables. Phono input ground is not connected. Possible ground loop through equipment and cables. Unplug inputs to see if the hum stops. A filter device may be required to prevent ground loops.
Amplifier not responding to remote control	<ul style="list-style-type: none"> Remote batteries are depleted and must be replaced. See page 18 for detailed instructions. There is no line of sight between remote and amplifier for infrared signal—remove any obstructions.
Tube Auto-Bias failure message	<ul style="list-style-type: none"> A tube is installed incorrectly or has failed. See page 8 for instructions on tube handling. An incompatible 300B electron tube is installed.
Music playback not loud enough	<ul style="list-style-type: none"> Level settings are too low for selected input. See page 17 for instructions on input Level Adjustment. Check source device levels.
Amplifier automatically turns off	<ul style="list-style-type: none"> If no audio signal is detected, the 91E will enter standby mode to conserve electricity. See page 13 for how to disable the auto-standby feature.
Cannot connect device for wireless streaming	<ul style="list-style-type: none"> Ensure no other devices are connected. Ensure the included BT antenna is properly installed in the rear panel. See page 14 for connection instructions.



The 300B electron tube is manufactured by hand in the USA at the Western Electric Rossville Works. The 91E is assembled by hand in the same facility using globally sourced components.