

Bia 200 Select Class A Stereo Power Amplifier Owner's Manual



Please read carefully before installing and operating this equipment

Zesto Audio

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Made in the USA Using US and Imported Parts

Dear Music Lover,

I wanted to personally thank you for your purchase of my Bia 200 Select Stereo Power Amp.

I have loved music all my life – as a musician, record producer and audio engineer. That makes me fussy about sound. That's a good thing.

Each unit is built by hand with precision and pride to produce the most enjoyable listening experience for you.

I am proud to put my name on it and honored to share this with you.

Wishing you many happy years of listening!

Sincerely,

-- George Counnas, President of Zesto Audio

FYI:

Zesto is Greek for hot

Bia (pronounced "by-ah") is the Titan Goddess of force and power in Greek mythology. The word bias comes from the goddess Bia.



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What's in the box

Bia 200 Select Stereo Power Amp 4 KT150 Vacuum Tubes 4 ECC82 (12AU7) Vacuum Tubes White glove for handling tubes IEC power cable 6'

What's not Included:

KT88, KT120, or KT170 vacuum tubes Interconnect or speaker cables

Warning and Caution

WARNING: The triangle with the lightning flash symbol displayed on the unit advises the user of dangerous uninsulated voltage inside the product's enclosure.

CAUTION: To reduce the risk of electric shock, do not remove the cover. There are no user-serviceable parts inside; it is recommended that only qualified personnel service this component.

- 1. **OWNER'S MANUAL:** Before powering up the equipment, read all safety and operating instructions and follow them as instructed. Retain the safety and operating instructions for future reference.
- 2. **ATTACHMENTS:** Use only those attachments recommended by the unit manufacturer, as others may cause hazards.
- 3. **ACCESSORIES:** Do not place the unit on an unstable cart, stand, tripod, bracket, or table. The unit may fall, causing injury to a person or damage to the unit. Mount the unit according to the manufacturer's instructions with the suggested mounting accessory.
- 4. WALL OR CEILING MOUNTING: Do not mount the unit on a wall or ceiling.
- 5. **WATER AND MOISTURE:** Do not use the unit near water (for example, near a swimming pool, bathtub, wash bowl, kitchen sink, or laundry tub) or in a damp environment (like a basement or outside in the rain).
- 6. OBJECT AND LIQUID ENTRY: Do not push objects of any kind into the unit through openings as they could touch dangerous voltage points and short-out parts, possibly resulting in a fire or electric shock. Do not spill liquid of any kind on the unit. If water or any metal object (such as a paper clip, coin, or staple) accidentally falls inside the unit, disconnect it from the AC power source immediately and contact Zesto Audio for further instructions.
- 7. **HEAT:** Position the unit away from heat sources such as radiators, heat registers, stoves, or other units (including amplifiers) that produce heat.
- 8. **VENTILATION:** Slots and openings in the enclosure create ventilation to protect the component from overheating. All of these openings must remain unobstructed. Allow at least 12 inches of clearance above the unit, 1 inch below and an opening behind the unit for airflow. Do not place the unit on a bed, sofa, rug, built-in bookcase, or rack without adequate ventilation.

- 9. GROUNDING OR POLARIZATION: As a safety feature, the unit may be equipped with a polarized alternating current line plug in which one blade is wider than the other and a has an additional grounding blade. This plug will fit into the power outlet only one way. If you cannot insert the plug fully into the outlet, try reversing the plug. If the plug still will not fit, contact a licensed electrician to update your outlet. Do not defeat the safety purpose of the polarized plug.
- 10. **POWER SOURCES:** Operate the unit only from the power source indicated on the marking label on the back of the unit. If you are unsure of the type of power supplied to your home, consult your unit dealer or local power company.
- 11. **POWER CORD PROTECTION:** Arrange power supply cords so that they do not suffer from foot traffic or pinching by items placed on or against them. Pay close attention to cords where plugs enter the AC outlet and where they exit from the unit.
- 12. **LIGHTNING:** For added protection during a lightning storm or when the component is idle for extended periods of time, unplug the unit from the wall outlet. This will help protect the unit from lightning and power line surge damage.
- 13. **POWER LINES:** Do not locate an outside antenna system in the vicinity of overhead power lines or other electric light or power circuits. When installing an outside antenna system, take extreme care to avoid touching the power lines or circuits; contact with them could be fatal.
- . **OVERLOADING:** Do not overload wall outlets, extension cords, or integral convenience receptacles as this increases the risk of fire or electric shock.
- 15. **REPLACEMENT PARTS:** When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer or those having the same characteristics as the original parts. Unauthorized substitutions may result in fire, electric shock, or other hazards.
- 16. **SAFETY CHECK:** Upon completion of any service or repairs to the unit, ask the service technician to perform safety checks to ensure the unit is in proper operating condition.

17. **IMPORTANT SAFETY NOTE:**

- Before connecting a new product such as the Bia 200 Select to your audio or home theater system, turn off all other equipment (preferably unplugging them from the AC power source). Many audio components feature automatic turn-on circuits that may activate during an installation, potentially causing damage to electronic components or speakers. This type of damage is not covered by product warranties, and Zesto Audio specifically disclaims responsibility for any such damage.
- **Power Cord:** The removable IEC power cord provided with your unit was specifically designed for use with this product, but other AC cords may be used. Consult your dealer for advice on AC power cords and high quality wire in your system.

- AC Fuse: The fuse is located inside the IEC power entry connector and is user replaceable. Only replace fuse with the exact same type that was removed. Only use slow blow fuse. If the unit does not power up, contact an authorized service representative.
- · **Important**: Any use of aftermarket performance fuses in the IEC mains will **VOID** the warranty.
- Wiring: Cables running inside walls should have the appropriate markings to indicate compliance and listing by the UL, CSA or other standards required by the UL, CSA, NEC, or your local building code. Questions about cables inside of walls should be directed to a qualified custom installer, licensed electrician, or low-voltage contractor.
- 18. **RECORDING COPYRIGHT:** Recording of copyrighted material for other than personal use is illegal without permission of the copyright holder.

19. FCC INFORMATION FOR USER:

- **CAUTION:** Any changes or modifications not expressly approved by Zesto Audio could void the user's authority to operate the equipment.
- These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates and can radiate radio frequency energy, and if not installed and used in accordance with the instructions it may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
 - Reorient or relocate the equipment.
 - Increase the separation between the equipment and receiver.
 - Connect the equipment into an outlet on a circuit different from where the receiver is connected.

Front & Rear Panel Inputs, Outputs and Controls



Front panel (not shown)

- Power on/off switch:
 - Turns the unit ON/OFF (located on front panel).
- Front panel LED lights:

Green indicates high voltage; Amber indicates low voltage (Both lights will remain on when unit is in use)

Rear panel

- IEC Power entry connector:
 - 15 Amp 120V AC power with 8 Amp 5mm x 20mm slow blow fuse.

 Optional factory installed 220V, 230V/240V 50/60Hz mains, 4 Amp slow blow. The fuse is located in the drawer compartment in the IEC mains connector.
- Inputs left and right:
 - RCA Single Ended High quality recessed gold pin connectors
- Inputs left and right:
 - XLR True floating ground, differential balanced transformer inputs.
- Left and right Ground on/off switch:
 - Connects or disconnects the ground (pin 1) to the Balanced inputs
- Outputs left and right:
 - 5-way binding posts with 4, 8 and 16 Ohm taps with Black common
- Output speaker fuses:
 - Individual 10A, 7A & 5 Amp 6mm x 32mm slow blow fuses for each output tap

Specifications (based on KT150 tubes)

Output

- Class A
- KT150 = 100 Watts per channel into 8 Ohms
- 4 Ohm, 8 Ohm and 16 Ohm output taps
- 10A, 7A and 5 Amp 6mm x 32mm Slow-blow speaker fuses for outputs
- Eight 5-way binding posts
- Non-inverting output polarity
- Push-Pull Ultra-Linear design

Power rating for Auto Bias Select Switch Settings

Left Position:

- KT88 = 60 Watts per channel,
- KT120 = 60 Watts per channel
- KT150 = 60 Watts per channel
- KT170 = 60 Watts per channel

Middle switch position:

- KT120 = 85 Watts per channel
- KT150 = 85 Watts per channel
- KT170 = 85 Watts per channel

Right switch position:

- KT150 = 100 Watts per channel
- KT170 = 100 Watts per channel

Inputs

- Transformer floating ground differential balanced XLR inputs
- Left and right balanced inputs (pin 2 hot), impedance 10K Ohms
- RCA single ended inputs Left and Right with impedance of 47K Ohms
- Independent ground lift switches on left and right Balanced inputs
- 2.5 Volts RMS input to reach rated output

Detailed Specs

- Dual Mono
- Auto bias
- No negative feedback
- Frequency response 20Hz to 30Khz ~ 3dB
- Total Harmonic Distortion ~ 0.22% at 1W into 8 Ohms
- Gain of 24dB
- Noise level > 2mV -RMS into 8 Ohms with input shorted
- 1% metal film resisters throughout
- Polypropylene capacitors throughout the signal path

Power

- Custom Toroidal power transformer with global mains
- 15 Amp IEC power mains connector
- 120 Volts AC mains with 8 Amp 5mm x 20mm slow blow fuse
- Optional factory installed 220V, 230V/240V 50/60Hz with 4-amp slow blow fuse
- Power consumption at rated output 517 Watts
- Front panel on/off switch with green LED indicator for high voltage and amber LED for low voltage

Active Components

- Matched quad set of four (4) KT150's vacuum tubes
- Four (4) Gold pin ECC82 (12AU7) vacuum tubes
- High quality gold plated ceramic sockets

Other Features

- Each unit is made by hand
- 50-hour factory burn in on all circuits and vacuum tubes
- Dimensions 17" W X 20" D X 10" H
- Weight 64 lbs. (29Kg)
- Shipping box = 27" x 27" x 13" (68.5 cm x 68.5 cm x 33 cm)
- Shipping weight: 80 pounds (36 kg)
- 16 and 14 gauge Zinc plated steel enclosure
- Two year limited warranty
- Six months warranty on 12AU7Vacuum Tubes
- 90 day warranty on the KT150 power tubes

Set up

Placement

Awarning! You can damage this amplifier by not providing adequate ventilation on all 6 sides and at least 12" above the unit. It is **not recommended** to install this BIA 200 Select in an enclosed rack.

Tip! Placement near other components such as network routers, satellite TV boxes, table or floor lamps can be a notorious source of hum or clicking noise in your system. It is a good idea to put all your lighting and digital sources on their own power strip.

Cables

Interconnect: Using RCA or XLR interconnect cables; connect your preamp to the inputs of the power amp.

Tip! If you have a choice, **balanced cables are preferred** for sonic reasons, as well as it will allow you to use the ground lift switches if you encounter any ground loop problems.

Speaker: Using speaker cables connect the speakers to the common black binding post and either the 4, 8 or 16 Ohm output red binding posts.

Tip! Take advantage of the multiple taps as your system may respond better to the 4 or 8 Ohm. For example, some systems find there is more base with the 4 Ohm, and some find it's more open on 8 Ohms.

Power cable: This unit responds well to high quality power cables.

Safety Tip! Just in case the on/off push button switch is already in the on position, plug your power cable into the mains last after you install the tubes! If the unit turns on when you plug in the cable, wait for one minute, turn the amp off by pushing the button on the front. Once both Amber and Green LEDs are off it is safe to proceed.

Power

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Tip! Power amps need lots of clean power.

For best results, it is recommended to plug the Bia 200 directly into an AC wall outlet with a proper ground and not through any power conditioner, extension cord or power outlet strip.

For the best performance of your system, if you must use a power conditioner or outlet strip, use a separate strip for the power amp and a separate strip for your other components. It's ok to use the same duplex, but not the same outlet strip.

Power amps will draw all the power it wants first, sometimes at the expense of anything plugged into the same strip and can affect the sonic performance of your system.

Carefully plug in the AC power cable to the power amp first then into the wall outlet.

Warning! It is **not recommended** to use any AC 2 to 3 pin adapter (cheater plug) with this power amp. For your safety Zesto Audio provides 2 ground switches that float the ground when using XLR cables. If you get a hum, start with the ground switch off, then independently flip the switches for the least amount of noise.

Tip! What Is Your Best Audio Accessory? Hire an electrician to install a 20 Amp dedicated line for your audio system. Do not plug in any lighting on your audio circuit as lighting can be a notorious source of hum.

Tubes

Installing the tubes

- This unit is compatible with KT88, KT120, KT150 and KT170 output tubes and only 12AU7/ECC82 input tubes.
- Output tubes can go in any socket V1 thru V4. Input tubes V5 thru V8.
- When installing the 12AU7/ECC82 tubes, be careful not to bend the pins or damage the 9 pin sockets. You should not have to use excessive force. Inserting tubes incorrectly is not covered under the warranty.

Warning! The circuit design is **not compatible** with 12AX7, 12DW7 or any other 9 pin tube. This will cause damage to the unit.

Warning! The Bias settings are **not compatible** with 6550, KT90's, KT100's tubes.

Because of their lower power rating, they cannot manage the higher current and voltage, which will cause damage to both the power amp and the tubes. You could cause what's known as "Red Plating."

- **Important!** The wrong type of the tubes can cause considerable damage.
 - Any damage caused by tube rolling is **not** covered by the manufacturer's warranty.
- This Bia 200 Select ships with a matched quad of KT150's and four 12AU7
- Only KT150 and 12AU7/ECC82 supplied by Zesto Audio are covered under the warranty. All other tubes are purchased separately and are the responsibility of the owner.

A Warning! You cannot mix and match output tubes.

- All four output tubes must be of the same manufacturer. For example, all four must be JJ or 4 Tung-Sol or 4 Gold Lion etc.
- All four output tubes must be of the same model type. For example, all four are KT88's model, or four KT120's, or four KT150's or four KT170's.

Tip! The logo on the metal collar and the alignment key on the tube faces forward.

Caution! Do not ROCK the tube, install straight up and down holding the metal collar.

What if you break the "Key" on an output tube?

If you look at the bottom of the tube, there is a black plastic cylinder in the center of the pins with a notch, this is your alignment key. This plastic is fragile and can easily break if you rock the tube. You can fix it with a 5 minute 2 part epoxy glue.

- If you break a key you must be very careful to install the tube in the correct orientation or you will damage the amplifier. (See warning below)
- If you break the key in the socket, just push it thru and it will fall to the bottom of the amp. Don't worry! It won't short out anything, but it will rattle when you move the amp.
- Broken keys do not affect the performance of the amp
- Broken keys are **not covered** under warranty.

Warning! You can blow up a power amp with considerable drama by inserting an output power tube incorrectly.

- This happens when you break the plastic alignment key and do not insert the pins with the proper orientation into the socket.
- Notice there are 8 pins in the socket, but only 7 pins in the tube with pin 6 missing, so it's easy to get it wrong. Intuitively you think the open pin matches the key, but it doesn't. The key orientates at 6 o'clock, but the missing pin 6 orientates at 10 o'clock.
 Tip: The logo on the metal collar and the alignment key on the tube faces forward.
 There is usually a notch in the metal tube collar that lines up with the key.
- For your safety, all Zesto Audio power amps ship with a copper plug inserted in the pin 6 socket to avoid any accidents. The good news is your power amp can be repaired at the factory or authorized service technician if inserted incorrectly. The bad news is any repairs caused by tubes installed incorrectly are not covered under warranty.

Changing Tubes

- Turn the power OFF, then wait for both the amber and green LEDs to go OFF.
- For the best performance, this amp needs to warm up for 30 minutes.
- If your amp is already warmed up, you only need 15 minutes for the new output tubes to warm up.
- Tubes are fragile when hot, so handle carefully with a cotton towel and place them to cool down on a cotton towel, not a hard surface and not your carpet.

A Warning! Hot tubes will melt Micro cloths and most synthetic fabrics.

Replacing tubes

If one output tube goes bad like V1, it is recommended to replace it with a matched pair for both V1 & V2 or both V3 & V4.



About the Bias Select Switch

- The Bias Select switch changes the power of the amplifier.
- The bias switch settings are clearly labeled for the specific output tubes and are **not interchangeable**.
- Maximum output for a KT88 is the left position only. Caution! Any other position will
 exceed its maximum power rating and will damage the tube known as "Red Plating"
 and possibly damage the amplifier.
- Maximum output for a KT120 is in the middle position but can also be used in the lower powered left position. Caution! The Right position will exceed its maximum power rating and will damage the tube known as "Red Plating" and possibly damage the amplifier.
- The Maximum output for a KT150 & KT170 is the Right position but can also be used in the lower powered Left & Middle positions. Enjoy!
- Only the KT150 and 12AU7/ECC82 supplied by Zesto Audio are covered under the manufacturer's warranty. 90 days on the KT150s and 6 months on the 12AU7s. All other tubes are purchased separately and are the responsibility of the owner.

How to use the Bias Select switch

- This switch gives you the option to customize your system.
- Each setting not only changes the power but also changes the sound.
- This feature is designed to be easy to use. You can change the bias on the "FLY" while the unit is on, so you can hear the difference.
- It will take a few minutes for the tubes to react, to either heat up or cool down to hear the difference.

¹ Tip!

- KT150 and KT170 can be changed to all 3 positions, however you can damage a KT88 and KT120 in a few seconds if you overload them on the wrong bias setting.
- You may find a more musical option for your system then the maximum power setting and may prefer the sound on a lower bias setting.
- KT150's set in the right bias position at maximum power, maybe more suited to your rock and roll.
- KT150s in the middle bias position will tend to have a more open sound. You may find that your Jazz and Classical will benefit from the additional headroom. The choice is yours.
- Just remember that you can always go down in output power below the maximum but cannot go up in power beyond a tube's capability.

How to use

Safety Tip! Just in case the on/off push button switch is already in the on position, plug your power cable into the mains last after you install the tubes! If the unit turns on when you plug in the cable, wait for one minute, turn the amp off by pushing the button on the front. Once both Amber and Green LEDs are off it is safe to proceed.

Tip! The simple rule to remember is to "turn on your preamp first before turning on your power amp and turn off the power amp before turning off the preamp." Not doing so may create a very loud noise that could damage your speakers or other equipment.

- It is customary for vacuum tube equipment, when it is first turned on, while the unit is powering up, to have a brief initial "hum" coming from the unit, not from the speakers.
- It is very important that all of your audio equipment is **turned off** or unplugged from

the main power before attempting to install this unit.

Grounding

- Grounding switches apply to the XLR Balanced inputs only.
- The grounding switches do not affect the RCA Single Ended inputs.
- If you have XLR inputs, start with both ground switches down or off.
- The ground switches work independently. You can adjust them for the least amount of noise.
- Example: Right channel up, left channel down.

Right channel down, left channel up.

Right channel up, left channel up

Right channel down, left channel down

Turn it on

Turn on the power amp using the ON/OFF switch located on the front right logo plate. The amber LED indicates low voltage, and the green LED indicates high voltage. Both lights will go on together and will remain illuminated while the unit is on. The eight tubes should start glowing.

Warning! Tube electronics should not be turned ON, then OFF, then ON again quickly. This could blow a fuse. Once the unit is ON, it is safe to wait a minute (60 seconds or until both LED lights on the front panel have been on for a few seconds) before switching OFF, then another 60 seconds or until both LED lights on the front panel have been off for a few seconds, before you can turn it back on. If you blow a fuse replace with the same slow blow fuse located in the drawer like compartment in the IEC mains connector.

- When you first turned on the Bia 200 there will be a brief inrush of power (your lights may dim for an instant). After that, the amp draws a lot less power.
- The unit is ready to listen to within a few minutes after powering up, however for best performance allow at least 30 minutes of warm up.

Tip! Burn-in

For the best performance, this Vacuum Tube Amplifier can take 200 hours to break in. For circuit testing and quality assurance, Zesto Audio ships all the Bia 200 Select Amps with at least 50 hours of factory burn-in.

Safety Tips

Fuses:

There are many safety features built into a Zesto power amp. The purpose of a fuse is to protect the amplifier, sometimes they wear out and sometimes the fuse will blow. The mains fuse is the most likely fuse to blow.

- The fuse is located in a drawer like compartment in the IEC power connector.
- 120 Volts AC mains is 8 Amp 5mm x 20mm slow blow fuse
- 220V, 230V/240V 50/60Hz mains is 4-amp slow blow fuse
- All fuse types are not created equal. For example, a Slow Blow fuse is not the same as a Standard fuse.

Warning! The BIA 200 is designed for "Slow Blow" fuses. If you install a standard fuse, the fuse will blow when you turn the amp on.

- If a slow blow fuse blows, the most likely cause is an output tube. If you replace the tube and the fuse blows again, contact your dealer.
- Important! Any use of aftermarket performance fuses on the IEC mains will VOID the manufacturer's warranty.

Speaker fuses

- The fuses directly under the binding post are designed to blow to protect the amplifier in case there is a short in the speaker or speaker cable.
- Speaker fuses are not the mains fuse.
- Speaker fuses are 6mm x 32mm 5A, 7A & 10A slow blow fuses



Safety Tips!

- Power amp output tubes (KT150) get very hot when operating properly; tubes can exceed 300 degrees Fahrenheit.
- Avoid moving your amplifier with hot tubes. Tubes are the most vulnerable when they are hot, and it will break the filament not the glass. However, you can change a hot tube as long as the amp is turned off and both LED lights are off.
- To protect your speakers, turn the power amp OFF when changing any cables in your

system.

- If you change cables or move the amp, always double check that your power cable is properly inserted. A loose power connection can blow a fuse and possibly damage this amplifier.
- If you break a tube, turn unit off immediately. Wait at least 1 hour for the high voltage to discharge completely to replace it.
- If you spill any liquids on the unit, turn off immediately and call the factory.

Trouble Shooting



Tip! Make your adjustments one at a time so you can isolate the problem.

Clicking from speakers

 A rhythmic clicking noise is usually found when a digital source such as network router or Satellite TV box is placed too close to the amp. Just move the component until the sound goes away.

Tip! It's a good idea to put all your lighting and digital sources on their own power strip.

Random clicking usually is caused by a weak output tube. Switch tubes in pairs V1 & V2 with V3 & V4. If the noise changes to the other channel it's one of the output tubes.

Hum from speakers

- Usually a grounding issue. Flip the ground switches. Start with off.
- It could be your output tubes are no longer matched. Switch V1 with V3 or V2 with V4.

Drifting center image

• Indicates a weak 12AU7 signal tube. If it drifts to the left, switch V5 with V6. If it drifts to the right, switch V7 with V8.

Warranty

All Zesto Audio equipment is covered by a 2 year limited warranty for parts and labor to cover defects in materials and workmanship. There is a 6 month warranty on the original 12AU7 vacuum tubes from date of purchase and 90 days on the KT150. **Only KT150 and 12AU7/ECC82 supplied by Zesto Audio are covered under the warranty. All other tubes are purchased separately and are the responsibility of the owner.**

To obtain this original owner warranty the completed warranty registration card must be received at the factory within 15 days from date of purchase. The warranty is not transferable.

This warranty is void if the product has not been used in accordance with the instructions found in this owner's manual, or if it has been misused, abused, modified or damaged by accident or neglect, or in transport once in possession of purchaser. The warranty is also void if the product has been tampered with or has been repaired or modified by anyone other than Zesto Audio or its specifically authorized representatives. This limited warranty only applies to Zesto Audio equipment and carries no responsibility for any other equipment attached to this unit.

- Important! Any use of aftermarket performance fuses on the IEC mains will VOID the warranty.
- Any damage caused by tube rolling is not covered under the warranty.
- Any damage caused by inserting tubes incorrectly is not covered under the warranty.
- Broken alignment keys are not covered under the warranty.

To return the product it must be packed in its original packaging and returned to Zesto Audio or its authorized representative via insured freight at the owner's expense. Returned products must be accompanied by written description of the defect and a return authorization number that is available from Zesto Audio or the authorized representative. Upon receipt of the defective product Zesto Audio or the authorized representative agrees to repair the product without charge for parts and or labor if within the 2 year warranty period, except for vacuum tubes if the unit is more than 6 months old. The product will then be returned via prepaid insured freight with a carrier at the sole determination of Zesto Audio or the authorized representative.

Zesto Audio and its partners reserve the right to modify their products or change specifications at any time without obligation or liability to previous purchasers.

Warranty will cover ownership outside the USA, but shipping is the sole responsibility of the owner. See your local dealer for factory approved service in your area.

Factory service on non-warranty items will be billed at an hourly rate to be quoted before work is done.