icon Audio

User Manual for

Stereo 20PP

Integrated Amplifier with Headphone Socket

IMPORTANT!
THIS MANUAL CONTAINS ESSENTIAL HEALTH & SAFETY INFORMATION FOR YOU AND YOUR AMPLIFIER. PLEASE READ & KEEP SAFE AND REFER TO IF NECESSARY

Contents

1 Introduction

Thank you for purchasing one of our amplifiers, a lot of care has gone into the design, selection of components and hand made production of this amplifier. We are sure that you will hear the difference.

The Stereo 20PP is a MKII of our earlier ST20 the PP denotes “Push Pull” in contrast to our ST20SE “Single Ended” design. It is an integrated stereo amplifier using the excellent EL84 pentodes in class A/B giving the first few important watts in ‘Class A’ then sliding into ‘Class B’ at higher powers. The first stage is a 12AX7 double triode (one ½ per channel) driving a 12AU7 phase splitter. The simple design means the Stereo 20 is capable of a smooth detailed illumination of you recordings without harshness or listening fatigue.

Important improvements to the ST20PP are the incorporation of a “proper” headphone socket, which utilises dedicated windings in the transformer to give the best possible match to your headphones. The switch on the front allows you to mute the loudspeaker output.
Also incorporated are our new “Low Distortion Tertiary” output transformers.

Despite its moderate price and compact size, with the suitable source material and loudspeakers the Stereo 20 is capable of stunning performance!

When choosing loudspeakers you should aim for as large as possible with the rated efficiency above 90db. Smaller speakers need more power and the bass output is lower..

We would like you to get the best out of our amplifier. Please read the enclosed notes. **Please follow the ‘quick set up guide’.** Should you be uncertain about anything to do with your STEREO 20 please contact your dealer or ourselves.

Final Inspection

This amplifier has been carefully checked, tested and final adjustments made by Icon Audio in Leicester.

It has passed our rigorous listening test and final inspection to assure you of optimum performance and reliability.

Date ….//…./….

Model …….

Amp Serial Number …….

Customer ……

Check amplifier finish	…….	Mains cable	…….
Check Headphone socket	…….	Sales invoice	…….
Run 6 hour test	…….	Credit card receipt	…….
Check all inputs	…….	Customer survey form	…….
Output Valve Bias level	..AUTO	Bias meter	…….
Sound Quality	…….	Transformer Protection	…….
Channel Balance	…….	**Upgrades:**	
Valve Microphony	…….	HT Delay	…….
Valve Seating	…….	Capacitors	…….
Hum level left/right	…/….mv	Output valves	…….
RF Test	…….	Driver valves	…….
Serial No sticker and recorded	…….	Mains lead	…….
Mains voltage	110 - 230/240V	Interconnects	…….
IEC Mains Fuse	……		

Signed off by …….

Notes:

IMPORTANT READ THIS FIRST

2 QUICK SET UP GUIDE

1 Unpack unit carefully. It is important that you keep packaging for warranty/service return/transit or storage.

2 Check that the valves are fitted properly. Handle the valves with a soft cloth. The valves may be gently pushed into place. It is normal for them to feel a little loose. If not fitted fit the valves in the appropriate position before proceeding. The three 'driver' valves are marked. The Russian EL84's may not be marked but are the larger four which go to the rear.

3 Connect to source units, e.g. CD, Tuner, Tape, Phono pre amp (if used) etc via appropriate phono sockets.

4 Connect to speakers. Suitable impedance is from 4 to 8 ohms (see back of speakers). Most modern speakers are 4ohms. Don't forget to get the correct polarity of speaker cables. (See speaker connections chapter). If 'bi-wiring' both 'common' should go to the black terminal and both 'positive' (or red) should go to the red terminal. Do not use more than one pair of speakers. A second banana plug may be accommodated through the 'bare wire' hole in the post.

5 Connect to mains supply using supplied IEC mains lead to 230v (115V USA) supply. **If for some reason the welded plug must be removed, please remove fuse and dispose of immediately.** (As they can be a danger to children if plugged in). The replacement plug should be wired in the following way Brown to Live terminal, Blue to Neutral terminal and Green/Yellow to Earth terminal.

6 SWITCH ON! The blue (or red) mains indicator should light up and unit will take approximately 40 seconds to start working. All valves should have a visible orange glow from the cathode heaters. With the volume control set to minimum (fully anti-clockwise) there should be no sound coming from the speakers except a barely discernable gentle hum. If there are any unpleasant sounds coming from the speakers, switch off and refer to the 'Trouble Shooting' section or contact Icon Audio.
If your unit is fitted with the HT delay timer, operation will begin after the unit switches the HT on (approx 25-50 secs), your may hear very low distorted sound from the speakers during the warm up time. This is because there is virtually no HT to operate the amplifier. We suggest you reduce the volume until the HT cuts in.

7 Your unit should now be functioning. If not check wiring again and/Use selector/tape monitor/volume to choose source program and suitable listening volume. Do not operate at a high volume for the first five minutes to allow the valves to warm up properly.

8 Health and Safety. The valves when operating have high surface temperatures. Keep out of reach of children and pets. The use of the supplied guard is recommended in these circumstances. Always unplug when making adjustments. **Like all amplifiers there are potentially lethal high voltages inside (300v DC), which when switched off can take up to 1 hour to discharge!** Do not remove bottom panel unless you are a competent engineer. There are no user serviceable parts inside. **Like other household electrical appliances do not leave unattended whilst switched on.**

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3 Connecting inputs & outputs

Many problems associated with electronic equipment involves connecting leads, which are usually either **'BAD CONNECTION' or a 'WRONG CONNECTION'**. So it's worth making sure that you have good connections and that your leads are the right way round.

Inputs
The amplifier will work with any standard piece of hi fi e.g. CD, Tuner, Tape Deck, Mini Disc, TV, Video Recorder, DVD etc having an output of approx 250mv or more, to get full power.
If you wish to use a turntable you will need a suitable phono pre-amp. Icon Audio can supply you. Contact for more information.

The unit will also function as a power amplifier. In this mode of operation it is suggested that the volume control be fully clockwise and volume be controlled on the pre-amplifier for best results. Use any input. Good quality screened interconnects should be used. Should this be required permanently, we can reduce the sensitivity and disconnect the volume control as required.

Connecting a tape deck (or recording device)
The STEREO 20 will playback from virtually any tape deck having suitable output, but it is not possible to record through the amplifier. But in this case you could connect your source direct to the tape deck and monitor the output from the tape deck. Or a suitable switch box could be used.

Connecting loudspeakers
The function of speaker cable is to present the output of the amplifier to the speakers as if the cable did exist, therefore cables should have the following properties:
Low resistance, low capacitance, as be as short as is practical, and be of similar length (up to 33% variation). Something like QED 79 strand or, or better. But beware, no cable on earth can make your system sound 'better' than it actually is. It would be better and may be cheaper to re-arrange your room and use shorter cables than to spend a fortune on longer cables!
You can either 'hard wire' your cable to the amplifier by baring enough cable to fit in the connector and twist together to avoid any spare strands touching anywhere else. **Be warned this amplifier does not have an output protection device, which we consider would degrade the sound. So a prolonged short due to strands of wire touching could damage the valves**. Alternatively use good quality 'banana' plugs, once fitted they are trouble free.
It is essential that you observe the polarity of the terminals; they must be the same for the left/right connections at the amplifier end and at the loudspeaker end. Otherwise the sound will be 'out of phase' with the sound stage 'inside out' with reduced bass.
If you are unable to check or confirm the polarity (e.g. if you have 'built in' wiring), try the following; Connect the system up and play some music with plenty of bass (e.g. dance music), preferably in mono (FM tuners are usually switchable to mono) and stand the speakers close together. If correct you should hear plenty of bass, if not **reverse the terminals for one channel only, either at the amp or speaker.** You will now hear more, or less bass. The higher bass output is the correct setting to use. Another alternative is to use a test disc.
The STEREO 20 is designed to work with full range, medium to high efficiency having impedance of 4 ohms to 8 ohms. Speakers which have efficiency of lower than 88db will have greater difficulty in providing a high sound level. But this will also depend upon room size, type of music and positioning.
If your speakers are labelled '4 to 8 ohms' or similar, this usually means that the speaker has an 8 ohms midrange and treble unit, but uses a 4-ohm bass unit to get greater efficiency. The Stereo 20 has the output optimised for 6 ohms, which should match virtually all speakers in this range.
If your speakers are bi-wired the holes in the post may be used to accommodate either bare wire or banana plugs.

Triode Operation

When using very efficient speakers (90+db) such as Lowther Fostex or our own Icon Audio Full Range we are able to convert the ST20PP to pure Triode operation or can supply details of how to do this upon request. The power is reduced to about 8 watts per channel. Customers that we have done this for previously have reported very good performance

4 How to get the best out of your amplifier

- It is essential the amplifier be stood on a solid surface and be well ventilated.
- Do not use the amplifier without speakers being connected.
- Do not switch off and then on without a rest of one minute (to allow the 'Soft start to re-set)
- Do not any driver valves other than listed, as there could be danger of shock.
- Do use the best possible source material.
- Make sure the speakers are in phase.
- Do use efficient, well-designed speakers.

The Stereo 20 amplifier is of compact design, and will therefore get quite warm during extended use; this is quite normal as the transformer block acts as a heat sink for the valves. Better ventilation will be achieved and extended valve life if the cover removed, but make sure this will not cause a hazard to children or pets etc.

What is safe maximum volume?
The Stereo 20 will run happily all day long at maximum power; the valves are not stressed any more at full power than at zero volume. Running into gross distortion will however stress the whole amplifier. To find the maximum safe volume, play full range music and advance the volume until distortion occurs, back off the volume control about 30 degrees, this is approximately full power. However this position will vary according to the type of music and the output of the source unit. For example CD players tend to be higher than say tuners.

Leaving the amp switched on
People sometimes ask if the amp should be left running 24/7 without switching off. Whilst the amplifier will sound at its best when it is properly warmed up, there is no advantage leaving it switched on when it is not in use. It is using electricity and as valves have a finite life. Conversely the valves and other components are stressed more at switch on; therefore do not switch on and off unnecessarily. **Although the amp should sound good within about 5 mins it can take up to 30 to sound at its best and will take a couple of weeks of regular use before it is 'run in'.**

We would recommend that any item of Hi Fi, Video or TV is switched off when not in use

Cabinet Care
To remove dust we suggest gentle brushing of the polished stainless steel cabinet with a soft paintbrush. Other marks can usually be removed with a damp cloth. The Perspex valve cover may need a gentle wipe with soapy water and drying with a duster. On no account use anything wet on the amplifier, and always clean with the power disconnected.

5 Trouble Shooting

Amplifier Dead
Check the IEC mains socket fuse at the back of the amplifier. To gain access, remove the mains lead. The fuse is in a small plastic drawer, which forms part of the socket assembly. To open insert a flat bade screwdriver or similar and prise open. **The fuse in use is the innermost** the outer is a spare. Should the replacement fuse also blow there is a fault. Replacements should be 1.6 Amp (3 Amp USA) 'quick blow'.
The fuse in the UK IEC mains plug should be a 3 or 5 amp fuse, although unlikely, this should be checked if the amplifier fuse is OK.

No sound
Have you selected the right input? Are the connections OK? Is everything switched on? Are the speakers connected?

Distorted sound.
Try another source; if sound improves then it's probably something wrong with the first source. If no improvement try different speakers, if no improvement could be an amplifier problem.

Hum Problems
If you experience hum, try disconnecting all inputs, if hum persists this is probably an amplifier fault.
If not, identify which input is causing hum. Connect one input at a time. A common cause is a 'hum loop' caused by having too many earths, and may be identified by unplugging each input source from the mains. One remedy for this is to use an interconnect which only has the screen connected at one end. Other causes of low-level hum can be from adjacent equipment, so experiment with moving equipment around to see if this makes the hum better or worse.

One channel missing.
Usually 'bad' connection on either the input or the speakers. Try swapping the connection over to establish if the cause is:
(a) Input to the amp. Sound will move to the other channel.
(b) Amplifier or speakers. Sound will not move.

Strange noises coming from speakers
Turn volume to minimum on unused input, if problem corrected either fault with source unit or with connection. If noise persists, problem with amplifier.

If an output valve glows red (other than the heater), often accompanied by a hum through the speakers, switch off immediately, and refer to Icon Audio or a service engineer, as this could be valve failure.

A valve that is lit up is not a guarantee that it is working properly; conversely a valve that is not lit up will not be working.

6 Specification & Features

- 4x EL84 output valves or equivalents
- 1x 12AX7 (ECC83) Triode for first stage
- 2x 12AU7 (ECC82) Triodes for phase-splitter
- No printed circuit board
- Dedicated Headphone output (8-600Ω)
- Ceramic valve bases for low noise/leakage
- HT delay circuit to protect cathodes (option)
- Soft start fitted to protect vital components
- All hand wired point to point method
- 15 Watts RMS per channel (8 ohms)
- Speaker suitability 3-15 ohms
- Class AB operation
- Signal to noise level -90db
- Freq response 10-50khz +or- 0db @1w
- Freq response 30-20khz +or- 1db @10w
- 4 to 8 ohms speaker matching (6 optimum)
- Low Distortion Tertiary transformers
- Long grain iron transformers
- Supplied with attractive safety guard
- Minimal feedback used
- Ultralinear transformer
- High quality metal film & wire wound resistors
- High quality polypropylene audio caps
- Japanese 'Blue' ALPS volume pot.
- Nichicron/Rubicon power caps.
- Silver PTFE internal audio wiring
- Gold plated Input & speaker terminals
- Inputs for CD, Tuner, Aux
- 250mv sensitivity for full output
- 230/240volts, 100watts
- Rear Fuse: 1.6A (230v). 3A (115v) 'T' or 'AS'
- Size 270W, 256D, 160H, allowance should be made for adequate ventilation.
- Weight 9.5kg
- IEC mains lead, (3amp fused UK only)
- CE certified

(Typical, but may vary slightly with valves and mains voltage)
Specification subject to change without notice.

7 Valve Replacement

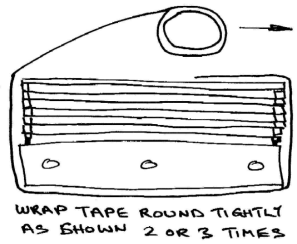
No special procedure or set up is involved. Switch off and unplug before attempting. The EL84s are "Self Bias" so no adjustment is necessary. As the valves used in the Stereo 20 are easily available and reasonably priced it is worthwhile investing in quality replacements. Only fitted the designated types as others may damage the amplifier and cause high voltages to be present at the input terminals. We would recommend that the EL84s and the 12AU7s be replaced as sets.

Valve life will depend upon such things as hours of use and number of on/off cycles, the HT Delay Circuit if fitted will extend the life of the valve by not stressing the cathode when it is cold. We would expect around four years life, but valves may last considerably longer than this although at reduced output. It is not good practice to remove the valves unnecessarily as this can strain the pins and cause tiny air leaks.

Service: Should you suspect a problem, you could return the unit to Icon Audio for a periodic service or return the valves for testing free of charge. You should carefully remove the valves numbering them with a marker from left to right as you do so in order that that may be replaced in the same position. They should be well packed in cardboard & foam or similar, and returned to Icon Audio for testing. (Valves are very rugged if packed properly).

8 Packing Instructions

It is essential that the original box and packing be kept in good condition, as this provides vital protection during transit. Please do not write on box, but use removable labels. If returning for service do not send the cover, as this is easily damaged. If you are sending the cover place the amplifier in a plastic bag and wrap packing tape around the amplifier as shown in order to "clamp" the cover down firmly. This minimises damage if the amplifier is not kept upright.



- Re-use the supplied plastic bag to keep the amp clean and free from damp.
- The mains lead fits in a foam cut-out underneath the amplifier.
- **Insert the piece of cardboard between the transformer cover and the valve guard; this will prevent the valve guard scratching the transformer paintwork.**
- Valves should be removed, numbered and packed in "Bubblewrap" or similar for protection inside the valve cover.
- If the amplifier is stored in the box, keep upright.

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This amplifier is designed for normal domestic hi fi use. It is not guaranteed for commercial, Public Address use, or use in other situations.
The supplied packaging will provide essential protection during storage shipping or service return. It will probably also increase the second hand value. We would suggest that this be retained wherever possible.
Do not write on box, but use removable labels
2010-12-01 G EU version