icon Audio

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

Instruction Manual Covering:

MB 845i Mono Block Amplifiers

Signature Version With Jensen Copper Capacitors & Upgraded Valves

designed by David Shaw

Contents

1 Introduction

Thank you for purchasing the ***MB 845i***. These pure valve mono block amplifiers are the result of years of careful design and listening tests with a wide range of speakers. The amplifiers are hand built using carefully selected audiophile components. The transformers are hand wound using 99.9999% pure low oxygen copper and higher grade special Japanese long grain iron. Finally each amplifier is valved, carefully commissioned and tweaked for best performance in Leicester UK.

The MB845i is very similar to the original keeping all the original features but with several improvements including our “Low Distortion Tertiary” output transformers and an improved power supply.

In order to get the best out of your amplifier, please read the “SET UP” notes. These contain important information about the correct operation and safety. Should you be uncertain about anything please contact your dealer or one of our team.
Valve amplifiers do need a little more attention than their solid-state counterparts, but the sonic results are well worth it. In this manual we have tried to include everything that you need to know. Please let us know if you find any errors or feel that we have missed anything out.

The ***MB 845i*** are push-pull all triode power amplifiers using the fabulous 845 high power triode valves. These have very linear characteristics which many people consider give the finest reproduction of any valves. Similar to the 300B but with more power and punch. These are in fixed-bias mode which gives maximum power, cool running and low distortion. You MUST occasionally check the bias (at least twice a year). The driver and phase splitting are also triode for best sound quality and low noise. The MB 845is are sensitive enough to be used with any pre-amplifier or passive in most situations. Their simplicity coupled with point to point hand wiring without the use of printed circuit boards results in an open euphoric sound that is wonderfully detailed and warm.
The ***MB 845i*** are the finest and most ambitious amplifiers we have made to date. Their performance when properly set up is amazing, so take your time to read and do things according to this manual.

Final Inspection - Your Guarantee of Quality

To assure you of optimum performance and reliability, this amplifier has passed our rigorous final inspection and listening test by the Icon Audio team in Leicester . During which the final set up and adjustments were made.

To get the best out of your unit and to save time please read this information & keep it to hand for reference

Date ….…./….

Model …….

Amp Serial Number …….

Customer ……

Check amplifier finish …….

Internal wiring check …….

Check Triode mode N/A…..

Run min 6 hour test …….

Check input …….

Output Valve Bias level ……..v

Sound Quality …….

Channel Balance …….

Valve Microphony …….

Valve Seating …….

Hum level L…...R…..mv

RF Test …….

LED brightness …….

Serial No sticker and recorded …….

Mains voltage 110-120 / 230-240V

IEC Mains Fuse 5A……

Soft Start Fitted N/A…..

Sales invoice …….

Bottom label …….

Credit card receipt …….

Customer survey form …….

Bias meter …….

Transformer Protection N/A…..

Upgrades:

Output valves ……...…….

1st Stage valve …….

2nd Stage valve …….

Capacitor grade (Audio) …….

Capacitor grade (Power) …….

Mains lead …….

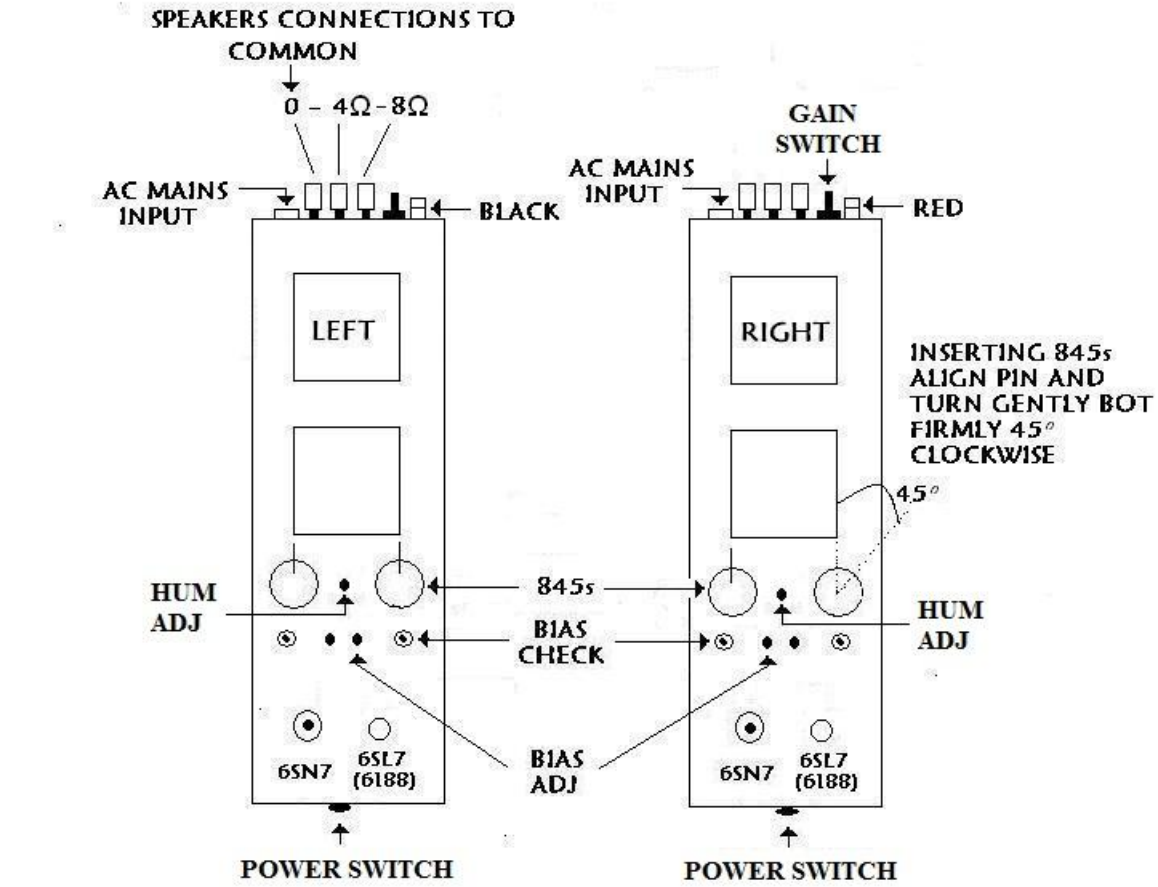
Interconnects …….

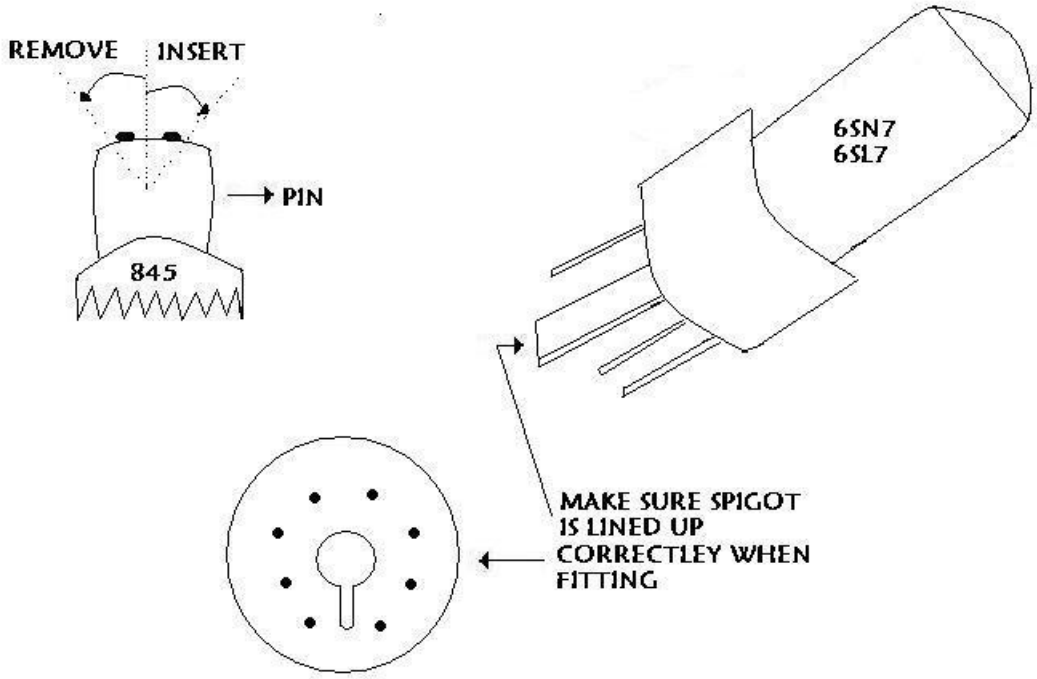
Signed off by …….

Checked by …….

Notes:

MB 845i Valve Insertion





IMPORTANT READ THESE NOTES THROUGH FIRST!

2 QUICK SET UP GUIDE

Your safety is paramount to us. Big triode amplifiers like the MB845is operate using high voltages. Please take care when setting up and adjusting. NEVER OPERATE WITHOUT VALVES FITTED. If you are uncertain how to proceed at any point ask your dealer or Icon Audio.

1 Unpack each unit carefully. Make sure that it is in good condition. If not report to Icon Audio. It is important that you keep the packaging for warranty/service return/shipping.
NOTE THE "LEFT" and "RIGHT" 845i orientation on each amplifier. Also keep the left and right amplifier valves separate.

2 If Necessary fit the valves, or check that they are firmly in place. **SEE PREVIOUS PAGE.**
Fit the valves according to the numbers written on the base of the valve, and on the socket, (normally numbered 1-10). The 845s should be fitted first to the two **REAR** sockets (the two sockets nearest the transformers). Fit by locating the bayonet pin at the side and twisting clockwise by 45 degrees. (For the novice all four 845s should be oriented in the same).
The small valves should be gently but firmly pushed into place. The 6SL7 (or 6188) is fitted to the right hand side, and the 6SN7 to the left hand side (viewed from the front).
Be careful to note the correct orientation of the small valves central "spigot" between the pins otherwise damage could occur.
To avoid damage to the valves do not twist the glass envelopes excessively as the base may become loose/detached. Hold the valves as close to the base as possible. Damage to valves is not covered by the warranty.

3 Connect to source unit, e.g. Pre amp, Passive pre amp etc via sockets on the rear.
4 Connect speaker terminals use "0" &"8 ohm" terminals unless you have 4 ohm speakers (see P5) Make sure that the polarity is correct. (See speaker connections chapter 3). If 'bi-wiring' both 'common' should go to the black terminal and both 'positive' (or red) should go to the red terminals.

5 Connect to mains supply using supplied IEC mains lead to 230/240v supply. **If for some reason the welded plug must be removed, please remove plug 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 mains indicator should light up. The 845s will glow bright yellow. You will likely hear a "humming noise" for about 20 secs, through your speakers, this is normal. After about 40 seconds the amplifier should now be working. The small valves should have a visible orange glow from the cathode heaters. With the pre amp volume control set to minimum there should be no sound coming from the speakers except a barely discernable hum. If there are any unpleasant sounds coming from the speakers, switch off and refer to the 'Trouble Shooting' section or contact Icon Audio.

6a Passive/Power Amplifier Operation Switch
Located on the rear, this switch is "UP" for Passive operation (high sensitivity). Or if use with a pre-amplifier is required, the switch should be "DOWN" in the low sensitivity position.

7 Your unit should now be functioning. If not check wiring again. Do not operate at a high volume for the first five minutes to allow the valves to warm up properly.

Please note all these things are normal for valve amplifiers:

A, Valves will get very hot, BEWARE!
B, The transformer covers will get quite warm
C, The amplifier may smell for a few weeks.
D, Mobile phone 'breakthrough' is normal.
E, Valves may make a 'tinkling' sound when warming up and cooling down.
F, One channel may come on before the other at switch on.
G, There may be a 'click' when switching off.
H, The occasional "click" or "pop" is normal.
I, The amplifiers may "hum" for about 30 secs after switching on.

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, which when switched off can take twenty minutes 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.** Do not adjust the 845i bias pre sets without reference to the manual. Incorrect adjustment could cause the valves to overheat, with resulting in damage to valves and amplifier.

Bias Adjustment:
The bias adjustment is factory set. No initial adjustment is necessary with the supplied valves.
To maintain the best performance of the amplifier you should check the bias of the output valves from time to time (say twice a year). Full details will be found in section 6.

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
These power amplifiers require some kind of pre amplifier to accomplish switching and volume control. This could either be achieved by either a "passive" or powered unit. Icon Audio make ideal pre amps (Icon Passive or LA4 MKII) . You may wish to consult your dealer. If you wish to use a turntable you will need a suitable phono pre-amp. Your dealer or Icon Audio can advise you. Either of our highly rated PS1 or PS3 MM/MC all valve phono stages would be an ideal partner.

Connecting loudspeakers
It is important to use good quality loudspeaker cable. This should be relatively thick and muti-stranded. i.e. QED 'Original' or better. Take care to connect the correct polarity. The use of 'Banana plugs' or 'spade' connections will ensure a good connection whilst minimising the risk of 'shorts'.
In our experience Icon valve amplifiers are more tolerant of cables, therefore the benefits of some very 'exotic' cables may be less apparent. But this is also personal taste. The losses in speaker cables is normally less than in interconnects.
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 (soldering the stands together helps). **Be warned this amplifier does not have an output protection device, which would degrade the sound. So a prolonged short due to strands of wire touching could cause damage.** Alternatively use good quality 'banana' plugs or spade connections, once fitted they are trouble free.

Speaker polarity. When using a pair of MB845is it is essential that you observe the polarity of the terminals; they must be the same for the left/right connections at each 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 this 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. If you are 'bi-wiring' your speakers use only two terminals, you must use only 4 or 8 ohms (plus "0" black terminal), not both, as this will not load the amplifier properly.

4 or 8 Ohms?
Many modern loudspeakers have an impedance which can vary from 2-16 ohms. The best power match is (1) the loudest, and (2) the most pleasing tonal balance.
The MB 845i is designed to work with full range, low to medium efficiency speakers having impedance between 4 ohms to 8 ohms. Speakers having efficiency of lower than 86db will have greater difficulty in providing a high sound level. But this will also depend upon individual speakers, room size, type of music and positioning etc.

4 Getting the best performance from your amplifier

- UNDER NO CIRCUMSTANCES OPERATE WITHOUT VALVES FITTED!
- NEVER REMOVE THE BOTTOM COVER
- Switch on your pre-amp first. This will limit "switch on thump" in your speakers.
- Do not leave the amplifier switched on all the time. This is not necessary
- Do not switch off and on without a short rest of 60 seconds (to reset the 'soft start')
- Do not adjust the output valve grid bias without reading the manual
- Do not operate the amplifier without loudspeakers connected
- Do not use valves other than listed as there could be danger of shock or damage
- Do check the bias once or twice a year or if you have cause to suspect a problem
- Make sure the speakers are in phase

What is safe maximum volume?
The MB 845i will run happily all day long at maximum power; the valves hardly stressed any more than at zero volume. Running into distortion will however stress the whole amplifier. Generally speaking if the sound is not distorted then the amplifier is not stressed. But beware of heavy musical transients at high volume which could also damage your speakers and blow fuses.

Leaving the amp switched on
We are often asked if the amplifier 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.

'Burning in'
Although the amplifier should sound good within about 10 mins it can take up to an hour to sound at its best and will take several months of regular use before it is fully 'run in'.

Upgrading Valves!
Quality valves should sound better and have a better service. The valves supplied with selected models are the result of careful comparison with other makes. But beware of paying a premium for "New Old Stock" valves where you may be paying for rarity value and not performance. Icon Audio normally keep a range of upgrade valves in stock.

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. Never use anything wet on the amplifier, and always clean with the power disconnected.

5 Trouble Shooting

Amplifier Dead
Check the 3 amp mains 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 blade 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 you should disconnect from the mains and seek qualified help or Icon Audio. Replacements should be 3 Amp 'anti-surge'.
The fuse in the wall plug should be a 3 or 5 amp fuse, although unlikely to fail, this should be checked if the amplifier fuse is OK.
There is also a HT fuse inside the amplifier. This would not normally blow unless there is a valve fault or an overload condition. This should be checked by your dealer, or only if you feel competent. Disconnect amplifier from the mains power and wait 20 minutes before removing bottom plate. If the HT fuse has blown, there are replacements inside. Replace bottom cover afterwards and check bias immediately after switching on.

No sound
Have you selected the right input? Is the "Tape Monitor" switch up? Are all the connections OK? Is everything switched on? Are the speakers connected?

Distorted sound.
Could be your source, the speakers or the amplifier, check all wiring, and try swapping things around to eliminate or prove which component if the problem.
Left or right amplifier? If both probably the source unit. Try another source. If one amplifier is distorted check the bias. No bias reading means either a fuse blown or a faulty valve. Distorted sound at higher volumes may be because one of the output 845i valves is not working. This could be due a faulty 845 or one of the MB845i internal fuses blowing. A symptom of this would be no 0.4V bias voltage at the test point. Also the valve would not be as hot as the others. Refer to an engineer or to Icon Audio. Spare internal fuses are secured inside the chassis. Replacements are available free of charge from Icon Audio.

Hum Problems
See also section 6
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.

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

If the whole 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.

Service: Should you suspect a problem, you could return the unit to your dealer or Icon Audio for a periodic service or return the valves for testing free of charge. You should carefully remove the valves (the 845s should be held by the base when removing, to prevent damage) 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).

Mains Supply
This amplifier is hard wired to work on 230/240v ac. The transformer may be re-configured for 110/120v ac by a qualified engineer. Contact for more information.

This manual is provided for guidance only, and is not intended as a comprehensive service manual. In case of problems you should refer to your dealer or directly to Icon Audio.

6 Bias & Hum Adjustment

The bias voltage for this amplifier is 180mv DC

Read these notes all the way through first!

If you are unsure about any aspect contact your retailer, Icon Audio or a competent service engineer.

When checking the bias ensure that any "Active" pre-amp or source is "off" with zero volume to prevent false readings. Passive pre-amps should have "zero" volume. On a test bench "short circuit" the input.
The MB 845is use the "fixed bias' mode of valve operation. This has the advantage of higher power, and cooler running. However occasionally (twice a year) it is advisable to check the bias reading using the supplied meter to ensure best performance from the amplifier. This is a safe procedure which involves measuring 0.18v (180mv) DC in the 2 sockets next to each 845 and adjusting if necessary.

1, Tools you will need: The supplied meter or one set to measure approx approx 2v (2000mv), and a small flat blade screwdriver. Adjustment is done at zero volume with speakers connected. Run the amplifier for about 10 mins (if possible) first.

2, Connect: the black probe to the chassis 'earth' by unscrewing the '0' speaker terminal and tightening the probe in the exposed hole. And the other in the test socket adjacent to the valve on test. Set the 'Icon' meter to 2000mv or the 'black mark'. See pics.

Making the 'earth' connection.

3, Checking Bias: You should get a reading of ideally 180mV if each valve is conducting correctly. But this will vary from about 150mV to 210mV. Bear in mind that your mains voltage fluctuations can affect your readings by up to 10%.

If all the valves are reading slightly high or slightly low, this is usually due to mains fluctuation. In this case no adjustment is necessary.
TIP: If one or two valves are out of line with the average, only adjust those valves to the settings of the others.

Showing a probe in output valve test point

4, Adjusting: If all the valves are high or low, set the 180mv by inserting a small screwdriver in each adjuster. If one valve is significantly higher or lower, then it may be faulty or life expired**. The adjustment is very sensitive so adjust very carefully.** If the reading appears a little unstable this is normally due to mains fluctuations.
5, If one or more valves are showing erratic readings or you cannot set the 180mv, then that valve is probably faulty or out of specification. If you are unable to set the reading high enough this means the emission of the valve is low.
NOTE!
If there is no reading at all the internal fuse individual to each 845 valve should be checked by a qualified engineer. Spares should be located inside.
HUM Adjustment
New amplifiers should not require adjustment, but as valves age you may notice an increase in hum. Disconnect the inputs at the rear to be sure that this hum is only coming from the MB845i amplifiers. You can either measure by ear or an AC voltmeter set to measure approx 1000mv. If doing by ear turn the "Hum Adj" screw near the 845 valves GENTLY for minimum hum. If using a meter you should set to the lowest reading typically 1mv AC max on "Low Gain".
A reading much higher than this may indicate an imbalance in the 845s or a fault elsewhere.

7 Valve Replacement

Important! Do not attempt to change the 845 output valves without reading these notes. Failure to do so could be both dangerous to you and damaging to the amplifier. Keep these notes handy.

Take care that you orient the valve correctly before inserting. Line up the centre "Spigot" first. They are easy to break, do not bend excessively to the side.

Health & safety; High voltages are present inside the amplifier and on exposed valve sockets when valves are removed, so take suitable care. It is not necessary to remove the bottom cover. Beware valves get hot in operation!

How do I know when to replace valves?

Generally speaking valve failure may be one of these:
1, The valve continues to work but the emission gets low. In the case of output valves this will result in not being able to set the bias.
2, The valve gets noisy/microphonic. Usually happens to the small valves, and can be confirmed by tapping with a pencil.
3, Heater fails. No glow in centre of valve. Valve is cold.
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 at all.
4, Dramatic Failure. Occasionally the demise of a power valve may be obvious with internal sparks and noise through the speakers. In that case, switch off and do not use until a replacement is available. Before use see chapter 6 "Bias Adjustment". If there was any associated burning smell etc, we would recommend a qualified person examines the inside of the amplifier first.

If the amplifier sounds OK the valves are probably fine. If the emission drops you will have difficulty setting the bias for the output valves.

Valve life will depend upon such things as hours of use and number of on/off cycles. It is not good practice to remove the valves unnecessarily as this can strain the pins and cause tiny air leaks. If the amplifier has had regular use of 4 years of more the amplifier will probably benefit from a valve change.

5, Changing valves:
Before changing the 845i valves ensure that it safe to do so by switching off and removing the mains plug at least 20 minutes before hand. This will enable dangerous voltages to dissipate, and the valves to cool down.
If possible check the bias setting before you attempt to change the valve(s), in order to familiarise yourself with the procedure.
If changing 845 valves you will need to check and if necessary adjust the bias as the new valves will probably be a different bias. Most people find it easier to do a course adjustment (within 10% of 180mv), and then do a final adjustment when the amplifier is fully warmed up.
If all is well there should be no more than a barely detectable hum from the speakers, and the amplifier should sound OK when tested. **You may need to adjust the "Hum Adj" screw, see section 6.**

6, If you cannot set up 180mv, then the valve is probably faulty or is unsuitable. (if the reading is zero the individual fuse may be blown).
If the valves are brand new, you will need to check again after approximately 10 & 100 hours, after that only occasionally or if you suspect a problem.

7, To avoid damage to the amplifier and electric shock hazard you must use only valves marked 845, 6SL7, 6SN7 or equivalent. Use only valves which you know to be new or good condition and test the amplifier thoroughly before resuming normal use.

8, Replacing the small valves:
6SL7 (6188) and 6SN7 (CV181). Neither of these requires any set up procedure. It's just 'plug and play' although care should be taken when removing and inserting not to bend the pins. If this happens gently bend the pins back into shape. (These valves are similar with the same pin connection; accidentally interchanging these two valves would not cause damage, buy will reduce the amplifier performance).

Icon Audio are happy to check the valves/amp or re-bias your amp free of charge.

(For Engineers with technical knowledge, the correct bias setting is 42ma through the 4.3 Ohm tertiary winding of the transformer, which will give 180mv DC).

8 Specification & Features

(Typical conditions @ 235v 50Hz)

- 845 output valves (only)
- 6SL7 double triodes for first stage (6188 eqv)
- 6SN7 double triodes for 2nd stage (CV181 eqv)
- Hand wired point to point components
- No printed circuit board
- Ceramic valve bases for low noise/leakage
- 80w RMS at clipping
- Signal to noise level -105dB
- Freq response 20Hz-20kHz ±1db
- Power bandwidth -3db=10Hz-40kHz
- 0.3% THD typical 8w (0.1% 1w) 1khz
- Custom hand wound transformers using Japanese long grain steel
- Supplied with attractive safety guard
- Minimal feedback used
- High quality oversized metal film resistors
- Audiophile High quality polypropylene or Jensen audio capacitors (optional upgrade)
- Internal wiring using silver PTFE audio cable
- Valves carefully matched for best performance
- Gold plated Input & speaker terminals
- 400 mv sensitivity for full output (High)
- 900 mv sensitivity for full output (Low)
- 230/240volts, 180watts (zero signal)
- 3 amp T mains rear fuse (with spare)
- 250 ma T 845 anode fuses (with spares)
- W:22cm. D:52cm. H:29cm. Weight:23kg
- IEC mains lead, (5amp fused)
- CE certified. ROHS & WEEE compliant

Specification subject to change without notice.

9 Guarantee

Thank you for purchasing one of our amplifiers. We hope you will be pleased with it.

This amplifier is guaranteed by the dealer you purchased from for 12 months from the date of purchase for parts and labour, excluding shipping. Valves are consumables and therefore on a 12 months pro-rata wear basis. Please keep your receipt as proof of purchase, this will be needed.

All units are individually tested for performance for at least six hours before despatch to you. In the unlikely event that you believe the unit is not functioning correctly, it may be helpful to contact us first as we may be able to assist you. Then we would request that you return the item to us for further action.

You are advised to inform us of any change of address or change of ownership in order that we may keep you up to date of any upgrades or improvements. Check our website.

Exclusions
Claims for any damage to either amplifiers or valves must be reported within three days of receipt.

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 guarantee becomes void if the unit has been modified in any way not approved by Icon Audio.

10 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. Should the original box and packaging be lost or become unusable a repacking charge of one hundred pounds will be made.

- 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.
- **Send the valve covers and valves in the separate supplied box. See above for valve removal.**
- 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.
- Do not store in damp conditions as the transformer windings may corrode.
- If the amplifiers are shipped insurance is desirable due to the high unit value.

icon Audio UK LTD

351 Aylestone Road Leicester LE2 8TA

Email: sales@iconaudio.com Website: www.iconaudio.com

Phone +44 (0) 116 244 0593 Cell +44 (0) 778 715 8791

Fax 0116 244 0593

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