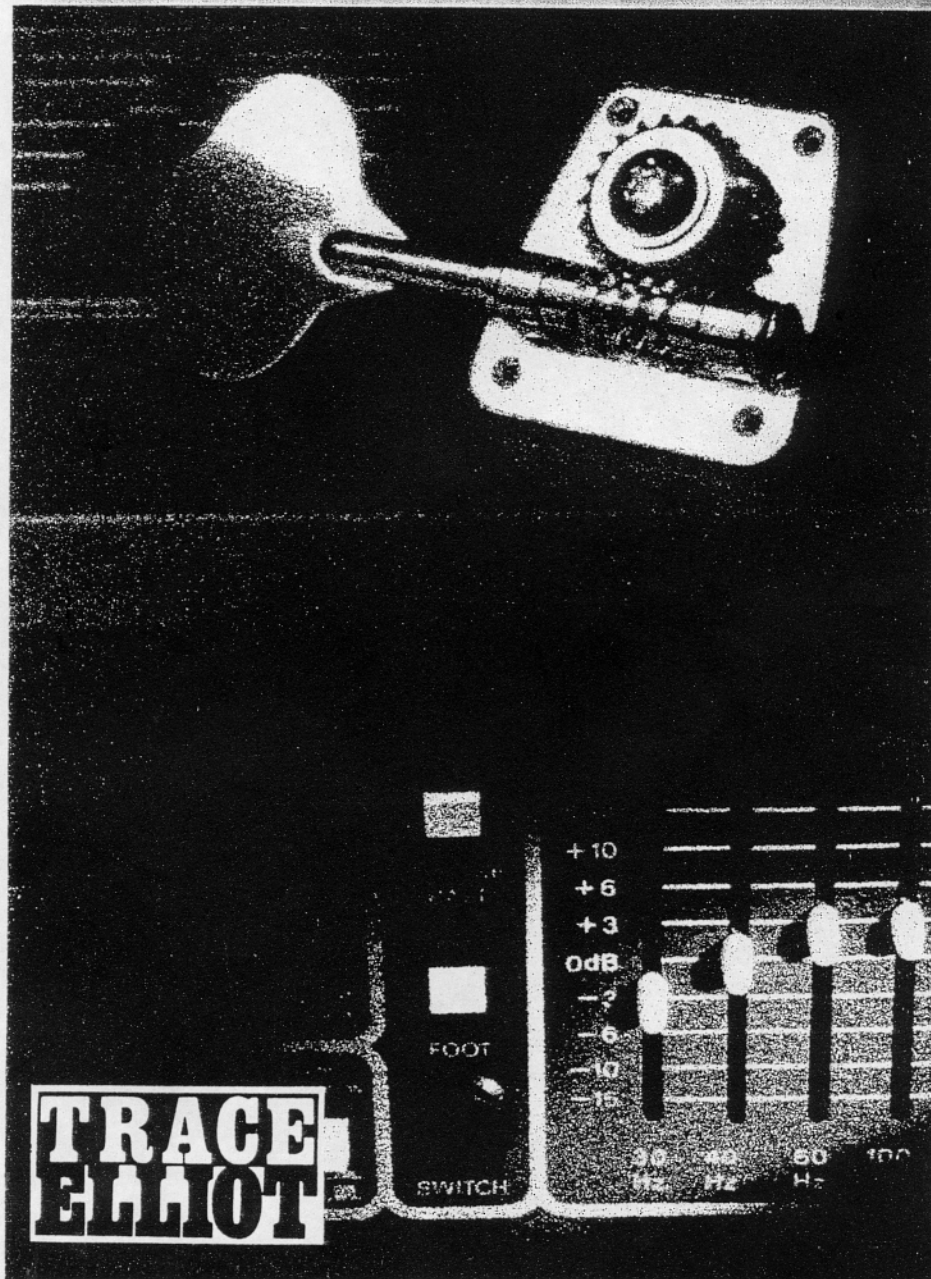


SERIES 6



OPERATING INSTRUCTIONS

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INTRODUCTION

These Trace Elliot Operating Instructions cover all models in the range with the following exceptions:

Valve (tube) amplifiers
MP11 programmable pre-amp

The above items have their own individual instruction manual, since they are of a specialized nature.

First consult the Index, from which you will be able to select the appropriate section (or sections) which apply to your equipment. However we strongly advise you to read through the whole manual, since we have made it as informative as possible and you may pick up extra useful hints.

REGULAR MAINTENANCE

A properly designed solid state amplifier does not deteriorate with age but a few points should be checked periodically.

- A) Make sure all leads, particularly speaker leads and mains leads, are checked for good connections.
- B) In the case of fan cooled power amps, it will be necessary to clean accumulated dust from the inside of the amp. This should be done by a qualified engineer. The frequency of this cleaning will depend on how often and how long the amp is used for but once a year should be enough.
- C) Should faders or volume potentiometers become intermittent or scratchy, they can be cleaned with special solvent by a qualified engineer.

FAULT FINDING

Trace Elliot equipment is designed, built and tested with reliability in mind. The most common causes of trouble are defective leads and in the event of a fault condition, check these first. Next, check all fuses and if blown, **replace with a fuse of the correct value as shown on the equipment**. If the fuse blows again, refer the equipment to a service engineer with a note of the fault.

If leads and fuses prove to be in order, but the fault is still there, the equipment needs to be referred to a qualified engineer.

There are no user serviceable parts inside the equipment and no attempt should be made by an unqualified person to dismantle it or remove any covers.

DO'S AND DON'TS

- DO read this manual carefully.
- DO set up the input gain sections of the GP12 or GP7 pre-amps correctly.
- DO use XLR to XLR speaker leads where possible.
- DO remember:-

The bass guitar is a hard signal to amplify. It is punishing on loudspeakers and demanding on the power amp. Trace Elliot use very heavy duty components throughout, which will withstand a lot of abuse. However, sustained overloading of loudspeakers will eventually result in their failure. If your volume of playing causes your speakers to distort regularly and continually, you should up-rate your system.

- DON'T connect two output channels of any amplifier into the same connector panel.
- DON'T connect a full range signal into the Bi-amp input of the 1510X or 1818X cabinets.
- DON'T use equipment if it is improperly earthed (grounded) - if in doubt, have your system checked by a qualified engineer.
- DON'T allow any electrical equipment to get wet, or use it if it is wet.

If you have any problems or queries, please consult your Trace Elliot dealer. If the dealer cannot help, feel free to contact us for any assistance you may require.

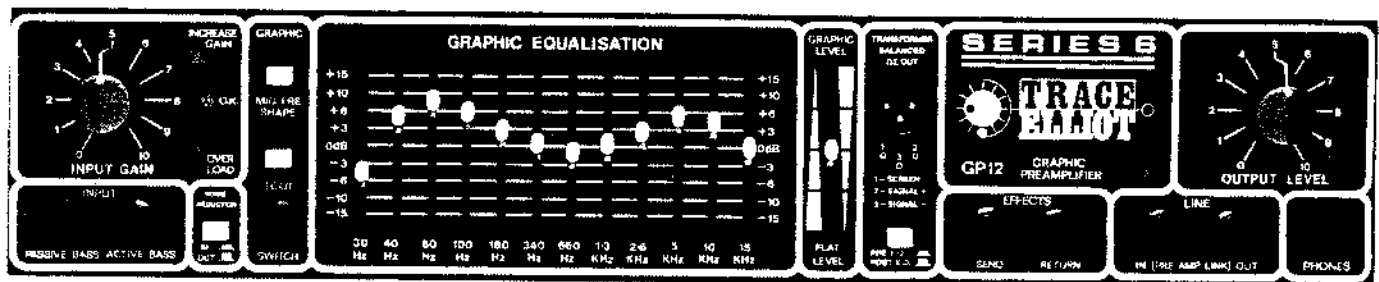
GP12 PRE-AMP

The GP12 pre-amp is the "Control Centre" on all TRACE ELLIOT amp heads and combos (except the AH100 and 715 combo that use the GP7 pre-amp).

The GP12 has many facilities that, if used correctly, can greatly benefit the bass player.

The following GP12 Operating Instructions are to assist you in becoming fully familiar with these facilities enabling you to use them to their best advantage.

For a full and really useful description of all facilities read all sections carefully.



INPUTS

There are two instrument Input Jacks, one to suit the output signal of passive bass guitars (i.e. those with no internal battery) and one to suit active bass guitars.

This second input has been provided because most active basses can put out a much larger signal than that of a passive instrument; also because so many active basses are now available it was considered necessary to provide a special input that is best suited to these instruments.

INPUT GAIN SETTING

To get the best results from your GP12 it is important to understand fully the correct use of the "Input Gain" control (red knob cap) and the stage "Output Level" control (green knob cap).

The optimum setting is achieved when the "Input Gain" control is as high as possible without lighting the red "Overload" LED; the stage "Output Level" should always be set as low as possible to achieve the required volume. i.e. The "Input Gain" is adjusted and left set at the optimum level while the "Output Level" is used to make any changes to the amplifier volume. To set these two controls correctly use the following procedure:-

- 1) First turn the "Output Level" control to zero.
- 2) Plug your bass into the appropriate input.
- 3) Turn all volume controls on your bass up full.
- 4) Gradually turn up the "Input Gain" control while playing your bass as hard as you are likely to during your performance.
- 5) When the red "Overload" LED lights up reduce the "Input Gain" by 1 click.

For most basses the "Input Gain" control will end up being set between 5 and 8 on the scale.

6. Now turn up the "Output Level" a few clicks to give the desired playing volume.

Please note: If the "Graphic Equalisation" is altered it may be necessary to re adjust the "Input Gain" control; this will definitely be the case if excessive amounts of "Boost" or "Cut" are applied. Re set the "Input Gain": by following steps 3 to 6 of the above procedure.

Remember during normal playing the yellow "O.K." LED should light up, with the red "Overload" LED only occasionally flickering on heavy "Pulls" or "Slaps".

Playing passive basses with the instrument volume control turned back will also reduce the frequency response of the bass so try to keep this control well advanced, using the amplifier "Output Level" control to provide for larger changes in volume.

MID PRE SHAPE

The "Mid Pre Shape" is like a preset graphic equaliser already built into the GP12; it provides a "Boost" at both the low end (50Hz) and the high end (2kHz to 5kHz) of the frequency spectrum as well as a "Cut" at mid frequencies (400Hz).

This removes the "Nasal" quality from most bass sounds and gives a clear well defined sound to the instrument. This can be switched in from either the front panel push button or from the foot switch (provided free of charge).

The "Mid Pre Shape" will provide an instant "Punchy" sound to your bass playing and may be used with or without the "Graphic Equalisation" section being switched in.

NOISE REDUCTION

The "Noise Reduction" may be switched into operation from the front panel push button.

This facility has been provided to reduce any background "Hiss" that may be apparent when no signal is present, i.e. when the bass is not being played.

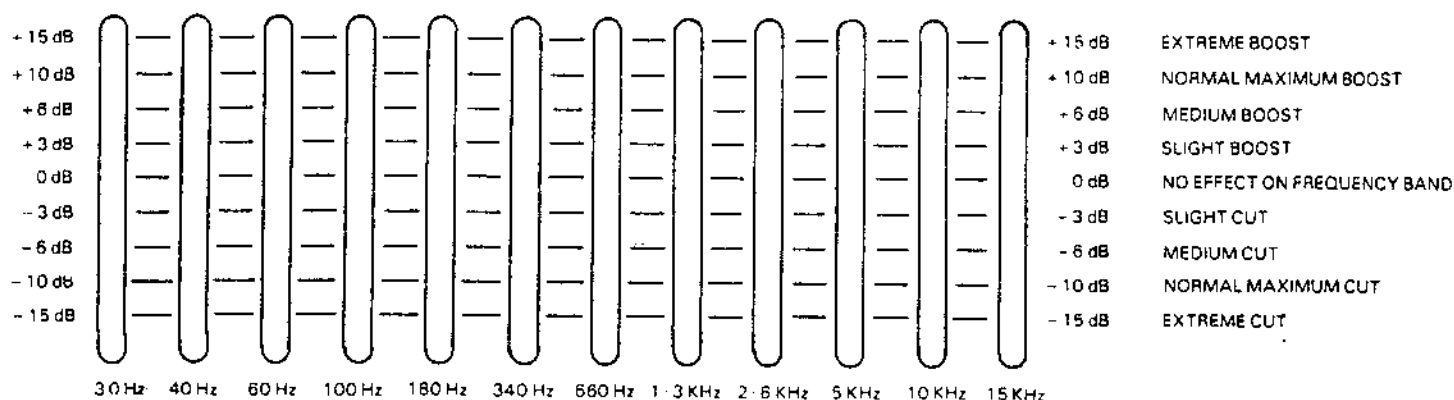
Providing the "Input Gain" has been correctly set, background hiss will only be a problem if using excessive amounts of top boost or when using some active bass guitars. To discover if the hiss is coming from the bass, just unplug it from the GP12; if the hiss goes away then it is coming from the bass itself.

The "Noise Reduction" circuit is disabled as soon as any signal is presented to the GP12, and will not become operative again until the signal has completely died away.

This ensures that the "Noise Reduction" cannot affect the sound of the bass in any way while you are playing.

USING THE GRAPHIC EQUALISER

Below is a representation of the graphic sliders showing the frequency centres and degrees of "Boost" and "Cut" available with them.



A carefully designed "Graphic Equaliser" is by far the most flexible way of varying the sound of a bass guitar and if properly used will provide all you will ever need in the way of tone shaping for your instrument.

The GP12 has a 12 band "Graphic Equaliser" that can be switched "In" or "Out" of the circuit from the front panel push button or from the footswitch provided.

Because of the flexibility and massive "Boost" and "Cut" potential of the GP12 (more about this later) it is important to know how to get the best from it.

It is equally important to know how to avoid the problems that can be associated with its incorrect use, so firstly here is a list of things **not to do**, and why:

1) **DON'T** fully boost just one frequency band as this will tend to emphasize a small range of notes on the bass producing a "Peaky" and not very useful sound.

2) **DON'T** boost or cut "All" frequencies as this will have the same effect as increasing or decreasing the overall volume level without affecting the tonal characteristics of the sound.

3) **DON'T** use excessive bottom (30Hz or 40Hz) boost on the graphic equaliser unless your speakers can handle it (very few speaker systems are capable of handling frequencies as low as this with any degree of efficiency).

Boosting at 30Hz for instance will *not* add to the perceived amount of "Bottom End" in the sound and in fact boosting at 60Hz or 100Hz will have the apparent effect of adding far more "Bottom End" than boosting at 30Hz or 40Hz.

The 30Hz slider has been added to allow precise tailoring of these low frequencies when using 5 string basses where the low "B" string is around 30Hz and even then it is more a case of how much 30Hz to "Cut" rather than "Boost" to get the speaker system working at its optimum efficiency.

Use the 30Hz and 40Hz sliders sparingly i.e. slight boost or cut and you will find you can achieve a far greater overall volume without the speaker system complaining.

4) **DON'T** use excessive top (10kHz and 15kHz) boost; this will tend to add mostly "Hiss" to the sound as there is very little signal output at this frequency from a bass.

This is even more important when using a 4052H high frequency unit with your system.

Again these sliders have been provided to give you full control at all frequencies making the GP12 the most flexible and comprehensive bass system available for the discerning user.

The fundamental frequency range of a bass guitar is from 41.2Hz (bottom 'E' string) to around 392Hz range (two octaves up on the 'G' string) not a very wide range. Obviously a lot of harmonics are produced when playing and these can extend up to 5kHz or more.

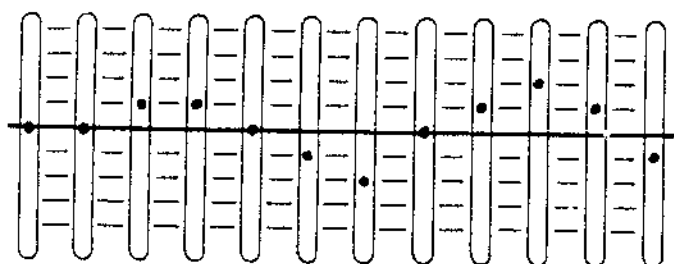
Other frequencies are also produced by the attack portion of the note when the string is first struck; this attack can be emphasized by boosting the top end.

However because of the fairly small range of frequencies from a bass guitar by "Top End" we mean between 1.3kHz and 5kHz and you will find by boosting at 5kHz the "Attack" will be emphasized whereas by boosting at 1.3kHz and 2.6kHz you will bring out the harmonics in the note.

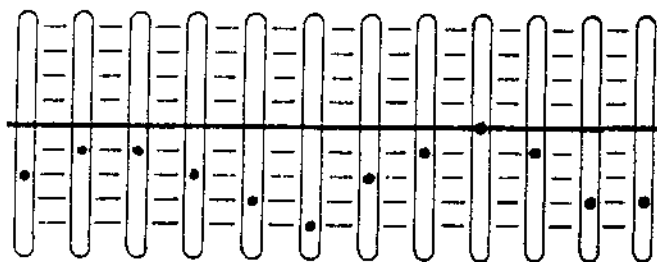
Above this frequency range you will find it is better to use a small degree of "Cut" to reduce any "Hiss" present as this "Hiss" will not be masked by the bass signal when playing, due to the very small amount of bass frequency content at 10kHz to 15kHz.

That has got the "Things Not To Do" out of the way so what *can* you do with the "Graphic Equaliser" in terms of tonal variation? Well basically anything you like providing you bear in mind the "Don'ts" and follow two basic rules; these are:-

1) Try to keep the slider settings balanced around the 0dB line on the graphic. (See diagram below)

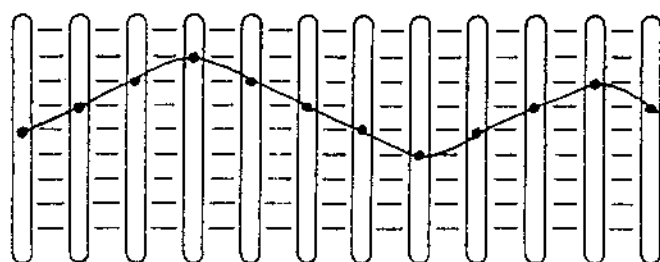


RIGHT

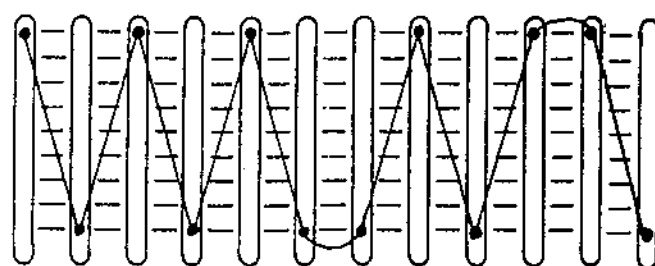


WRONG

2) Try to set the sliders in a smooth, gentle curve, as setting adjacent sliders at the opposite extremes will give sharp peaks and troughs in the sound, emphasizing some notes and killing others. (See diagram overleaf)



RIGHT



WRONG

So switch the graphic "In" and experiment with the available sounds but remember "Top End" means 1.3kHz to 5kHz, "Bottom End" means 60Hz and 100Hz (plus 30Hz and 40 Hz if your speaker system can adequately handle it), "Mid Range" means 180Hz to 660Hz.

Don't forget you may have to re-adjust the "Input Gain" setting once you have altered the graphic.

This is necessary because altering the graphic will change the overall gain and the level indicating circuit monitors the signal at a number of places through the GP12 to ensure that clipping or distortion is not occurring at any stage.

Consequently changing the gain will change the reading on the LEDs and you will have to re-adjust the "Input Gain" control to compensate.

GRAPHIC LEVEL/FLAT LEVEL BALANCE SLIDER

This slider balances the relative volumes of the "Graphic Level" (slider up) and the "Flat Level" (slider down) allowing you to adjust for differences in volume between the graphic being switched "In" (graphic level) and the graphic being switched "Out" (flat level).

This slider can be used either to adjust the volume to be the same when the graphic is "In" as it is when the graphic is switched "Out", or purposely to boost one setting for solos etc.

D.I. OUTPUT

The GP12 has a transformer balanced, isolated DI (direct inject) output for connection to a PA or studio mixer.

You do not need a DI box - simply take a feed directly to the mixer using a 3 pin XLR connector wired as indicated on the GP12 front panel adjacent to the socket (pin 1 screen, pin 2 signal +, pin 3 signal -).

There will be no problems with hum loops as this is a genuine transformer isolated output and not just electronically balanced as with many amplifiers.

By using the switch below the DI socket, the signal being sent to the mixer can be "Pre EQ" which takes the signal direct from the bass but after the "Mid Pre Shape" switch; you can then adjust your EQ to your own taste on stage without affecting the signal to the mixer. "Post EQ" takes the signal from after the graphic and after the effects loop, so whatever sound you set up on stage and whatever effects you are using will all go to the mixer.

EFFECTS SEND AND RETURN

The effects "Send" and "Return" sockets are for the connection of external equipment to the GP12.

Any effects units can be connected to these sockets in exactly the same way that you would connect them if you were using them between the bass and the input of the GP12, i.e. the "Send" signal goes to the first effects unit with the signal from the last unit coming back into the "Return" socket.

The advantage of using them in this way rather than prior to the input of the GP12 is that these sockets are positioned after the EQ section and consequently any noise from the effects units will not be boosted by the EQ section.

As well as using the effects "Send" and "Return" sockets for the connection of effects units, the "Send" socket can be used as a signal level output (i.e. about the same level as the signal from the bass itself) for connection to the instrument input of another amplifier.

This output is prior to the stage "Output Level" control.

LINE IN, LINE OUT (PRE-AMP LINK)

The "Line Out" socket is situated after the "Output Level" control on the GP12 and can be used for connection to further power amplifiers if you wish to up-rate your system.

The "Line In" socket can be used as a "Pre-amp Link" facility to link up multiple pre-amps. This is done by linking the "Line Out" of pre-amp A to the "Line In" of pre-amp B; the volume of each pre-amp will be individually adjustable, with the combined output of both coming from pre-amp B.

Alternatively the "Line In" socket may be used as a "Slave Input" to the power section in both amp heads and combos; used in this way any signal plugged into the "Line In" socket will be combined with the GP12 pre-amp signal and both will be fed to the power section.

HEADPHONE SOCKET

A headphone socket is fitted to all TRACE ELLIOT equipment using the GP12 pre-amp; this is to suit high impedance headphones i.e. 600ohms or above. The old type of headphones i.e. 8 Ohms should not be used.

For silent practice on headphones using an amp head or combo just unplug the speaker from the power stage; the "Output Level" control is then used to adjust the headphone volume.

AMPLIFIER HEADS

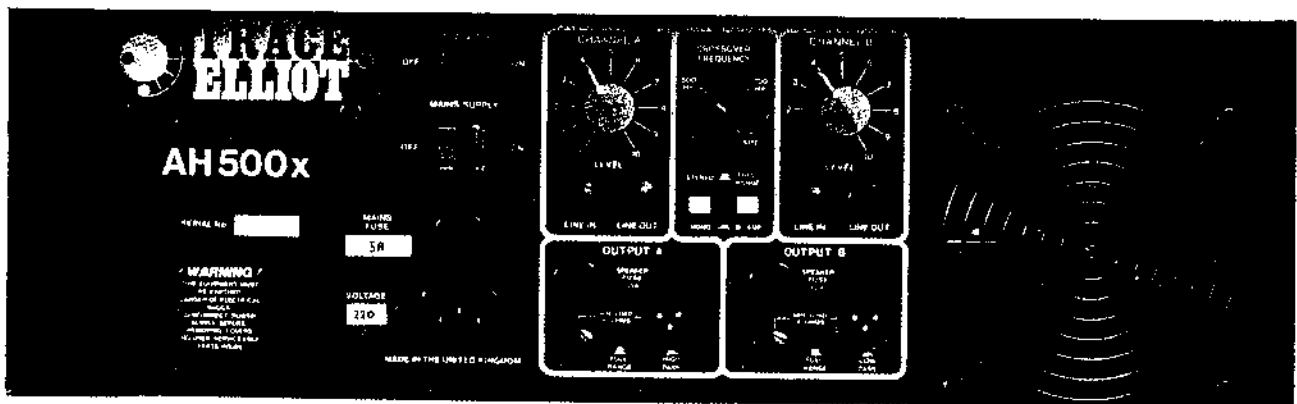
AH500X

With your AH500X you should have received the following:-

- 1) A heavy duty vinyl cover.
- 2) A footswitch unit with LED indication and 6 metres of cable.
- 3) A moulded mains cable.

The AH500X is the most powerful amp head in the TRACE ELLIOT range built with the professional user in mind, and is housed in a unique moulded case with built in ultraviolet illumination of the front panel. It is a twin channel unit (250 watts per channel) that can be used either as a "Full Range" 500 watt system or as a "Bi-amped" system with variable cross over and separate control of the "High" and "Low" frequency levels.

The AH500X uses the GP12 pre-amplifier (see GP12 details pages 3 to 7); all other controls are on the back panel and the facilities that these provide are described below.



THE POWER SWITCH

Once the correct voltage supply has been connected to the AH500X the amplifier can be switched on with the green "Power" switch; this should light up when switched to its "On" position.

If at any time it does not light up when switched "On", either the power is not reaching the amplifier (check the supply cable and plug) or the "Mains Fuse" has blown.

THE MAINS FUSE

In the event of having to replace the "Mains Fuse" always use the same rating and type as marked on the unit's back panel; using one of a higher rating will invalidate the guarantee.

If it should blow a second time, immediately refer the unit to a Trace Elliot approved service engineer for checking.

SWITCH ON DELAY

The AH500X has a switch on delay circuit that keeps the speakers disconnected until the internal power supplies have reached their full voltage; this prevents the familiar "Thump" often heard through the speakers when an amplifier is switched on.

U.V. ON/OFF SWITCH

The U.V. "On/Off" switch will turn the ultraviolet illumination for the front panel "On" or "Off".

SPEAKER OUTPUTS A AND B

The two channels of the AH500X are provided with an XLR and Jack socket for speaker connection.

It is recommended that the XLR socket is used whenever possible as this can carry higher currents with less losses than a Jack socket.

The Jack socket can be used for secondary connections or for linking to a high frequency unit on channel 'A', the "High Pass" channel in the bi-amped mode.

Each channel can drive up to 250 Watts into a speaker impedance of 4 Ohms and for a "Full Range" system this means that up to 4 speaker cabinets can be driven, 2 from each channel (all of the TRACE ELLIOT speaker cabinets are nominally rated at 8 Ohms and 300 Watts).

SPEAKER OUTPUT FUSES

Each channel has its own separate output fuse; this is a 10 Amp "Fast Blow" type of fuse and **should only ever be replaced by one of the same type.**

Never fit a higher rated fuse as this will not only invalidate your guarantee but could also cause considerable damage to both the amplifier and the speaker.

In the unlikely event of having to replace this fuse, first check your speaker cable for short circuits (the most likely cause of fuse failure) before using the amplifier again.

Should this fuse blow a second time, immediately refer the amplifier to a qualified TRACE ELLIOT approved service engineer for checking. Include your speaker cable so this may also be checked.

CHANNEL A, CHANNEL B LEVEL CONTROLS

Regardless of the mode of use of the AH500X (full range, bi-amped, stereo or mono) the level controls will individually adjust the "Output Level" from the two channels 'A' and 'B'.

The use of these in both the "Full Range" and "Bi-amped" modes will be covered in the sections below.

FULL RANGE USE

With "Full Range" selected by the "Full Range/Bi-amp" push button and nothing connected to the "Line In" sockets, the GP12 pre-amp will be connected to both channel 'A' and 'B' output stages with both channels being driven "Full Range".

The level of each can be adjusted using the channel 'A' and 'B' level controls for balancing the output to the speaker combinations connected to each channel; these controls should always be set as high as possible. The "Output Level" control of the GP12 pre-amp can then be used as a master volume to adjust the overall stage volume.

The "Stereo/Mono" switch will have no effect when using the AH500X as described above.

USING STEREO EFFECTS IN "FULL RANGE" MODE

Stereo effects units (those that take a mono input and produce a stereo output) may be used with the AH500X by taking the input to the effect from the "Line Out" on the GP12 front panel and bringing the stereo return into the channel 'A' and 'B' "Line In" sockets on the back panel.

The channel 'A' and 'B' "Level" controls and the GP12 "Output Level" control will all function and should be set up as described in FULL RANGE USE. The Stereo/Mono switch will now operate and will need to be set to "Stereo" for the effect to be in stereo.

BI-AMP USE

Bi-amp means using the two separate power amplifiers in the AH500X to amplify the "High" and "Low" frequencies derived from the internal active "Cross Over" separately.

It is most important when using this mode to make sure you have suitable speakers connected to the correct channels, as connecting a high frequency speaker to the "Low Pass" output can very quickly destroy the speaker.

To use this facility connect the "High Frequency" speaker to channel 'A' output and the "Low Frequency" speaker to channel 'B' output; then select "Bi-amp" with the "Full Range/Bi-amp" push button, (the "Stereo/Mono" push button will have no effect in bi-amp mode).

Channel 'B' level control will now adjust the "Low Pass" output and this should be set to 10. Channel 'A' level control will adjust the "High Pass" output and this should be adjusted to give the required balance between the "High" and "Low" frequency signals, and will probably end up being set at around 7. The GP12 "Output Level" control is then used to adjust the overall stage volume.

CROSS OVER FREQUENCY

The "Cross Over" frequency is continuously variable between 250Hz and 1kHz with the control provided; we recommend the use of the 250Hz cross over but have made this facility adjustable to allow you to alter it to suit your own tastes.

LINE OUT SOCKETS

The "Line Out" sockets are for connection to a further power amplifier for use with a larger system. To do this connect channel 'A' "Line Out" to the channel 'A' "Line Input" on the additional power amplifier; turn the power amplifiers "Level" control up full and both the AH500X's internal output stage and the power amplifiers volume will be controlled from the channel 'A' "Level" control on the AH500X.

Connect channel 'B' in exactly the same way; if the AH500X is then switched to "Full Range" the additional power amplifier will also be "Full Range"; if the AH500X is switched to "Bi-amp" the power amplifier will be "Bi-amped" as well.

LINE IN SOCKETS

When in the "Full Range/Stereo" mode a jack inserted into a "Line In" socket will disconnect the GP12 pre-amp from that channel. This can be used for the connection of stereo effects as described earlier or where you want to use the AH500X's output stages as separate power amplifiers i.e. bypassing the pre-amp.

In the "Bi-amp" mode the "Line In" sockets are bypassed and the pre-amp is directly connected to the power amplifiers via the internal cross over.

When both "Line In" sockets are being used in the "Full Range" mode, the "Stereo/Mono" switch will be operational, connecting both input signals to both power amplifiers in "Mono", or channel 'A' and 'B' input signals to their respective power stages in "Stereo".

Remember in Bi-Amp mode, Channel 'A' = High Pass = High Frequency Speaker; Channel 'B' = Low Pass = Low Frequency Speaker.

FAN COOLING

The AH500X has "Intelligent Fan Cooling" where the speed of the fan is automatically controlled from a sensor that detects the temperature of the output stage heatsinks; consequently there is no need for a fan speed switch as fitted to previous Trace Elliot equipment.

This is a more efficient system as it also takes into account the ambient room temperature to ensure that the output stages always run at their optimum temperature regardless of the external operating conditions.

It is however very important not to block the air inlet directly behind the fan.

OUTPUT THERMAL PROTECTION

The AH500X has output thermal protection that operates from the same sensors that control the speed of the fan. In the event of fan failure or the air inlet becoming blocked in some way, this protection circuit will operate by disconnecting the speaker from the output stage; this removes the load from the amplifier allowing it to cool down.

The protection circuit will automatically reset itself once the output stage heatsink has cooled down sufficiently.

AH300

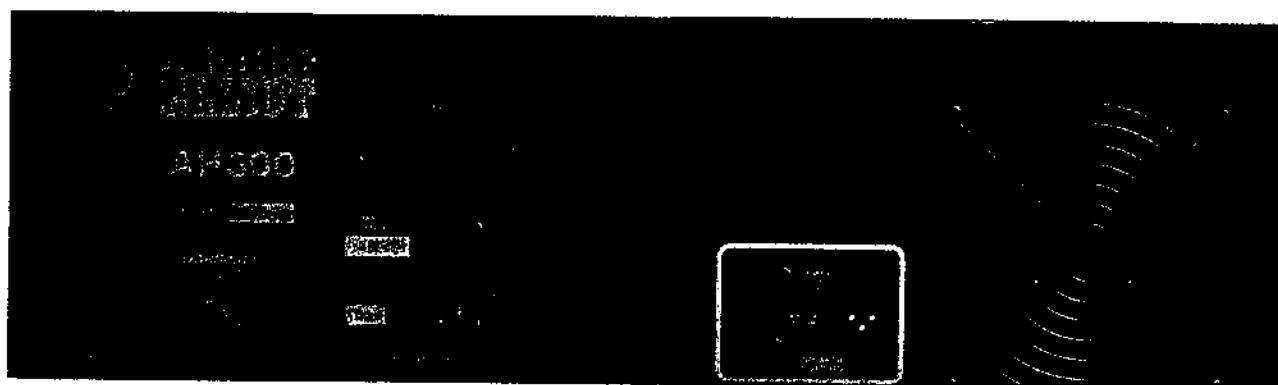
With your AH300 you should have received the following:-

- 1) A heavy duty vinyl cover.
- 2) A footswitch unit with LED indication and 6 metres of cable.
- 3) A moulded mains cable.

The AH300 is a high performance 300 Watt bass amp head. It is built as a professional unit using the unique TRACE ELLIOT moulded case with built in ultraviolet illumination of the front panel.

It has "Intelligent Fan Cooling" of the output stage as well as output "Thermal Protection" and includes "Switch on Speaker Delay" for a silent turn on.

The front end uses the GP12 pre-amp (see GP12 details pages 3 to 7); all other switches etc. are on the back panel and this is shown below.



THE POWER SWITCH

Once the correct voltage supply has been connected to the AH300 the amplifier can be switched on with the green "Power" switch; this should light up when switched to its "On" position.

If at any time it does not light up when switched "On", either the power is not reaching the amplifier (check the supply cable and plug) or the "Mains Fuse" has blown.

THE MAINS FUSE

In the event of having to replace the "Mains Fuse" always use the same rating and type as marked on the unit's back panel; using one of a higher rating will invalidate the guarantee.

If it should blow a second time then immediately refer the unit to a TRACE ELLIOT approved service engineer for checking.

SWITCH ON DELAY

The AH300X has a switch on delay circuit that keeps the speakers disconnected until the internal power supplies have reached their full voltage; this prevents the familiar "Thump" often heard through the speakers when an amplifier is switched on.

U.V. ON/OFF SWITCH

The U.V. "On/Off" switch will turn the ultraviolet illumination for the front panel "On" or "Off".

SPEAKER OUTPUT

The AH300 is provided with an XLR and a Jack socket for speaker connection.

It is recommended that the XLR socket is used whenever possible as this can carry higher currents with less losses than a Jack socket.

The Jack socket is provided as a secondary connection in the event of having no XLR cable (XLR cables are provided with all TRACE ELLIOT speaker enclosures).

The AH300 will deliver its maximum output power of 300 Watts into a 4 Ohm speaker system i.e. any two TRACE ELLIOT speaker enclosures as these are all nominally rated at 8 Ohms each.

Into an 8 Ohm speaker enclosure you will get less output power with the maximum being just over 200 Watts.

Never run the output into a combined impedance of less than the minimum of 4 Ohms.

SPEAKER OUTPUT FUSES

The speaker fuse is a 10 Amp "Fast Blow" type of fuse and **should only ever be replaced with one of exactly the same type.**

Never fit a higher rated fuse as this will not only invalidate your guarantee but could also cause considerable damage to both the amplifier and speaker.

In the unlikely event of having to replace this fuse, first check your speaker cable for short circuits (the most likely cause of fuse failure) before using the amplifier again.

Should this fuse blow a second time, immediately refer the amplifier to a qualified TRACE ELLIOT approved service engineer for checking. Include your speaker cable so this may also be checked.

FAN COOLING

The AH300 has "Intelligent Fan Cooling" where the speed of the fan is automatically controlled from a sensor that detects the temperature of the output stage heatsink; consequently there is no need for a fan speed switch as fitted to previous TRACE ELLIOT equipment.

This is a more efficient system as it also takes into account the ambient room temperature to ensure that the output stage always runs at the optimum temperature regardless of the external operating conditions.

It is however very important not to block the air inlet directly behind the fan.

OUTPUT THERMAL PROTECTION

The AH300 has output thermal protection that operates from the same sensors that control the speed of the fan. In the event of fan failure or the air inlet becoming blocked in some way this protection circuit will operate by disconnecting the speaker from the output stage; this removes the load from the amplifier allowing it to cool down.

The protection circuit will automatically reset itself once the output stage heatsink has cooled down sufficiently.

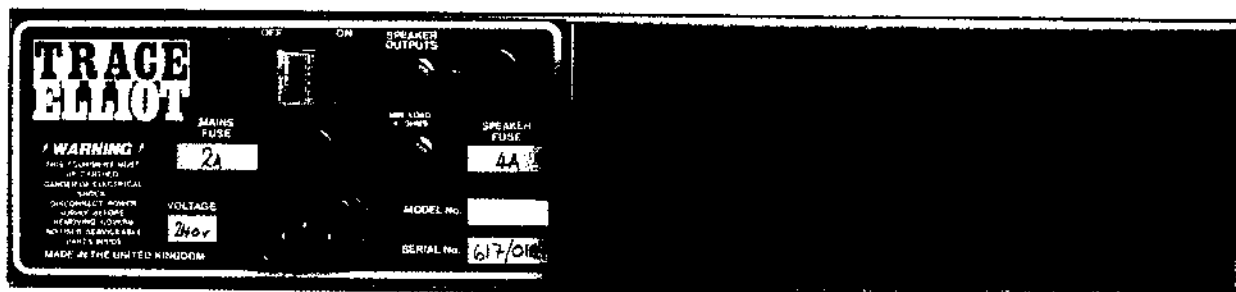
AH200

With your AH200 you should have received the following:-

- 1) A durable padded "Gig Bag" for transporting the unit with storage space for the footswitch and cables.
- 2) A pair of "Rack Mounting" ears for optional mounting of the AH200 into a rack system.
- 3) A moulded mains cable.
- 4) A footswitch unit with LED indication and 6 metres of cable.

The AH200 is an all metal cased 200 Watt bass amp head that can be rack mounted if required with the supplied rack mounting "Ears".

It uses the GP12 pre-amplifier (see details on pages 3 to 7); its mains switch, fuses and speaker outlets are all on the back panel and these are described below:-



THE POWER SWITCH

Once the correct voltage supply has been connected to the AH200, the amplifier can be switched on with the green "Power" switch; this should light up when switched to its "On" position.

If at any time it does not light up when switched "On", either the power is not reaching the amplifier (check the supply cable and plug) or the "Mains Fuse" has blown.

Before switching the amplifier on always turn the "Output Level" control on the GP12 pre-amp to zero.

THE MAINS FUSE

In the event of having to replace the "Mains Fuse" **always use the same rating and type as marked on the unit's back panel**; using one of a higher rating will invalidate the guarantee.

If it should blow a second time, immediately refer the unit to a TRACE ELLIOT approved service engineer for checking.

SPEAKER OUTPUT

The AH200 is provided with two Jack sockets for connection to the speaker system.

The AH200 will deliver its maximum output power of 200 Watts into a 4 Ohm speaker system i.e. any two TRACE ELLIOT speaker enclosures as these are all nominally rated at 8 Ohms each.

Into a single 8 Ohm speaker system you will get less output power with the maximum being just over 150 Watts.

Never run the output into a combined impedance of less than the minimum of 4 Ohms.

SPEAKER OUTPUT FUSES

The speaker fuse is a 10 Amp "Fast Blow" type of fuse and should only ever be replaced with one of exactly the same type.

Never fit a higher rated fuse as this will not only invalidate your guarantee but could also cause considerable damage to both the amplifier and speaker.

In the unlikely event of having to replace this fuse, first check your speaker cable for short circuits (the most likely cause of fuse failure) before using the amplifier again.

Should this fuse blow a second time, immediately refer the amplifier to a qualified TRACE ELLIOT approved service engineer for checking. Include your speaker cable so this may also be checked.

OUTPUT STAGE HEATSINK

The heatsink fitted to the back of the amplifier is for cooling and will dissipate the heat from the output stage of the amplifier when it is being used. This will on occasions get quite hot and should never be obstructed or covered in any way, i.e. do not lay clothing etc. over the amplifier.

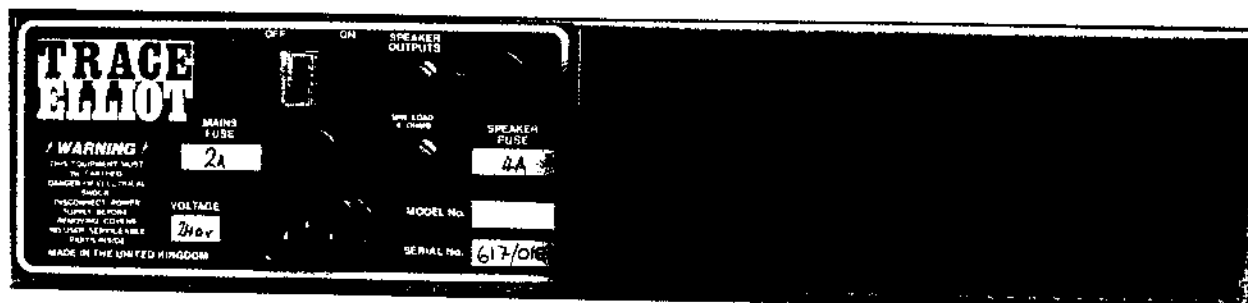
AH100

With your AH100 you should have received the following:-

- 1) A pair of "Rack Mounting" ears for optional mounting of the AH100 into a rack system.
- 2) A moulded mains cable.

The AH100 is an all metal cased 100 Watt bass amp head that can be rack mounted if required with the supplied rack mounting "Ears".

It uses the GP7 preamplifier (see GP7 details pages 16 to 19); its mains switch, fuses and speaker outlets are all on the back panel and these are described below:-



THE POWER SWITCH

Once the correct voltage supply has been connected to the AH100, the amplifier can be switched on with the green "Power" switch; this should light up when switched to its "On" position.

If at any time it does not light up when switched "On", either the power is not reaching the amplifier (check the supply cable and plug) or the "Mains Fuse" has blown.

Before switching the amplifier on always turn the "Output Level" control on the GP7 pre-amp to zero.

THE MAINS FUSE

In the event of having to replace the "Mains Fuse" always use the same rating and type as marked on the unit's back panel; using one of a higher rating will invalidate the guarantee.

If it should blow a second time, immediately refer the unit to a TRACE ELLIOT approved service engineer for checking.

SPEAKER OUTPUT

The AH100 is provided with two Jack sockets for connection to the speaker system.

The AH100 will deliver its maximum output power of 100 Watts into a 4 Ohm speaker system i.e. any two TRACE ELLIOT speaker enclosures as these are all nominally rated at 8 Ohms each.

Into a single 8 Ohm speaker system you will get less output power with the maximum being just over 70 Watts.

Never run the output into a combined impedance of less than the minimum of 4 Ohms.

SPEAKER OUTPUT FUSES

The speaker fuse is a 5 Amp "Fast Blow" type of fuse and should only ever be replaced with one of exactly the same type.

Never fit a higher rated fuse as this will not only invalidate your guarantee but could also cause considerable damage to both the amplifier and speaker.

In the unlikely event of having to replace this fuse, first check your speaker cable for short circuits (the most likely cause of fuse failure) before using the amplifier again.

Should this fuse blow a second time, immediately refer the amplifier to a qualified TRACE ELLIOT approved service engineer for checking. Include your speaker cable so this may also be checked.

OUTPUT STAGE HEATSINK

The heatsink fitted to the back of the amplifier is for cooling and will dissipate the heat from the output stage of the amplifier when it is being used. This will on occasions get quite hot and should never be obstructed or covered in any way, i.e. do not lay clothing etc. over the amplifier.

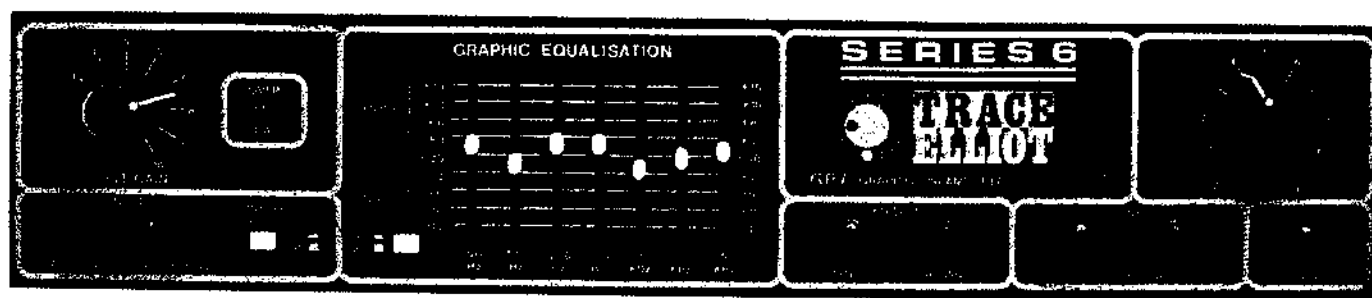
GP7 PRE-AMPLIFIER

The GP7 pre-amp is the "Control Centre" on the AH100 amp head and 715 combo.

The GP7 has many facilities in common with the GP12 and is built to the same exacting standards. Its 7 bands of equalisation have carefully chosen centre frequencies and bandwidths that cover the full frequency spectrum for bass guitar and if used correctly its facilities can greatly benefit the bass player.

The following Operating Instructions are to assist you in becoming fully familiar with these facilities enabling you to use them to their best advantage.

For a full and really useful description of all facilities read all sections carefully.



INPUTS

There are two instrument Input Jacks, one to suit the output signal of passive bass guitars (i.e. those with no internal battery) and one to suit active bass guitars.

This second input has been provided because most active basses can put out a much larger signal than that of a passive instrument. Also, because so many active basses are now available it was felt necessary to provide a special input that is best suited to these instruments.

INPUT GAIN SETTING

To get the best from your GP7 it is important to understand fully the correct use of the "Input Gain" control (red knob cap) and the stage "Output Level" control (green knob cap).

The optimum setting is achieved when the "Input Gain" control is as high as possible without lighting the red "Overload" LED; the stage "Output Level" should always be set as low as possible to achieve the required volume. i.e. the "Input Gain" is adjusted and left set at the optimum level while the "Output Level" is used to make any changes to the amplifier volume.

To set these two controls correctly use the following procedure:-

- 1) First turn the "Output Level" control to zero.
- 2) Plug your bass into the appropriate input.
- 3) Turn all volume controls on your bass up full.
- 4) Gradually turn up the "Input Gain" control while playing your bass as hard as you are likely to during your performance.
- 5) When the red "Overload" LED lights up reduce the "Input Gain" by one click.

For most basses the "Input Gain" control will end up being set between 5 and 8 on the scale.

- 6) Now turn up the "Output Level" a few clicks to give the desired playing volume.

Please note: If the "Graphic Equalisation" is altered it may be necessary to re-adjust the "Input Gain" control; this will definitely be the case if excessive amounts of "Boost" or "Cut" are applied.

Re set the "Input Gain" by following steps 3 to 6 of the above procedure.

During normal playing the red "Overload" LED should not come on, but should flicker on heavy "Pulls" or "Slaps".

On a continuous signal the "Overload" LED will flash on and off slowly when the "Input Gain" is correctly set; the speed of the flashing will increase as the signal increases until it reaches "Overload" when the LED remains lit.

Playing passive basses with the instrument volume control turned back will also reduce the frequency response of the bass so try to keep this control well advanced, using the amplifier "Output Level" control to provide for larger changes in volume.

MID PRE SHAPE

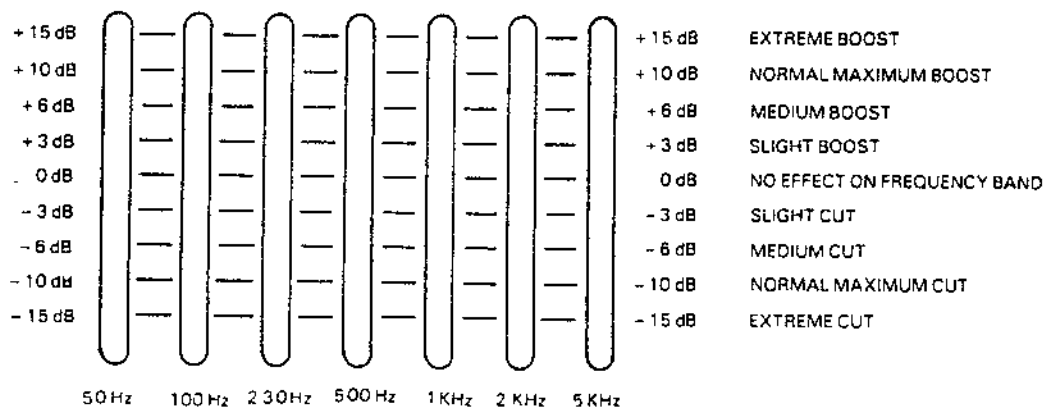
The "Mid Pre Shape" is like a preset graphic equaliser already built into the GP7; it provides a "Boost" at both the low end (50Hz) and the high end (2kHz to 5kHz) of the frequency spectrum as well as a "Cut" at mid frequencies (400Hz).

This removes the "Nasal" quality from most bass sounds and gives a clear well defined sound to the instrument. This can be switched "In" or "Out" of circuit with the front panel push button.

The "Mid Pre Shape" will provide an instant "Punchy" sound to your bass playing and may be used with or without the "Graphic Equalisation" section being switched in.

USING THE GRAPHIC EQUALISER

Below is a representation of the graphic sliders showing the frequency centres and degrees of "Boost" and "Cut" available with them.



A carefully designed "Graphic Equaliser" is by far the most flexible way of varying the sound of a bass guitar and if properly used will provide all you will ever need in the way of tone shaping for your instrument.

The GP7 has a 7 band "Graphic Equaliser" that can be switched "In" and "Out" of circuit from the front panel push button.

Because of the flexibility and massive "Boost" and "Cut" potential of the GP7 graphic equaliser (more about this later) it is important to know how to get the best from it.

It is equally important to know how to avoid the problems that can be associated with its incorrect use, so firstly here is a list of things **not to do**, and why:-

- 1) **DON'T** fully boost just one frequency band as this will tend to emphasize a small range of notes on the bass producing a "Peaky" and not very useful sound.

- 2) DON'T boost or cut "All" frequencies as this will have the same effect as increasing or decreasing the overall volume level without affecting the tonal characteristics of the sound.

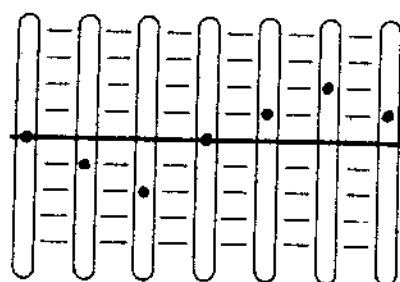
The fundamental frequency range of a bass guitar is from 41.2Hz (bottom 'E' string) to around 392Hz (two octaves up on the 'G' string) not a very wide range. Obviously a lot of harmonics are produced when playing and these can extend up to 5kHz.

Other frequencies are also produced by the attack portion of the note when the string is first struck; this attack can be emphasized by boosting the top end.

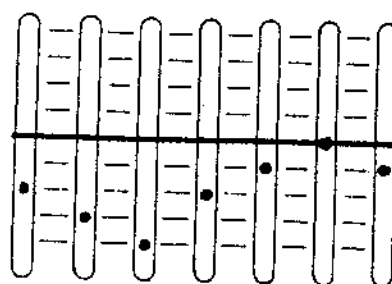
By "Top End" we mean between 1kHz and 5kHz and you will find by boosting at 5kHz the "Attack" will be emphasized whereas by boosting at 1kHz and 2kHz you will bring out the harmonics in the note.

That has got the "Things Not To Do" out of the way so what can you do with the "Graphic Equaliser" in terms of tonal variations? Well basically anything you like providing you bear in mind the "Don'ts" and follow two basic rules; these are:-

- 1) Try to keep the slider settings balanced around the 0dB line on the graphic. (See diagram below)

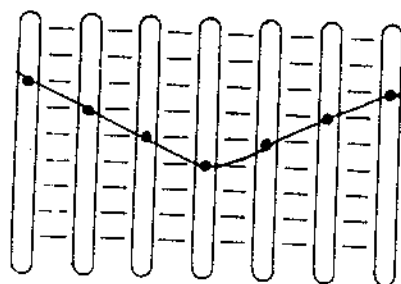


RIGHT

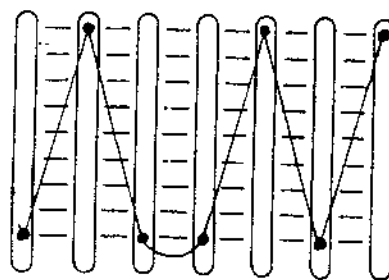


WRONG

- 2) Try to set the sliders in a smooth, gentle curve, as setting adjacent sliders to the opposite extremes will give sharp peaks and troughs in the sound emphasizing some notes and killing others. (See diagram below)



RIGHT



WRONG

So switch the graphic "In" and experiment with the available sounds but remember "Top End" means 1kHz to 5kHz, "Bottom End" means 50Hz to 100Hz, "Mid Range" means 230Hz and 500Hz.

Don't forget you may have to re-adjust the "Input Gain" setting once you have altered the graphic.

This is necessary because altering the graphic will change the overall gain and the level indicating circuit monitors the signal at a number of places throughout the GP7 to ensure that clipping or distortion is not occurring at any stage.

Consequently changing the gain will change the reading of the "Overload" LED and you will have to re adjust the "Input Gain" to compensate.

EFFECTS SEND AND RETURN

The effects "Send" and "Return" sockets are for connection of external equipment to the GP7.

Any effects units can be connected to these sockets in exactly the same way that you would connect them if you were using them between the bass and the input of the GP7, i.e. the "Send" signal goes to the first effects unit with the signal from the last unit coming back into the "Return" socket.

The advantage of using them connected in this way rather than prior to the input of the GP7 is that these sockets are positioned after the EQ section and consequently any noise from the effects units will not be boosted by the EQ section.

As well as using the effects "Send" and "Return" sockets for the connection of effects units, the "Send" socket may be used as a signal level output (i.e. about the same level as the signal from the bass itself) for connection to the instrument input of another amplifier.

This output is prior to the stage "Output Level" control.

LINE IN, LINE OUT (PRE-AMP LINK)

The "Line Out" socket is situated after the "Output Level" control on the GP7 and can be used for connection to further power amplifiers if you wish to up-rate your system.

The "Line Out" socket may also be used as a DI signal output for feeding to a studio or P.A. mixer.

The "Line In" socket can be used as a "Pre-amp Link" facility to link up multiple pre-amps. This is done by linking the "Line Out" of pre-amp A to the "Line In" of pre-amp B; the volume of each pre-amp will be individually adjustable, with the combined output of both coming from pre-amp B.

Alternatively the "Line In" socket may be used as a "Slave input" to the power section in both amp heads and combos; used in this way any signal plugged into the "Line In" socket will be combined with the GP7 pre-amp signal and both will be fed to the power section.

HEADPHONE SOCKET

A headphone socket is fitted to all TRACE ELLIOT equipment using the GP7 pre-amp; this is to suit high impedance stereo headphones i.e. 600ohms or above. The old type of headphones i.e. 8 Ohms should not be used.

For silent practice on headphones using an amp head or combo just unplug the speaker from the power stage; the "Output Level" control is then used to adjust the headphone volume.

RACK MOUNTING EQUIPMENT

GP12X

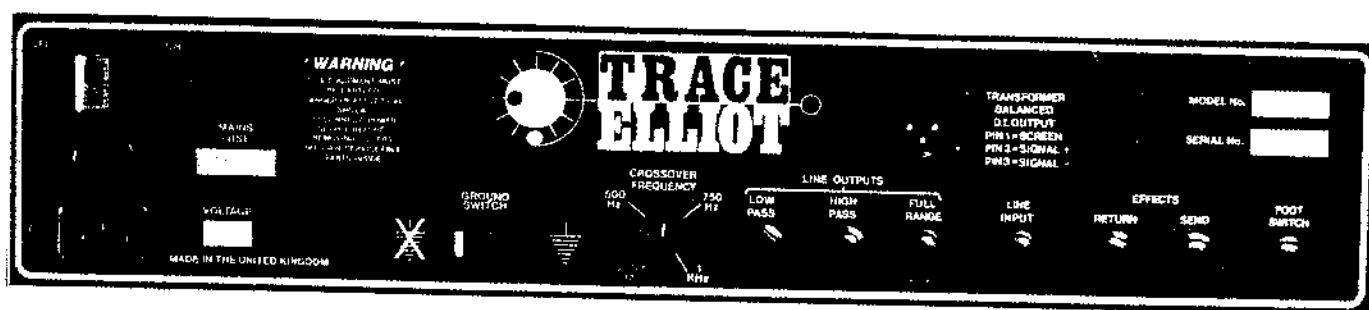
With your GP12X you should have received the following:-

- 1) A footswitch unit with LED indication and 6 metres of cable.
- 2) A moulded mains cable.
- 3) A pair of "Ears" for rack mounting the GP12X.

The GP12X is a rack mounting version of the GP12 pre-amp (see GP12 details pages 3 to 7) that includes "Hi-Pass" and "Low-Pass" outputs from a built in electronic cross-over, the frequency of which is variable between 250Hz and 1kHz. A ground lift switch is also provided to prevent hum loops when used with other equipment, and all main Jack sockets are duplicated on both the front and rear panels.

The GP12X can be used with many combinations of our power amplifiers and speaker cabinets to provide a bi-amped or full range system of whatever power you may require.

The unit's back panel is shown below with a full description of all facilities.



DUPLICATION OF FRONT PANEL SOCKETS

The following sockets are duplicated on the back panel of the GP12X to allow convenient interconnection to power amplifiers etc. when the unit is mounted as part of a rack system:-

- 1) Footswitch Jack socket.
- 2) Line Input Jack socket.
- 3) Effects Send and Return Jack sockets.
- 4) Full Range Line Output Jack socket.
- 5) DI Output socket.

These sockets are all straight forward duplications of the front panel sockets and can be used as described in the GP12 instructions (pages 3 to 7). The effects "Send" and "Return" sockets however are in series with the front panel sockets and can be used as a second effects loop if required.

THE POWER SWITCH

Once the correct voltage supply has been connected to the GP12X the unit can be switched on with the green "Power" switch; this should light up when switched to its "On" position.

If at any time it does not light up when switched "On" then either the power is not reaching the unit (check the supply cable and plug) or the "Mains Fuse" has blown.

THE MAINS FUSE

In the event of having to replace the "Mains Fuse" **always use the same rating and type as marked on the unit's back panel**; using one of a higher rating will invalidate the guarantee.

If it should blow a second time, immediately refer the unit to a TRACE ELLIOT approved service engineer for checking.

THE GROUND LIFT SWITCH

A "Ground Lift" switch is fitted to the GP12X; this is to prevent the formation of "Ground Loops" when connecting together multiple units in a rack system (causing a "Hum" through the speaker).

Ground loops can be avoided by lifting the ground or earth connection to all but one of the interconnected units; the remaining units will still be grounded via the screen connection of the signal cables between the units, so check these carefully.

We have added "Ground Lift" switches to all of our rack mounted equipment for the above reasons and also to prevent the removal of the earth connection inside the mains plug (a common and potentially dangerous practice).

We recommend that you leave the pre-amp grounded and lift the ground on all the other interconnected units.

INTERNAL CROSS OVER

Both "High Pass" and "Low Pass" outputs are provided from the internal electronic cross over; the cross over frequency can be varied between 250Hz and 1kHz with the control provided.

The output level of these sockets is about the same as that provided by the "Full Range" line output jack for connection to a power amplifier when hooking up a bi-amp system.

CONNECTION FOR BI-AMP USE

For using the GP12X in a bi-amp system with a twin channel power amplifier, connect the "High Pass" output from the GP12X to the "Line Input" on channel 'A' of the power amplifier; connect the "Low Pass" output to the "Line Input" on channel 'B' of the power amplifier.

Connect the high frequency speakers to channel 'A' and the low frequency speakers to channel 'B', and with channel 'B' level control set on 10 (Maximum), adjust channel 'A' level control for the desired amount of high frequency. Use the GP12X "Output Level" control to set the overall playing volume.

The cross over frequency can then be adjusted to your own tastes with the GP12X rear panel control. We recommend the 250Hz setting for use with our own speaker systems but have made the setting variable in order that you may adjust it to suit any system you may wish to use.

FULL RANGE SYSTEM

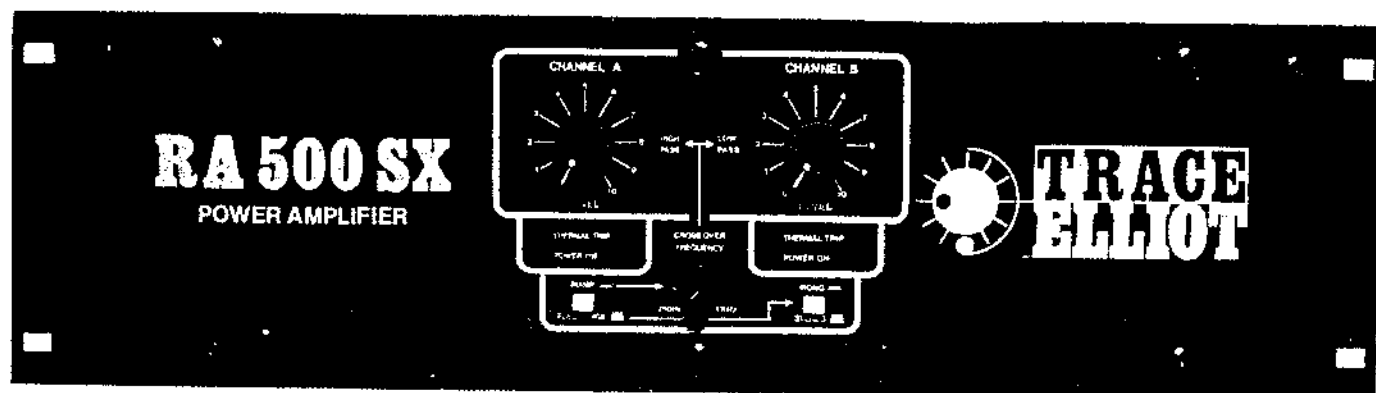
For a full range system use the full range "Line Output" on the GP12X for connection to the power amplifier.

RA500SX

The RA500SX comes supplied with a moulded mains cable and is a 250 Watts per channel stereo (dual channel) power amplifier with a built in electronic cross over having a cross over point that can be varied between 250Hz and 1kHz

It has switching that allows it to be used in "Mono", "Stereo" or "Bi-amped" using the internal cross over.

The RA500SX is a rack mounting unit with its output stages using the latest in "Intelligent Fan Cooling" as well as having output "Thermal Protection" circuits; it also features a "Switch On Speaker Delay" for a silent "No Thump" turn on. The front panel of the RA500SX with its controls is shown overleaf.



LEVEL CONTROLS

Regardless of the mode of use of the RA500SX (full range, bi-amped, stereo or mono) the level controls will individually adjust the "Output Level" from the two channels 'A' and 'B'.

FULL RANGE/BI-AMP SWITCH

In the "Full Range" position (with the Mono/Stereo switch set to "Stereo" a signal coming into the channel 'A' "Line Input" will provide a "Full Range" output from the channel 'A' speaker output and a signal coming into the channel 'B' "Line Input" will provide a "Full Range" output from the channel 'B' speaker out.

This is operating the RA500SX as a true "Stereo" amplifier or as two entirely separate "Mono" amplifiers.

In the "Bi-Amp" position (with the Mono/Stereo switch set to either position) a signal coming into either the channel 'A' or the channel 'B' "Line Input" sockets will be split by the internal cross over into its "High" and "Low" frequency components. The "High" frequency output is routed to channel 'A' and the "Low" frequency output to channel 'B'.

In the "Bi-Amp" mode be especially careful to check that the "High" frequency speaker is always connected to channel 'A', as connecting a high frequency speaker to the "Low Pass" output of channel 'B' can very quickly destroy the speaker.

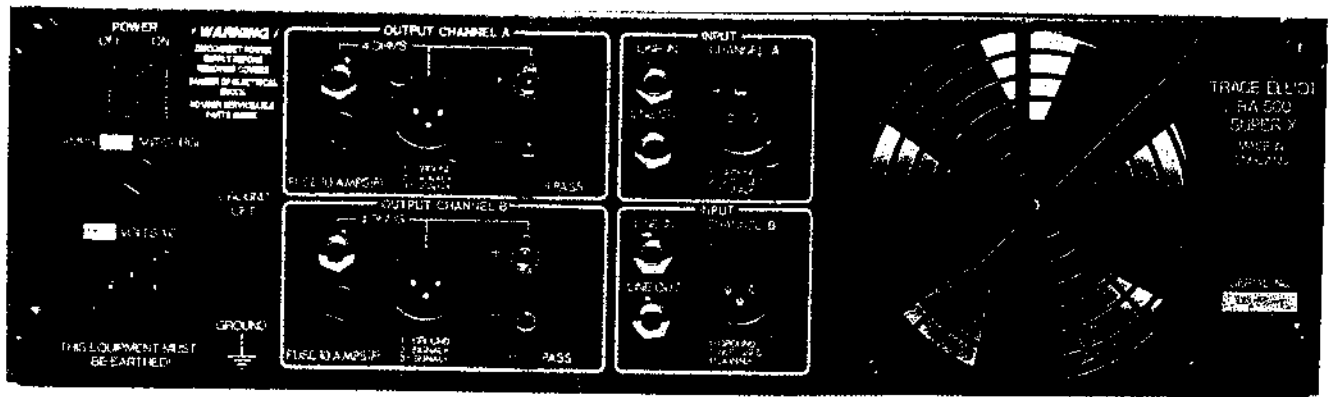
CROSS OVER FREQUENCY CONTROL

The frequency of the cross over point of the built in electronic cross over can be adjusted between 250Hz and 1kHz by the use of this control

MONO/STEREO SWITCH

With "Full Range" selected, the "Mono/Stereo" push button functions as follows:- In the "Mono" position, a signal into either of the "Line Inputs" will be routed to both power amplifiers; in the "Stereo" position, channel 'A' input signal is routed to channel 'A' power amplifier and channel 'B' input to channel 'B' power amplifier.

See overleaf for description of Back Panel.



THE POWER SWITCH

Once the correct voltage supply has been connected to the RA500SX the amplifier can be switched on with the green "Power" switch; this should light up when switched to its "On" position.

If at any time it does not light up when switched "On", either the power is not reaching the amplifier (check the supply cable and plug) or the mains fuse has blown.

THE MAINS FUSE

In the event of having to replace the mains fuse always use the same rating and type as marked on the unit's back panel; using one of a higher rating will invalidate the guarantee.

If it should blow a second time then immediately refer the unit to a TRACE ELLIOT approved service engineer for checking.

SWITCH ON DELAY

The RA500SX has a switch on delay circuit that keeps the speakers disconnected until the internal power supplies have reached their full voltage; this prevents the familiar "Thump" often heard through the speakers when an amplifier is switched on.

THE GROUND LIFT SWITCH

A "Ground Lift" switch is fitted to the RA500SX; this is used to prevent a "Ground Loop" being formed when multiple units are connected together (causing a "Hum" through the speakers).

The way to use this is to "Lift" the ground on all except one of the interconnected units; the other units are then grounded or earthed via the screen of the connecting signal cables so check these carefully.

We have provided "Ground Lift" switches on all our rack mounted equipment for the above reasons and also to make it unnecessary to remove the earth connection from the mains plug (a common and potentially dangerous practice).

We recommend that you leave the pre-amp grounded and lift the ground on all the other interconnected units.

SPEAKER OUTPUTS A AND B

The two channels of the RA500SX are provided with an XLR socket, Binding Post and a Jack socket for speaker connection.

It is recommended that the XLR socket or the Binding Post be used whenever possible as these can carry higher currents with less losses than a Jack socket.

The Jack socket can be used for secondary connections or for linking to a high frequency unit on channel 'A', the "High Pass" channel in the bi-amped mode.

Each channel can drive up to 250 Watts into a speaker impedance of 4 Ohms and for a "Full Range" system this means that up to 4 speaker cabinets can be driven, 2 from each channel (all of the TRACE ELLIOT speaker cabinets are nominally rated at 8 Ohms and 300 Watts).

SPEAKER OUTPUT FUSES

Each channel has its own separate output fuse; this is a 10 Amp "Fast Blow" type of fuse and should only ever be replaced with one of exactly the same type.

Never fit a higher rated fuse as this will not only invalidate your guarantee but could also cause considerable damage to both the amplifier and speaker.

In the unlikely event of having to replace this fuse, first check your speaker cable for short circuits (the most likely cause of fuse failure) before using the amplifier again.

Should this fuse blow a second time, immediately refer the amplifier to a qualified TRACE ELLIOT approved service engineer for checking. Include your speaker cable so this may also be checked.

LINE INPUT SOCKETS

The "Line Input" sockets are used for the connection of signals into channels 'A' and 'B' of the RA500SX; their use is described earlier in the descriptions of the front panel controls and switches.

LINE OUTPUT SOCKETS

The "Line Output" sockets are for connection to further power amplifiers for use in a larger system; to do this connect channel 'A' "Line Out" to channel 'A' "Line Input" on the additional power amplifier. Connect channel 'B' "Line Output" to channel 'B' "Line Input" on the additional power amplifier. The level controls on the additional power amplifier will operate independently from the RA500SX.

Use the pre-amp "Output Level" control to adjust the overall stage volume.

FAN COOLING

The RA500SX has "Intelligent Fan Cooling" where the speed of the fan is automatically controlled from a sensor that detects the temperature of the output stage heatsinks; consequently there is no need for a fan speed switch as fitted to previous TRACE ELLIOT equipment.

This is a more efficient system as it also takes into account the ambient room temperature to ensure that the output stages always run at their optimum temperature regardless of the external operating conditions.

It is however very important not to block the air inlet directly behind the fan.

OUTPUT THERMAL PROTECTION

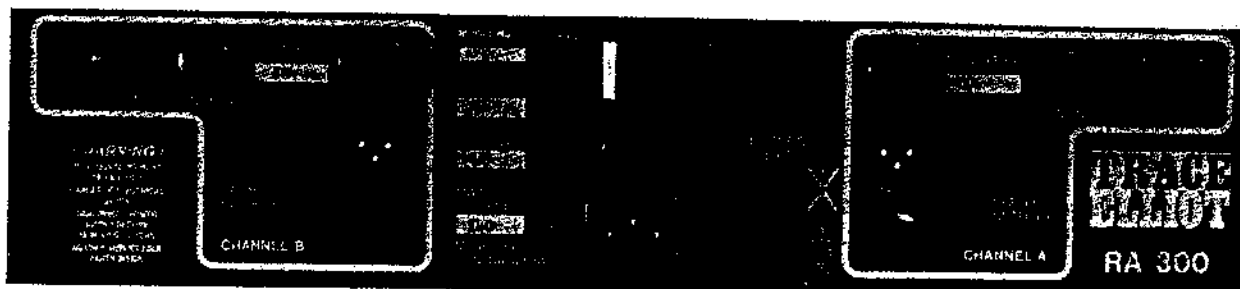
The RA500SX has output thermal protection that operates from the same sensors that control the speed of the fan. In the event of fan failure or the air inlet becoming blocked in some way this protection circuit will operate by disconnecting the speaker from the output stage; this removes the load from the amplifier allowing it to cool down.

The protection circuit will automatically reset itself once the output stage heatsink has cooled down sufficiently.

RA300

The RA300 is a rack mounting 150 Watts per channel stereo (dual channel) power amplifier: it is a compact 2u in height and utilizes passive heat sinking for its output stages.

It is a simple power amplifier to use having only a "Line Input" a "Line Output" and a single "Level" control per channel and is supplied complete with a moulded mains cable.



THE POWER SWITCH

Once the correct voltage supply has been connected to the RA300 the amplifier can be switched on with the green "Power" switch; this should light up when switched on its "On" position.

If at any time it does not light up when switched "On", either the power is not reaching the amplifier (check the supply cable and plug) or the mains fuse has blown.

THE MAINS FUSE

In the event of having to replace the "Mains Fuse" always use the same rating and type as marked on the unit's back panel. Using one of a higher rating will invalidate the guarantee.

If it should blow a second time immediately refer the unit to a TRACE ELLIOT approved service engineer for checking.

THE GROUND LIFT SWITCH

A "Ground Lift" switch is fitted to the RA300; this is to prevent a "Ground Loop" being formed when multiple units are connected together (causing a "Hum" through the speakers).

The way to use this switch is to "Lift" the ground on all except one of the interconnected units; the other units are still grounded or earthed via the screen of the connecting signal cables so check these carefully.

We have provided "Ground Lift" switches on all our rack mounted equipment for the above reasons and also to make it unnecessary to remove the earth connection from the mains plug (a common and potentially dangerous practice).

SPEAKER OUTPUTS A AND B

Each channel of the RA300 is provided with an XLR and a Jack socket for speaker connection.

It is recommended that the XLR socket be used whenever possible as this can carry higher currents with less losses than a Jack socket.

The jack socket can be used for secondary connection or for linking to a high frequency unit for bi-amp use. Each channel can drive up to 150 Watts into a speaker impedance of 4 Ohms and slightly less into a 8 Ohm impedance.

SPEAKER OUTPUT FUSES

Each channel has its own separate output fuse; this is a 5 amp "Fast Blow" type of fuse and should only ever be replaced with one of exactly the same type.

Never fit a higher rated fuse as this will not only invalidate your guarantee but could also cause considerable damage to both the amplifier and speaker.

In the unlikely event of having to replace this fuse, first check your speaker cable for short circuits (the most likely cause of fuse failure) before using the amplifier again.

Should this fuse blow a second time, immediately refer the unit to a TRACE ELLIOT approved service engineer for checking. Include your speaker cable so this may also be checked.

LINE INPUT SOCKETS

The "Line Input" sockets are used for the connection of signals into channels 'A' and 'B' of the RA300; if a jack is inserted into one of these sockets then that signal will be fed to both channels 'A' and 'B'. If jacks are inserted into both sockets then both channels will be separate i.e. the amplifier is then working as a true stereo or dual mono unit.

LINE OUTPUT SOCKETS

The "Line Output" sockets are directly connected to the "Line In" sockets and are for connection to further power amplifiers.

USING THE RA300 WITH A GP12X PRE-AMP

For a full range system using a GP12X pre-amp, just connect the full range "Line Out" from the GP12X to the channel 'A' "Line In" on the RA300; this will drive both channels of the RA300 in full range.

Turn both channel 'A' and channel 'B' "Level" controls up full and use the "Output Level" control on the GP12X to set the playing volume.

For a bi-amp system using the GP12X pre-amp, connect the "High Pass" output from the GP12X to channel 'A' "Line In" and the "Low Pass" output to channel 'B' "Line In". Set the channel 'B' "Level" control to 10 and channel 'A' "Level" control to 7.

Use the "Output Level" control on the GP12X to set the overall playing volume and then adjust the amount of "High Pass" signal using the channel 'A' "Level" control to suit your own taste.

Make sure that you have connected the channel 'A' output to the high frequency speaker as putting the "Low Pass" signal through the high frequency speaker can quickly destroy the speaker.

LOUDSPEAKER CABINETS

All Trace Elliot Series 6 Loudspeaker Cabinets have a power rating of 300 Watts and a nominal impedance of 8 Ohms. Each Cabinet (except the 4052H) is supplied with a heavy duty XLR to XLR speaker lead and a tough vinyl cover. Bi-amp Cabinets (1510X and 1818X) have an additional Jack to Jack speaker lead - see "Connection of Bi-amp Cabinets". Each Cabinet has a different characteristic sound and you should try different combinations to arrive at your ideal system. Recommended applications are shown below:-

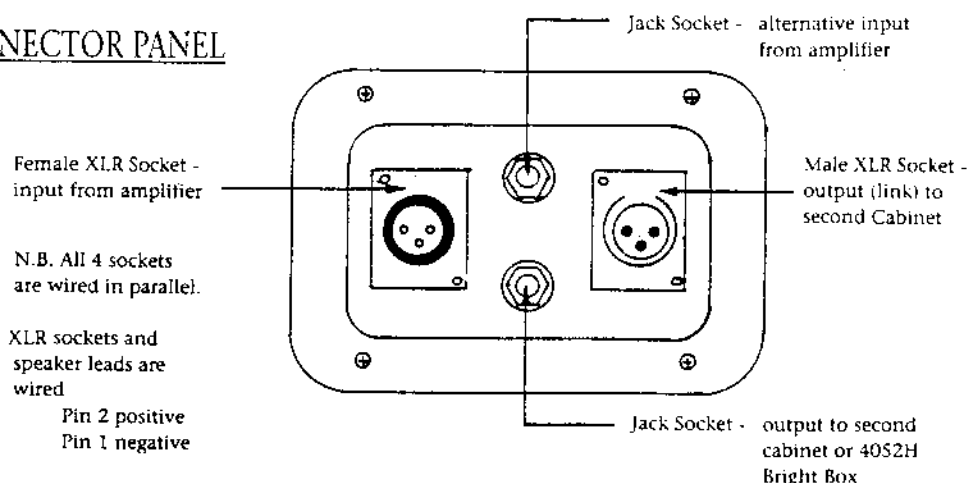
<u>TYPE</u>	<u>SPEAKER CONFIGURATION</u>	<u>SOUND CHARACTER/APPLICATION</u>
1048	4 X 10"	Firm midrange, tight bass – good for percussive playing styles.
1518	1 X 15"	Balanced full range sound – suitable for a whole variety of applications.
1528	2 X 15"	Good low end – suitable for hard rock bass sound.
1510X	1 X 15", 1 X 10"	Very wide frequency range, particularly when used in bi-amped mode.
1818X	1 X 18", 1 X 10"	As 1510X, but with extended low frequency response – particularly suited to 5 or 6 string basses.
4052H	4 X 5" Special Transducers	High frequency only – use as an "add-on" to extend top end.
MULTISTACK 2102	2 X 10"	Tight, bright sound.
MULTISTACK 1152	1 X 15"	Balanced, full range sound.
MULTISTACK 1182	1 X 18"	Extended low frequency response – best used in conjunction with a bright cabinet (4052H or 2102).

Multistack Cabinets may be used at any of three angles, either in backline format or as floor monitors. They can also be used in conjunction with Series 6 Cabinets, providing an almost unlimited choice of positioning combinations.

Because of their relatively compact size, the low frequency performance is less than the larger Cabinets, but careful attention to porting has given the best possible results.

CONNECTING FULL RANGE CABINETS - see also connection diagrams

STANDARD CONNECTOR PANEL



Where possible use XLR leads, since they provide a more reliable connection and less signal loss than Jack to Jack leads. Since each Cabinet is 8 Ohm impedance, you may link two Cabinets to each output channel of a TRACE ELLIOT amplifier, i.e. Twin Channel amplifiers can run a total of four Cabinets.

Never connect two amplifier output channels into one connector panel.

ADDING A 4052H "BRIGHT BOX"

If you wish to improve and extend the high frequency range of your system, simply add a 4052H and connect to one of the Jack sockets on your full range Cabinet. You can ignore the impedance of the 4052H, which means you can use it in addition to two Cabinets on the output channel of any TRACE ELLIOT Series 6 amplifier.

You can also add a 4052H to a combo amplifier to extend the high frequency response by connecting the Jack to Jack speaker lead to the Combo extension speaker output, (N.B. excluding the 715 Combo which has no extension speaker output.)

CONNECTING BI-AMP CABINETS - 1510X AND 1818X

Either of the above Cabinets may be run in their full range mode, simply by using the standard connector panel as described above. In this mode, a built in passive cross over will protect the 10" high frequency speaker.

However, to get the best from your Bi-amp Cabinet you need to use a twin channel amplifier system with an electronic cross over. The following combinations will "drive" in bi-amp mode:-

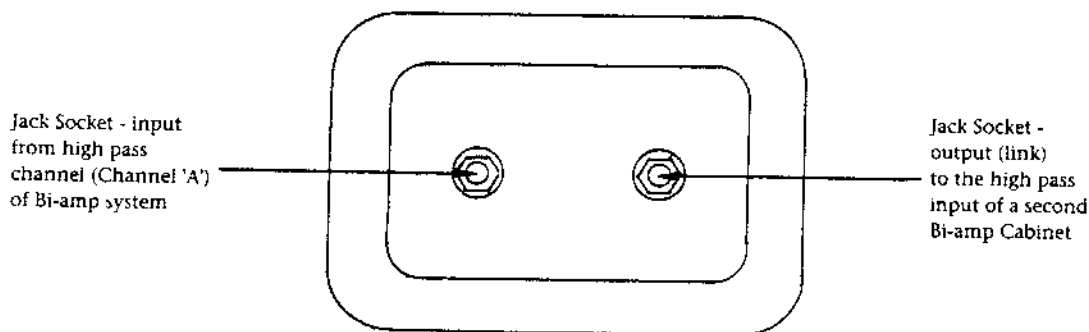
- GP12X pre-amp with an RA300 twin channel power amp.
- GP12X pre-amp with an RA500X twin channel power amp.
- AH500X amp head, set to Bi-amp mode.

Both the 1510X and the 1818X Cabinets have an additional connector panel (shown below) which should only be used if you are sure your amplification system will run in Bi-amp mode. If in doubt, consult your dealer.

By removing the cover from the secondary connector panel, you gain direct access to the 10" high pass speaker, bypassing the passive crossover. These sockets must only be connected to the high-pass channel (Channel A) of a Bi-amp system, using a Jack to Jack speaker lead.

WARNING: If you connect a full range output into either of these sockets, you will almost certainly destroy the 10" speaker and invalidate the guarantee.

SPECIAL ADDITIONAL CONNECTOR PANEL ON BI-AMP CABINETS



COMBO AMPLIFIERS

1210 COMBO

With your 1210 combo you should have received the following:-

- 1) A heavy duty vinyl cover,
- 2) A footswitch unit with LED indication and 6 metres of cable.
- 3) A moulded mains cable.

The 1210 combo is a 200 Watt unit using four specially developed 10" loudspeakers, providing a powerful combo with an exceptional attack to the sound.

The power section is identical to the AH200 amp head (see page 13 for details), using the GP12 as the pre-amp. The output stage has the facility for connecting an extension speaker if required.

1215 COMBO

With your 1215 combo you should have received the following:-

- 1) A heavy duty vinyl cover.
- 2) A footswitch unit with LED indication and 6 metres of cable.
- 3) A moulded mains cable.

The 1215 combo is an easily transportable, compact unit using a single 15" speaker. It however retains the sophistication of the GP12 pre-amp along with a 200 Watt output stage.

The pre-amp/power amp combination is identical to the AH200 amp head (see page 13 for details), and with the 15" speaker this provides a well balanced, full range of sounds at an ideal volume level for session work or small venues.

An extension speaker can be connected to the 1215 combo to give additional volume and bottom end for use in the larger venue.

715 COMBO

With your 715 combo you should have received the following:

- 1) A heavy duty vinyl cover.
- 2) A moulded mains cable.

The 715 combo is a 100 Watt unit using the GP7 as its pre-amp, and the AH100 power amp section (see page 14 for details). N.B. The 715 combo power amp section does not have provision for extension speakers, since the full power of 100 Watts is delivered into the internal speaker.

It is a compact and easily transportable combo that delivers its entire 100 Watts of output power into the single 15" speaker, providing a well balanced sound catering for all styles of playing.

The 715 is built to the same exacting standards as all other TRACE ELLIOT equipment i.e. a durable and rugged cabinet construction with sophisticated electronics that are both dependable and built to perform.

RECOMMENDED SYSTEMS

Unfortunately no one, not even TRACE ELLIOT, has yet been able to defy the laws of physics regarding loudspeakers. When applied to bass guitar amplification this means, roughly speaking, that the loudness of your system will be in direct proportion to the number and size of the speaker cabinets you use.

Here are a few simple rules, which apply to any bass amplification system, however well designed:

- 1) If you need more volume, buy more cabinets. (An AH200 with 2 Trace Elliot cabinets will be louder than an AH300 with one.)
- 2) The bigger the cabinet, the better the low end response. (For real reproduction of the low 'B' on a 5 or 6 string bass, listen to the 1818X cabinet.)
- 3) A small combo is designed for portability and sound quality. Do not expect it to compete with a "stack". For more volume add an extension speaker cabinet.
- 4) Bi-amping should increase the quality (fidelity) of your sound, but will probably not increase the volume.
- 5) Doubling amplifier power will not double the perceived loudness of your system. (A 200 Watt amplifier will not sound twice as loud as a 100 Watt amplifier.)
- 6) Bass frequencies are hard to amplify and punishing on loudspeakers. To compete with a 100 Watt guitar stack, you should use an AH300 with 2 cabinets.

Bearing the above rules in mind, the following systems are recommended by Trace Elliot:

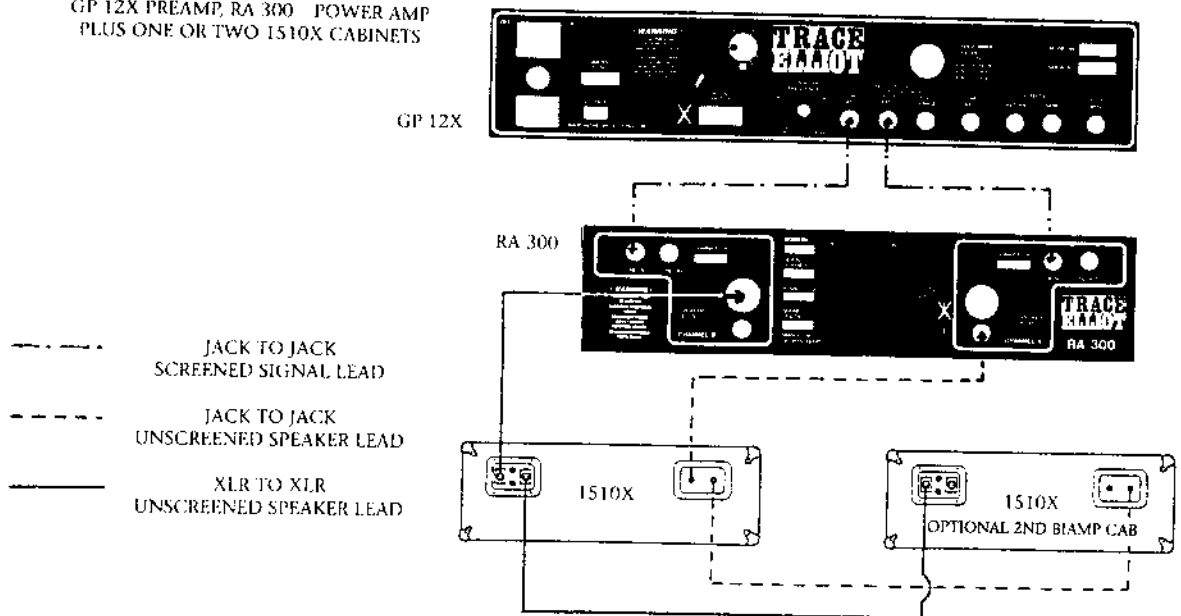
STARTER SYSTEM	<i>Either</i> your choice of combo <i>or</i> AH100 or 200 plus your choice of speaker cabinet (remember that you can add a second cabinet for more volume to all systems except the 715 combo).
PRO STAGE STACK	<i>Full range Sound.</i> AH300X plus 1 X 1048 cabinet and 1 X 1518 cabinet. To extend high frequency response, add a 4052H Bright Box.
PRO STAGE STACK	<i>Loud, hard rock sound.</i> AH300X plus 2 X 1528 cabinets.
COMPACT BI-AMP SYSTEM	<i>Hi-fi quality.</i> GP12X pre-amp, RA300 power-amp, plus 1 X 1510X cabinet (a second 1510X will significantly increase loudness).
SUPER HI-FIDELITY BI-AMP SYSTEM	<i>Extended frequency range.</i> AH500X plus 2 X 1818X cabinets and 2 X 4052H Bright Boxes. From a low "B" to the most sparkling harmonics.
MONSTER STAGE STACK	<i>Full range, high power.</i> AH500X plus your choice of 4 speaker cabinets (usable in mono or stereo modes).
MONITOR SYSTEM	<i>Used with or without a backline stack.</i> Your choice of Multistack cabinets.
RACK MOUNTED CUSTOM SYSTEMS	An almost limitless combination is possible, using multiples of the GP12X pre-amp and RA500X or RA300 stereo power amps. You can build a system to be as powerful and flexible as required and use any combination of Series 6 and Multistack cabinets. Trace Elliot and their authorised distributors will be happy to advise if you have special requirements.
VALVE SYSTEMS	<i>Classic, all valve (tube) sound.</i> Your choice of the VA400 valve head or VR400 valve rackmount power amp (used with GP12X), plus from 1 X 1528 to 4 X 1528 cabinets.

HOW TO CONNECT UP YOUR SYSTEM

Four examples are shown below in diagram form, which should cover most similar systems. Please consult your dealer if you are in any doubt.

300 WATT BI-AMP SYSTEM

GP 12X PREAMP, RA 300 POWER AMP
PLUS ONE OR TWO 1510X CABINETS

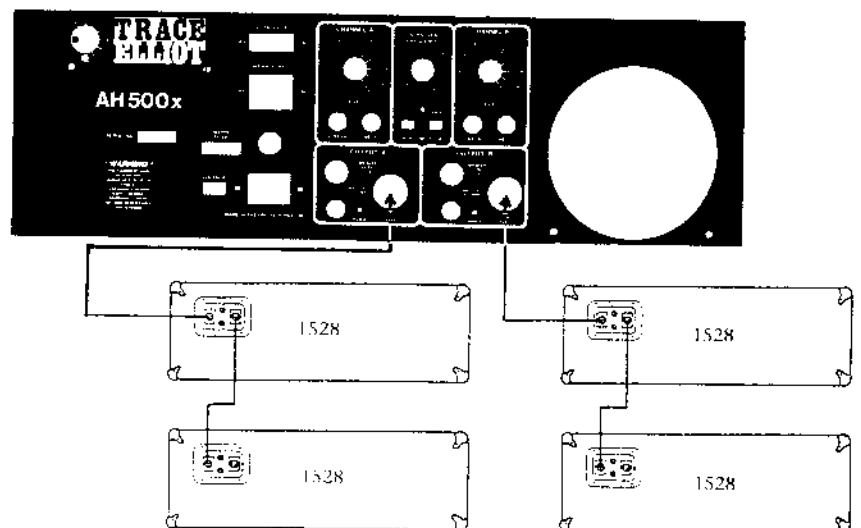


500 WATT FULL RANGE MONO SYSTEM

AH 500X PLUS FOUR 1528 CABINETS

MONO/STEREO SWITCH
= MONO

FULL RANGE/BIAMP SWITCH
= FULL RANGE

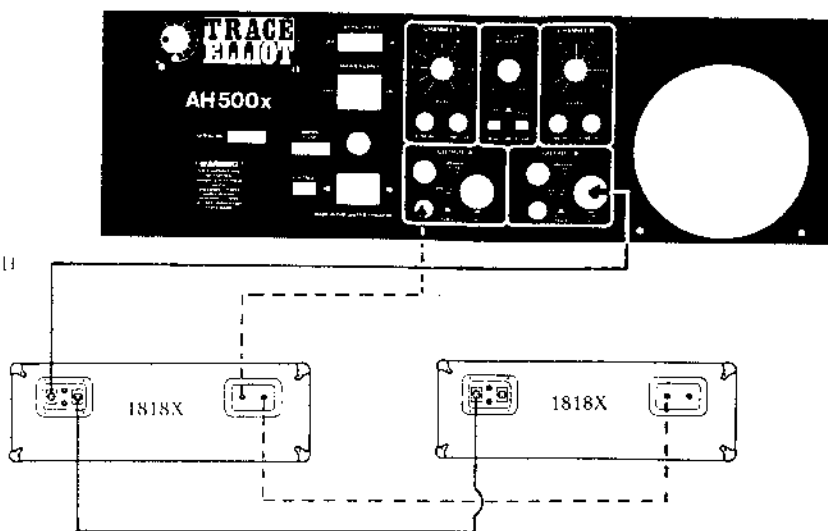


500 WATT BI-AMP SYSTEM

AH 500X PLUS TWO 1818X CABINETS

MONO/STEREO SWITCH
= MONO

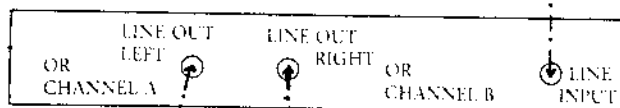
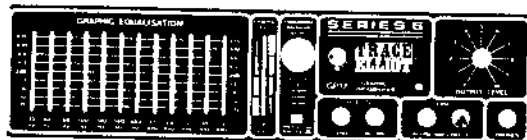
FULL RANGE/BIAMP SWITCH
= BIAMP



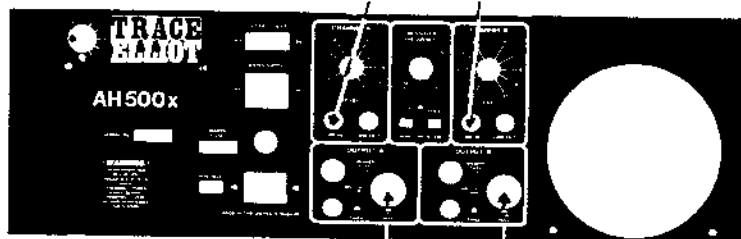
500 WATT FULL RANGE SYSTEM

AH500X PLUS-
STEREO EFFECTS UNIT,
2 X 4052H BRIGHT BOXES
2 X 1048 CABINETS
2 X 1518 CABINETS

AH 500 X
FRONT
PANEL

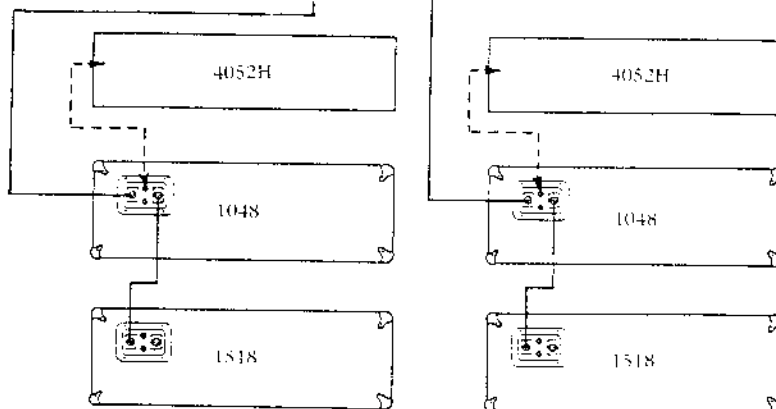


STEREO
EFFECTS
UNIT



MONO/STEREO SWITCH
= STEREO

FULL RANGE/BIAMP SWITCH
= FULL RANGE



GENERAL AND TECHNICAL SPECIFICATIONS

GENERAL SPECIFICATIONS

RANGE	MODEL	OUTPUT RMS	HEIGHT	WIDTH	DEPTH	WEIGHT
Amplifier Heads	AH500X	500 Watts	185 mm	520 mm	420 mm	29 Kg
	AH300	300 Watts	185 mm	520 mm	420 mm	26 Kg
	AH200	200 Watts	89 mm	482 mm	275 mm	8.5 Kg
	AH100	100 Watts	89 mm	482 mm	275 mm	7 Kg
Rack Mounting Equipment	GP12X	--	89 mm	482 mm	275 mm	5.5 Kg
	RA500SX	500 Watts	132 mm	482 mm	280 mm	17 Kg
	RA300	300 Watts	89 mm	482 mm	285 mm	9 Kg
Combo Amplifiers	1210	200 Watts	780 mm	610 mm	330 mm	51 Kg
	1215	200 Watts	600 mm	475 mm	330 mm	36 Kg
	715	100 Watts	600 mm	475 mm	330 mm	30 Kg

Loudspeaker Cabinets	MODEL	SPEAKER TYPE	POWER RATING	IMPEDANCE	HEIGHT	WIDTH	DEPTH	WEIGHT
	1048	4 X 10"	300 Watts	8 Ohms	660 mm	610 mm	470 mm	44 Kg
	1518	1 X 15"	300 Watts	8 Ohms	780 mm	610 mm	470 mm	43 Kg
	1528	2 X 15"	300 Watts	8 Ohms	910 mm	610 mm	470 mm	50 Kg
	1510X	(1 X 15" +1 X 10")	300 Watts	8 Ohms	780 mm	610 mm	470 mm	48 Kg
	1818X	(1 X 18" +1 X 10")	300 Watts	8 Ohms	910 mm	610 mm	470 mm	50 Kg
	4052H	4 X 5"	300 Watts	8 Ohms	200 mm	610 mm	120 mm	14 Kg
	2102 M	2 X 10"	300 Watts	8 Ohms	610 mm	575 mm	440 mm	35 Kg
	1152 M	1 X 15"	300 Watts	8 Ohms	610 mm	575 mm	440 mm	35 Kg
	1182 M	1 X 18"	300 Watts	8 Ohms	610 mm	575 mm	440 mm	37 Kg

TECHNICAL SPECIFICATIONS

Inputs	Passive Bass	Impedance 100k Ohms Input Range 50mv to 10v (peak-peak)
	Active Bass	Impedance 10k Ohms Input Range 100mv to 20v (peak-peak)
	Effects Return	Impedance 50k Ohms Nominal Input Level 0dBv (0.775v RMS)
	Line Input	Impedance 50k Ohms Nominal Input Level 0dBv
Outputs	Effects Send	Impedance 10k Ohms Nominal Level 0dBv
	Line Output	Impedance 600 Ohms Nominal Level 0dBv, Max Level +9dBv (7v RMS)
	DI Output	600 Ohms, Transformer Balamced Nominal Level 0dBv, (0.775v pins 2 & 3)
Equalisation	Graphic	+/- 15dB at 12 Centre Frequencies
	Mid Pre Shape	+ 6dB at 50 Hz and 2kHz, -6 dB at 400 Hz
Frequency Response		-3 dB at 22Hz and 25kHz
Signal/Noise Ratio		Better than 80 dB (EQ Flat, Mid Out)
Distortion		Less than 0.05% THD

GP12X

As GP12 with additional high and low pass outputs.

High Pass	Frequency variable from 250Hz to 1kHz Level nominally 0dBv, Max +9dBv
Low Pass	Frequency variable from 250Hz to 1kHz Level nominally 0dBv, Max +9dBv

GP7

All specifications are identical to those for the GP12 Pre-Amp except for the Equalisation:- +/- 15dB at 7 centre frequencies. The GP7 has no DI output.

Power Amplifiers

Input Impedance	50k Ohms
Input Sensitivity	0.775v RMS (0dBv) for full output
Distortion	Less than 0.02% into 4 Ohms
Slew Rate	Better than 30v/micro second
S/N Ratio	Better than 100dB
Frequency Response	-3dB at 20Hz and 25kHz
Stability	Unconditional
Damping Factor	Better than 100 at 50Hz

FUSE RATINGS FROM FEBRUARY 1989

CATALOGUE REF.	DESCRIPTION	MAINS FUSE ANTI SURGE (T)		SPEAKER FUSE FAST BLOW (F)	
	Amplifier Heads	220/240v	100/110v	Channel A	Channel B
AH500X	500 Watt, twin channel Amp Head, full range or bi-amp	5A	10A	10A	10A
AH300	300 Watt Amp Head, full range	4A	8A	10A	-
AH200	200 Watt Amp Head, full range (inc. gig bag)	3.15A	6.3A	10A	-
AH100	100 Watt Amp Head, full range (GP7 Pre-Amp)	2A	4A	5A	-
Rack Mounting Equipment					
GP12X	12 band Graphic Pre-amp with variable cross-over	150M/A	150M/A	-	-
RA500SX	500 Watt twin channel Power Amp, full range or bi-amp	5A	10A	10A	10A
RA300	300 Watt twin channel Power Amp	4A	8A	5A	5A
Combo Amplifiers					
1210	4 X 10" speakers, 200 Watts	3.15A	6.3A	10A	-
1215	1 X 15" speaker, 200 Watts	3.15A	6.3A	10A	-
715	1 X 15" speaker, 100 Watts (GP7 Pre-amp)	2A	4A	5A	-