SMX RANGE

O P E R A T I N G

I N S T R U C T I O N S

TRACE ELLIOT

Congratulations on purchasing your Trace Elliot Sound Management Series amplifier/speaker set up.

With your purchase you should have received a separate Owner's Warranty Registration Form plus mains cable (except in the case of speaker cabinets). If you did not receive these items please refer to the dealer who sold you the equipment.

Using this manual

Although Trace Elliot Sound Management Series equipment represents the ultimate bass amplification technology, it is also designed to be user-friendly straight out of the box. However, careful consideration to the relevant information contained in this booklet will provide you with the necessary benefits to really get the best out of your equipment.
Reading the Quick Set-up instructions will provide you with basic information if you have just got your equipment home and are keen to start using it. However, please find time to read the full instructions to fully understand its functions and capabilities.
Please also observe the safety instructions at the end of this manual.

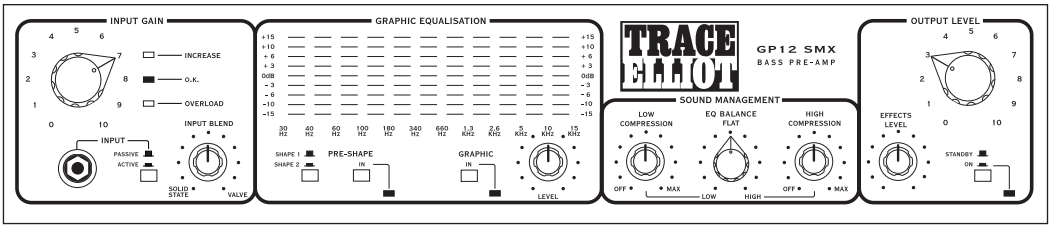
GP12SMX OPERATING INSTRUCTIONS

Getting Started - A quick guide

As well as being available in its stand alone rack-mounting format, the GP12SMX Sound Management Series preamp is included in the following products:-

Amp heads:
AH600SMX, RAH600SMX, AH400SMX, RAH400SMX, AH300SMX, RAH300SMX,
Combos:
1210HSMX, 1210SMX, 1215SMX, 122HSMX, 122SMX

Therefore, careful attention should be paid to this section if you own one of these units.
This QUICK GUIDE is for those that have used TRACE ELLIOT equipment before and are familiar with using the INPUT GAIN control and GRAPHIC sections.
With mains power connected to the GP12SMX, and the voltage selector set to the correct voltage for your country, turn on the power to the unit with the rear panel switch. If all is well the front panel will illuminate and assuming that you are correctly connected to power amp and speakers the GP12SMX will be ready to use.
N.B. The GP12SMX should always be turned on and off with the front panel switch set to STANDBY. This will ensure that the unit powers up and down silently.
With the controls set as in diagram 1 the GP12SMX is set completely FLAT,i.e. no EQ is applied to the signal. The signal remains exactly as it came from the instrument.
This is always a good place to start, by first becoming familiar with the pure sound of your instrument you will be better able to decide what sound modifications will give you the results you require.



Basic sound

Although the familiar basic sound of a TRACE ELLIOT preamp has been retained in the GP12SMX, you will also find an additional pallet of sounds readily available that cover many styles of bass playing. Most of these are available without the need for you to alter your favourite GRAPHIC setting.

Input blend

The INPUT BLEND control allows you to select the signal to drive the rest of the preamp from two entirely separate FRONT END circuits. One being a SOLID STATE circuit using an FET to provide a very high impedance input, the other being a VALVE stage, also providing a high impedance but in addition adding that something extra that only a valve can.
Any mix of these two input stages can be selected using the INPUT BLEND control.

Pre shape

As well as the well known classic TRACE ELLIOT PRE SHAPE (SHAPE 1), a second fixed EQ has been added in the form of SHAPE 2. This is a more ROCK orientated PRE SHAPE with solid bottom end and more mid than SHAPE 1.

Altering the EQ

The GRAPHIC EQUALISATION section in this unit is based on the traditional TRACE ELLIOT 12 band design, and apart from minor improvements that have been made in the 'Q' or bandwidth at certain frequencies, this will perform exactly as the SERIES 6 units. The setting of this will therefore be familiar to those reading this QUICK GUIDE.
In place of the GRAPHIC BALANCE slider used in previous designs, we now have a simple GRAPHIC LEVEL control. This adjusts the level of the GRAPHIC section when selected by the front panel push switch or the foot switch, and should be set to give approximately the same overall level with the graphic either in or out.

EQ balance control

This is something very new in concept, and something that you will not be familiar with from any amplifier. As such it requires a short description of its function (a full description is given in the SOUND MANAGEMENT section later in these instructions). Basically it is a very powerful new kind of tone control section on one knob. It can be thought of as a pivot point at the centre of the graphic about which the frequency response of the graphic may be swung. Turning to the right increases the top end and decreases the lower end of the graphic, whilst turning to the left has the reverse effect. You do not need to understand exactly how this is done to appreciate the power it gives you in instantly being able to transform your sound with one simple to operate knob.

Compression

TRACE ELLIOT have always avoided including compression in any of their previous amplifiers as the integrity of the bass signal has always been paramount in all designs. The reason for this is simply that any kind of FULL RANGE compression used on bass is always an unacceptable compromise. It cannot act fast enough to catch attack transients, and if it does then it distorts low frequency signals. If you have used any full range compression then you know what we mean.
The compression used in this unit has therefore been split into two entirely separate compressors, one optimised for LOW frequencies and one optimised for HIGH frequencies, but both individually adjustable by the user.
The LOW COMPRESSION and the HIGH COMPRESSION controls are located either side of the EQ BALANCE control. These three controls together we refer to as the SOUND MANAGEMENT section of the GP12SMX, as they work as a unit and provide such a vast variation to the bass sound.
As a QUICK GUIDE we would advise that full compression on either LOW or HIGH is never necessary except purely as an effect. LOW compression used on its own and set up to about halfway will really tighten up the bottom end and give excellent definition to bass runs. LOW compression past halfway with the EQ BALANCE turned a quarter left is excellent for really low reggae type bass. A small amount of both HIGH and LOW is good for those middly pumping bass lines.
The best way is to experiment bearing in mind that HIGH compression is very rarely needed as you will lose attack dynamics, and if your bass is active you will probably also emphasise the hiss coming from the instrument as well.

REAR PANEL FACILITIES

Line outputs
FULL RANGE STEREO line outputs are provided as well as the crossover STEREO HIGH PASS and LOW PASS line outputs.

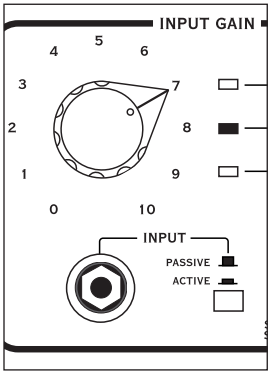
Crossover
A stereo crossover with variable crossover frequency is built into the GP12SMX to provide BI-AMPING facilities. The HIGH PASS section is in stereo whilst the LOW PASS section is in mono.

D.I.
Three D.I. sockets are provided with all three being balanced outputs giving levels of signal to suit the LOW IMPEDANCE MICROPHONE inputs on a mixing desk. All three have GROUND LIFT facility for use on balanced inputs to eliminate any ground loops.
The PRE EQ D.I. is fed from before the GRAPHIC but after the PRE SHAPE, whilst the stereo POST EQ D.I.'s are after all EQ COMPRESSION and EFFECTS returns but prior to the output level control.

Ground lift
A GROUND LIFT switch is provided to lift the mains ground from the signal circuits and prevent a ground loop being formed between the pre amp and the power amp.

GP12SMX Pre amp full instructions

The following is a more detailed description of the facilities of the GP12SMX pre amp.



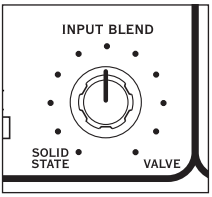
Input
There is only one instrument input jack provided, this will perfectly match both passive bass guitars (i.e. those with no internal battery) and active instruments by selecting either type with the switch adjacent to this socket.

Input gain setting
To get the best results from your GP12SMX it is important to understand fully the correct use of the INPUT GAIN control and the stage OUTPUT LEVEL control.
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 in and select ACTIVE or PASSIVE to suit the instrument
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 slightly until this LED goes out.
6. Now turn up the OUTPUT LEVEL to give the desired volume.

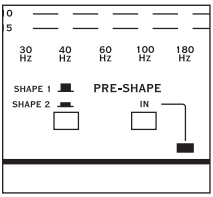
N.B. For most basses the INPUT GAIN control will end up being set between 5 and 8 on the scale

Please note: If the GRAPHIC EQUALISATION is altered it may be necessary to re-adjust the INPUT GAIN control. Re set the INPUT GAIN by following steps 3 to 6 in the above procedure.
Remember during normal playing the yellow OK LED should light up, with the red OVERLOAD LED only occasionally flicking on for heavier pulls or slaps.
Playing PASSIVE basses with the instrument volume control turned back will reduce the upper frequency response of the instrument so try to keep this control well advanced, using the preamp OUTPUT LEVEL control to provide for larger changes in volume.



Input blend control

The input section to this preamp is very different to all previous Mk5 and Series 6 units. It has two separate input circuits, one valve and one solid state. Both of these have a very high input impedance, which perfectly matches the output impedance of PASSIVE basses.
The INPUT BLEND control provides a continuously variable mix of the output from these two input stages i.e. you can have an all SOLID STATE input by turning this control fully anticlockwise, or an all VALVE input by turning the control fully clockwise, or any mix of the two.

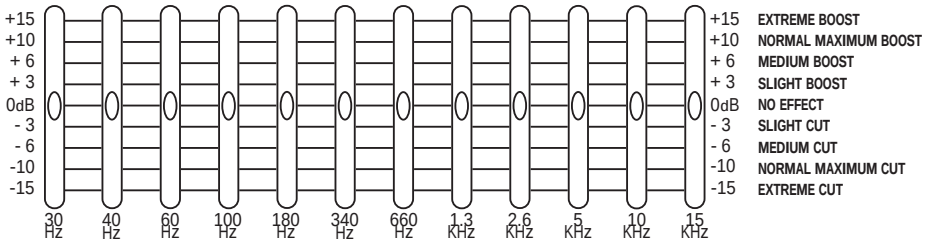


Pre shape

The PRE SHAPE facility is like a preset graphic equaliser built into the GP12SMX that you can switch in or out to modify the sound of the bass. Two pre shape sounds have been provided on this unit and are selectable from the front panel. The selected shape may be switched in or out via either the front panel switch or the external foot switch.
PRE SHAPE 1 is the classic TRACE ELLIOT EQ as found on Series 6 units, it adds a boost at both the low end (50Hz) and the high end (2 to 5kHz) of the frequency spectrum as well as a cut at mid frequencies (400Hz).
PRE SHAPE 2 is a more rock orientated equalisation providing a wider bandwidth boost at low frequencies, less of a mid cut and a slight boost at higher frequencies. This is a less extreme EQ than PRE SHAPE 1.
Both these pre shaped sounds will add extra punch to your sound 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 a flexible way of varying the sound of a bass guitar and if properly used will provide an extremely powerful method of tone shaping for your instrument.
The GP12SMX has a 12 band GRAPHIC EQUALISER that can be switched IN or OUT of the signal path from the front panel push button or from the external footswitch. Because of the flexibility and massive BOOST and CUT potential of the GRAPHIC it is important to know ho 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. **Do not** fully boost just one frequency band as this will tend to emphasise a small range of notes on the bass producing a PEAKY and not very useful sound.
2. **Do not** 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. **Do not** use excessive bottom (30 or 40Hz) boost on the graphic unless your speakers can handle it (very few speaker systems are capable of handling frequencies as low as this with any degree of efficiency).

N.B. Boosting at 30Hz for instance will not add to the perceived amount of bottom end in the sound, it will only make your speakers flap to no useful effect. In fact boosting at 100Hz or 180Hz will have the apparent effect of adding far more BOTTOM END than boosting at 30, 40 or even 60Hz.

4. **Do not** use excessive top (10 to 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.

The 12 sliders have been provided to give you full control at all frequencies providing a flexible and comprehensive bass EQ system for the discerning user.
The 30Hz slider has been provided to allow precise tailoring at very low frequencies when using a 5 string bass where the low B string is around 30Hz, and even then it is a case of how much 30Hz to CUT rather than BOOST to get the speaker system working at its optimum efficiency.

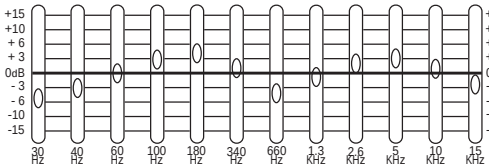
Useful observations

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 or more.
Other frequencies are also produced by the attack portion of the note When the string is first struck. This attack can be emphasised by boosting the top end.
However because of the fairly small range of frequencies from the bass by top end we mean between 1.3kHz and 5kHz. You will find by boosting at 5kHz the ATTACK will be emphasised whereas by boosting at 1.3 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 will not be masked by the bass signal when playing, due to the very small amount of bass frequency content at 10 to 15kHz. Use the 30Hz and 40Hz sliders sparingly unless you have a massive stack of speakers available, and the power amps to drive them. You will find that rolling off the bottom end by using these two sliders to give a degree of cut will allow you to play at a far greater volume level without the speakers complaining.

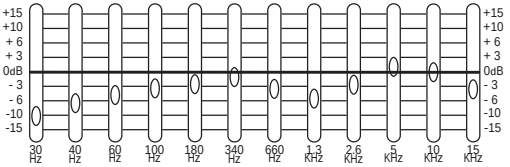
Back to the graphic

Having got out of the way the things NOT TO DO we move on to what you can do with the GRAPHIC EQUALISATION section. Basically you can do whatever you like as long as you bear in mind the DONT'S and follow two simple rules, these are:-
1. Try to keep the slider settings balanced around the 0dB line on the graphic.(see the diagram opposite)
2. Try to set the sliders in a smooth, gentle curve, as setting adjacent sliders at opposite extremes will give sharp [peaks and troughs in the sound, emphasising some notes and killing others. (see diagram opposite)
Switch the graphic IN and experiment with the available sounds but remember TOP END means 1.3kHz to 5kHz, BOTTOM END means 60Hz to 180Hz and MID RANGE means 340Hz and 660Hz.

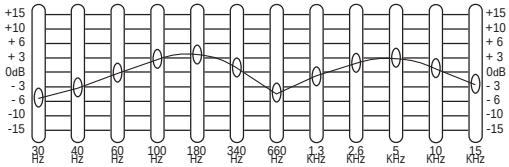
N.B. Don't forget to re-adjust the INPUT GAIN setting once you have altered the graphic. This is necessary because altering the graphic will change the overall gain and the level indicating circuit monitors the signal at a number of places to ensure that clipping or distortion is not occurring at any stage. Consequently changing the gain will change the reading on the LED's and you will have to re-adjust the INPUT GAIN control to compensate.



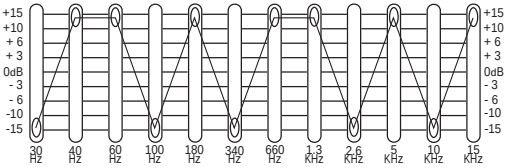
RIGHT - BALANCED AROUND 0dB



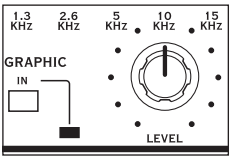
WRONG - SLIDERS NOT BALANCED AROUND 0dB



RIGHT - SMOOTH CHANGES



WRONG - CHANGES TOO ABRUPT



Graphic level control

The GRAPHIC LEVEL control adjusts the level of signal from the graphic section only. Consequently it will have no effect when the graphic is switched out.

This control is to allow you to balance the levels between graphic IN and graphic OUT, and should be set so that only a change in EQ occurs when the graphic is switched in and not a large change in level as well.

It can however be used to provide a boost in level when the graphic is switched IN if desired although we would advise that this is kept to a small increase so as not to overload the following stages.

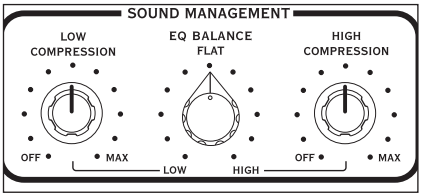
Sound management section

This section includes the EQ BALANCE control and the HIGH and LOW COMPRESSION controls as shown below:-

Firstly a short explanation is required about this section as it is an entirely new concept in terms of a means of EQ adjustment.

The signal entering this section is a full range mono signal, this is then split into two with one part containing the HIGH PASS (upper frequency) content of the signal and the other part containing the LOW PASS (lower frequency) content of the signal.

Both parts pass through their own separate compression circuitry and then on to the EQ BALANCE control. Here they are re-combined into a single full range signal once again that contains a mix of the HIGH and LOW frequencies in proportion to the setting of the EQ BALANCE control.



EQ balance

As can be seen from the diagram of this section the EQ BALANCE control varies between HIGH, LOW and is FLAT in its centre position. The action of this control can be envisaged by imagining a pivot point at the centre of the graphic about which the frequency response of the graphic can be swung.

Turning the EQ BALANCE control to the right increases the top end and decreases the bottom end of the graphic, while turning it to the left decreases the top end and increases the bottom end.

The internal filter circuits that feed this control have been designed to allow the HIGH PASS and LOW LOW PASS signals to overlap in frequency so that fully LOW or fully HIGH may be used as individually useful sounds in their own right i.e. with the EQ BALANCE control set at a fully LOW PASS there is still enough higher frequency content in the sound to make it useful. The opposite being true when the EQ BALANCE control is set fully HIGH PASS.

N.B. Do not confuse these HIGH and LOW PASS circuits with those of the output crossover circuitry, they are entirely separate parts of the circuit and do not interact in any way. Remember the HIGH and LOW PASS signals within the SOUND MANAGEMENT section of the unit are re-combined into a single full range signal at the EQ BALANCE control. Whether or not you understand its action, you will find the EQ BALANCE control a very easy and flexible way to instantly modify your sound over a wide range.

Compression

TRACE ELLIOT have always avoided including compression in any of their previous amplifiers as the integrity of the bass signal has always been paramount in all designs. The reason for this is simply that any kind of FULL RANGE compression used on bass is always an unacceptable compromise. It cannot act fast enough to catch attack transients, and if it does then it distorts low frequency signal. If you have used any full range compression then you know what we mean.

The compression within the GP12SMX has therefore been split into two entirely separate compressor, one optimised for LOW frequencies and one optimised for HIGH frequencies, but both individually adjustable by the user.

Separate attack and release characteristics are used for the HIGH and LOW compression, fast for the HIGH and medium to slow for the LOW. Fast is needed on the HIGH compression in order to catch initial high frequency transients on striking the string, if however this speed of attack is used for the LOW compression it produces distortion on low bass notes.

If the slower attack is used on the high frequencies any initial transient will get through unchecked and subsequent transients will disappear as the low bass compression would not have had time to recover, i.e. the release is too slow for the high frequencies.

Low compression

The LOW frequency compressor acts upon the low pass signal within the SOUND MANAGEMENT section.

Applying the compression to the LOW PASS only gives a fat bottom end to the sound without losing the upper frequency attack characteristics of the note. It is somewhat of a less processed sounding effect than full range compression but works extremely well in smoothing out bass signal peaks allowing a far greater volume of amplification to be used without the risk of speakers flapping.

You will also find that a degree of LOW compression will add definition to your playing, bringing out the notes within a run without loss of the upper dynamics.

As the compression control is advanced and compression is applied to the signal the overall level of volume is compensated for, if this were not done then adding compression would have the effect of reducing the volume of the sound as the available dynamics are reduced.

The compression within the GP12SMX has been added as a means of creatively modifying your bass sound and as such becomes part and parcel of the overall sound character that you create, and not merely as an effect. It is for this reason that no compression bypass switching facilities have been included within the unit. Also by turning either compression control to its fully anticlockwise position removes all compression from the sound without significantly altering the overall volume.

High compression

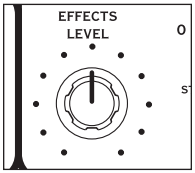
The HIGH frequency compressor acts upon the high pass signal within the SOUND MANAGEMENT section.

The HIGH COMPRESSION should be used with care as it is directly affecting the attack portion of the bass sound, this can be used to good effect but moderation should always be exercised when applying the high compression.

As the compression control is advanced and the compression applied to the signal the overall level of volume is compensated for, if this were not done then adding compression would have the effect of reducing the volume of the sound as the available dynamics are reduced.

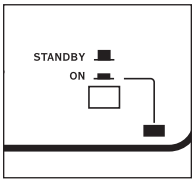
However in the case of the HIGH compression circuit this means that when no signal is present then additional gain is added at high frequencies. The more the compression control is advanced the more additional gain. This in itself presents no problem as the electronics within the GP12SMX produce very little noise. However if you are using an active bass you may well find that adding high compression adds significant levels of HISS to the sound, this HISS is coming from the active electronics within your bass, this can be proven by unplugging the instrument from the GP12SMX input socket, and the hiss goes away.

Using a passive bass with the GP12SMX will produce none of these problems unless excessive top boost is applied on the graphic.
The two compression circuits can be set individually to produce some useful sounds, i.e. with LOW set to to about half to tighten up the bottom end of the sound, the HIGH can be varied in conjunction with the EQ BALANCE control to produce a variety of different attacks to the note to suit many different styles of playing.



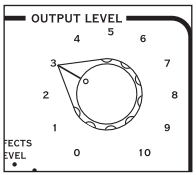
Effects 2 level control

The EFFECTS 2 LEVEL control sets the level of the signals coming into the STEREO returns from the effects loop 2. This control has no effect unless the effects loop 2 is being used. EFFECTS LOOP 2 is covered comprehensively in the EFFECTS LOOPS section of these operating instructions.



Standby/On switch

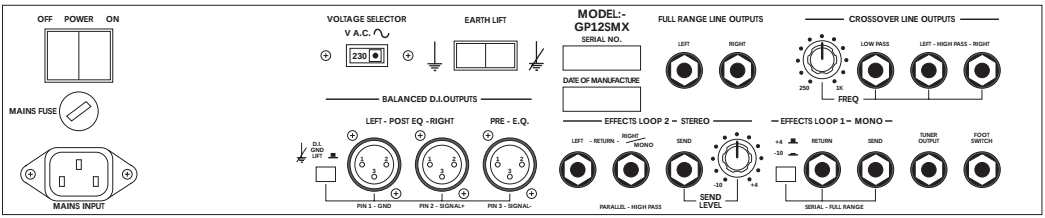
The STANDBY/ON switch is to put the unit into STANDBY when either it is not being used or while changing guitars.
It is also very important to switch to STANDBY when either turning the unit ON or OFF with the rear panel power switch. This will ensure that the valve has time to warm up and that the unit powers up and down silently.



Output level

The OUTPUT LEVEL control is used to set the stage volume of the amplifier, this will normally end up being set at between 3 and 4 on the scale with a TRACE ELLIOT output stage or power amplifier. This leaves plenty of available rotation of the output control in hand for when the unit is used to run non standard power amps that require a higher level signal input to drive them. However if you are using a TRACE ELLIOT output stage or power amplifier then please note that beyond about 4 on this scale your amplifier will almost certainly be running into clipping.

BACK PANEL FACILITIES

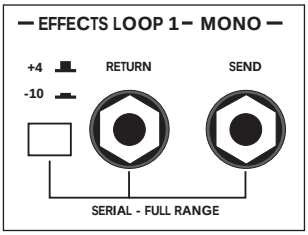


Footswitch socket

This is for connecting the external TRACE ELLIOT footswitch used for remote switching of the GRAPHIC and PRE SHAPE sections of the GP12SMX.

Tuner output

This is a line out socket with signal at a suitable level for direct connection to the tuner. Connecting a tuner in this way means you do not have to plug your tuner in line with your instrument and risk any degradation of the bass signal.The tuner may be left permanently connected without affecting the signal in any way.
The signal at this output is taken from after the pre shape and may be used as an additional full range effects send if required.

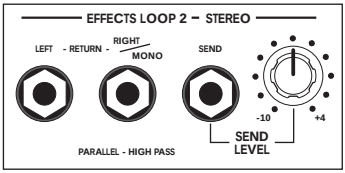


Effects loop 1 mono

EFFECTS LOOP 1 is a full range, serial, mono effects loop i.e. the signal is the full range bass signal taken from after the graphic equalisation but prior to the compression and the EQ BALANCE control.

The signal level for this effects loop is switchable between -10dB and +4dB with the rear panel push switch to accommodate a wide range of effects units. As a general rule effects units intended to have the instrument plugged straight into them will use the -10dB setting, as will most semi pro devices. The +4dB setting being a much higher signal level will overload the input to such devices and is there mainly for professional studio effects processors. This effect loop is the best position to use such devices as octave dividers or dynamic level control units as it is working with full range bass signal.

Because this is a serial effects loop, the signal path through the GP12SMX is broken to include whatever effects unit is being used within the loop. Consequently the integrity of the bass signal will depend upon the quality of the direct signal through the external effects device being used.



Effects loop 2 stereo

EFFECTS LOOP 2 is a high pass, parallel, stereo effects loop i.e. the signal is the HIGH PASS signal prior to the EQ BALANCE control but after the HIGH COMPRESSION. This allows a small degree of compression to be added to the effects send signal keeping down peaks and allowing the effects unit to be driven harder without its input overload on the sharp peaks.

The signal level for this effects loop is continuously variable between -10dB and +4dB with the rotary SEND LEVEL control, this allows you to optimise the level to suit any type of effects unit. Generally it is best to drive effects units as hard as you can without overloading the input this keeps the output noise from the unit to a maximum.

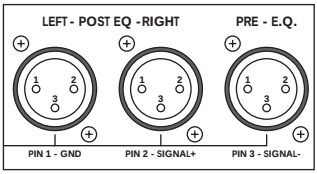
Being a stereo effects loop there are two RETURN sockets marked LEFT and RIGHT. The right socket doubles as a MONO return if a jack is plugged into this socket alone delivering signal to both channels of the preamp stereo outputs.

As this loop is a parallel type then you need only return the effect signal and not the direct DRY signal from the effects unit. This means the DRY signal is not degraded by the path through the effects unit itself.

The level of the stereo return signals is adjustable with the front panel EFFECTS 2 LEVEL control and this is used to mix in the amount of effects required i.e. set the SEND LEVEL control to suit the input to the effects unit, leave this set at its optimum level and use only the EFFECTS 2 LEVEL front panel control to vary the return signal to produce the desired effect.

If you wish to use this effects loop as a serial loop, this can be done by turning the EQ BALANCE control fully anticlockwise and then using the EFFECTS 2 LEVEL control to vary both the dry and effect signals together. The balance of dry to effect signal will then have to be set up in the external unit.

Although this effects loop is dedicated HIGH PASS only it is possible to use it full range by taking the effects send signal from the EFFECTS LOOP 1 send socket.

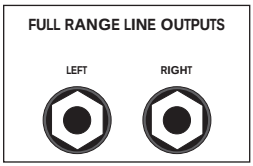


Balanced D.I. outputs

Three balanced D.I. outputs have been provided on standard male XLR sockets, these are all available simultaneously.

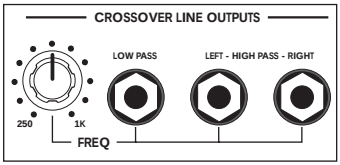
PRE EQ takes its signal from before the graphic equaliser but after the pre shape and POST EQ LEFT and RIGHT take their signal from after all equalisation, compression and effects loops but prior to the output level control.

All three D.I.'s are of a fixed level to suit the LOW IMPEDANCE MICROPHONE input on a mixing console, a ground lift switch has been provided for these sockets to prevent ground loops occurring with interconnected equipment, this can only be used for balanced connections.



Full range line outputs

The FULL RANGE stereo output signal is available at the LEFT and RIGHT FULL RANGE LINE OUTPUT sockets. These are used for connection to a stereo power amplifier full range operation with the level of signal adjustable from the front panel OUTPUT LEVEL control.



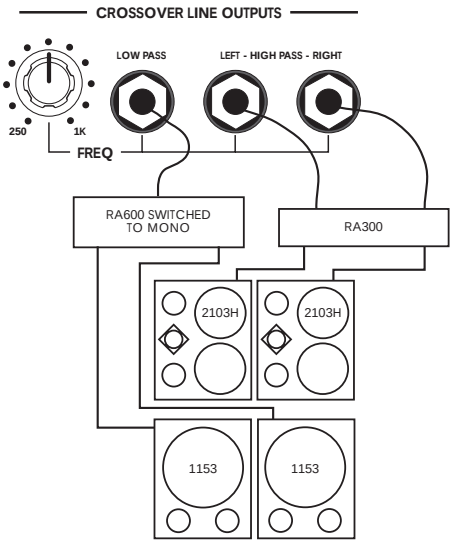
Crossover line outputs

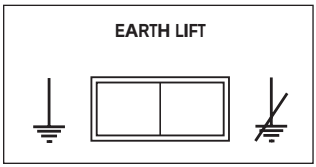
The GP12SMX has a built in variable, stereo crossover with individual outputs for the stereo HIGH PASS LEFT and HIGH PASS RIGHT signals, and a mono output for the LOW PASS signal. The LOW PASS output has been made MONO as all the stereo directional information is contained within the higher frequencies and consequently is only present in the HIGH PASS signal.

These outputs can be used to provide a STEREO BI AMPED system with the crossover frequency between HIGH PASS and LOW PASS variable between 250Hz and 1kHz with the FREQ control.

For fully STEREO BI AMPED system you will require a two channel power amplifier to drive two high frequency cabinets for the stereo high pass signals and at least another single power amplifier of twice the power rating of the individual high pass amplifier. We would recommend that for the LOW PASS end you use another two channel power amplifier and drive two suitable low pass cabinets making a two dual channel amplifier and four cabinet setup.

Remember when putting your system together that most of the power you will be using is in the LOW PASS end of the crossover. This is why we recommend that you use twice the power for driving the low frequencies and even better use two cabinets as well.



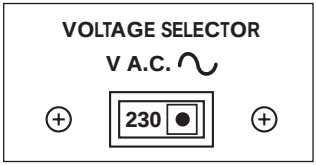


Earth lift switch

The EARTH LIFT SWITCH is provided to allow removal of the mains earth connection from the signal circuits of the GP12SMX to eliminate ground loops between connected equipment.

The GP12SMX as with all TRACE ELLIOT equipment still maintains an earth connection to the chassis and all metal parts of the unit for safety even when the EARTH LIFT switch is used.

NEVER lift the earth or ground to any equipment by removing the earth connection in the mains plug, this can be a potentially dangerous practice and in some instances prove lethal to both the equipment and the user.



Voltage selector

The VOLTAGE SELECTOR should be set to the appropriate voltage for your country prior to connection to the MAINS SUPPLY.

When transferring from one country to another that uses a different voltage system you should also take note of the different MAINS FUSE required for that country. This is printed on the rear of the unit adjacent to the fuse holder.

Power switch

Once the correct supply voltage has been set the GP12SMX can be turned on with the POWER switch on the rear of the unit.

Always make sure the front panel STANDBY switch is in the STANDBY position prior to switching ON or OFF. This will ensure the GP12SMX powers up and down silently.

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 after replacement the mains fuse should blow a second time, immediately refer the unit to a TRACE ELLIOT approved service engineer for checking.

GP12SMX technical specifications

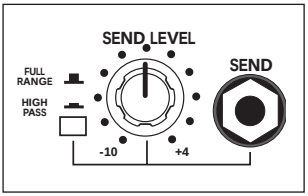
Inputs

Passive Bass	Input Impedance 2 Meg Ohms. Signal range 50mv to 10v (peak to peak)
Active Bass	Input Impedance 100k Ohms. Signal range 100mv to 20v (peak to peak)
Effects return 1	Impedance 50k Ohms. Signal level switchable between +4 and -10dBv
Effects return 2	Impedance 50k Ohms. Signal level variable between +4 and -10dBv

Outputs

Effects send 1	Impedance 10k Ohms. Nominal level switchable to +4 or -10dBv
Effects send 2	Impedance 10k Ohms. Nominal level variable between +4 and -10dBv
Line out (L&R)	Impedance 4k7 Ohms. Signal level - Nominal 0dBv. Max +8dBv
High Pass (L&R)	Impedance 1k Ohms. Signal level - Nominal 0dBv. Max +8dBv
Low Pass (mono)	Impedance 1k Ohms. Signal level - Nominal 0dBv. Max +8dBv
D.I. (Pre EQ)	Impedance 600 Ohms Balanced. Nominal level 600mv (peak to peak)
D.I. (Post EQ)	Impedance 600 Ohms Balanced. Nominal level 600mv (peak to peak)
Tuner	Impedance 10k Ohms. Signal level 0dBv
Crossover	Variable between 250Hz and 1kHz
Supply Requirements	230/115v switch selectable at 20VA

N.B This section also applies to the rear panel facilities of the 1210HSMX, 122HSMX and 1215SMX models



Effects loop

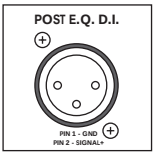
The EFFECTS LOOP is a switchable full range/high pass, parallel, effects loop. When switched to FULL RANGE the signal is the full range bass signal taken from after the graphic equalisation but prior to the compression and EQ BALANCE control. When switched to HIGH PASS the signal is the HIGH PASS signal prior to the EQ BALANCE control but after the HIGH COMPRESSION. This allows a small degree of compression to be added to the effects send signal keeping down peaks and allowing the effects unit to be driven harder without its input overloading on sharp peaks.

The signal level for this effects loop is continuously variable between -10dB and +4dB with the rotary SEND LEVEL control, this allows you to optimise the level to suit any type of effects unit. Generally it is best to drive effects units as hard as you can without overloading the input this keeps the output noise from the unit to a minimum.

As this loop is a parallel type then you need only return the effect signal and not the direct DRY signal from the effects unit. This means the DRY signal is not degraded by the path through the effects unit itself.

The level of the stereo return signals is adjustable with the front panel EFFECTS 2 LEVEL control and this is used to mix in the amount of effects required i.e. set the SEND LEVEL control to suit the input to the input to the effects unit, leave this set at its optimum level and use only the EFFECTS 2 LEVEL front panel control to vary the return signal to produce the desired effect.

If you wish to use this effects loop as a serial loop, this can be done by turning the EQ BALANCE control fully anticlockwise and then using the EFFECTS 2 LEVEL control to vary both the dry and effects signals together. The balance of dry to effects signals together. The balance of dry to effect signal will then have to be set up in the external unit.



D.I. output

This D.I. output is a dedicated POST EQ output only and takes its signal from after all equalisation, compression and the effects loop prior to the output level control.

This output is at a fixed level to suit the LOW IMPEDANCE MICROPHONE input on a mixer.

Tuner output

This is a line out jack socket with signal at a suitable level for direct connection to a tuner. Connecting a tuner in this way means you do not have to plug your tuner in line with your instrument and risk any degradation of the bass signal. The tuner may be left permanently connected without affecting the signal in any way.

The signal at this output is taken from after the pre shape and may be used as an additional full range effects send if required.

Footswitch socket

This is for connecting the external TRACE ELLIOT footswitch used for remote switching of the GRAPHIC and PRE SHAPE sections of the GP12SMX.

Speaker Outputs

The two speaker output jack sockets are intended for connection to either a single 8 Ohm cabinet plugged into one socket, two 8 Ohm cabinets with one plugged into each socket or a single 4 Ohm cabinet plugged into one socket only. With combo amplifiers using the SMX300 output stage only one extension cabinet of 8 Ohms may be connected to the spare socket.

Cooling Vents

Never obstruct the free flow of air to the air vents on the rear of the unit by for instance hanging clothes etc. over the top of the amplifier as this can cause the output stage to overheat and may cause permanent damage to your amplifier.

AH400SMX REAR PANEL FACILITIES

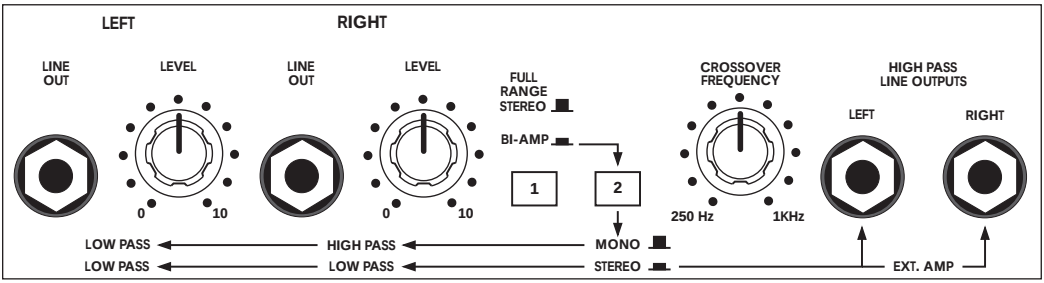
The AH400 rear panel facilities are the same as those described within the GP12SMX instructions with the exception of the CROSSOVER section which is not included within this amplifier.

Full range stereo line outputs

The preamp in the AH400 is a stereo unit with the single 400 watt power output stage being driven from the RIGHT preamp output.
A pair of STEREO LINE OUTPUT sockets are provided to allow the AH350 to be used as a full stereo unit with the addition of another power amplifier if required.

AH600SMX REAR PANEL FACILITIES

The AH600 rear panel facilities are the same as those described within the GP12SMX instructions with the exception of the CROSSOVER section.
The AH600 CROSSOVER section has additional switching facilities to allow FULL RANGE STEREO or MONO BI AMP operation using the internal power stages. With the addition of an external two channel power amplifier STEREO BI - AMP MODE may be used. The three different modes of operation will be dealt with in the following instructions with the aid of the diagram below of the CROSSOVER section.



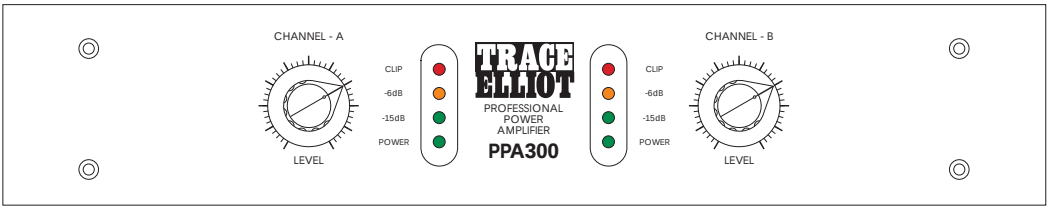
Full range stereo

Both push switches in their OUT position selects FULL RANGE STEREO operation with the stereo signal from the preamp driving the LEFT and RIGHT power output stages.
The LEFT LEVEL and RIGHT LEVEL controls adjust the output to each speaker enclosure driven from the two internal power stages. For FULL RANGE STEREO operation we recommend that you set these both to maximum and use the front panel OUTPUT LEVEL control to adjust the overall stage volume.
If additional power is required you may use the LEFT and RIGHT LINE OUT sockets to drive an external power amplifier. The signal from these sockets is not affected by the setting of the LEVEL controls adjacent to them (these only adjust the internal power levels), this allows you to balance the volume from the internal power stages against the volume from the external power amplifier (using the external amplifiers own level controls) and once set the overall stage volume can be turned up or down using the front panel OUTPUT LEVEL control without disturbing this balance.

Bi-amp mono

Push switch 1 IN and push switch 2 OUT provides BI-AMP MONO operations with the LEFT power output stage now becoming LOW PASS and the RIGHT power output becoming HIGH PASS, as indicated by the arrowed graphics from push switch 2 through to the two level controls.
Before using BI-AMP MONO mode made make sure that you have your low frequency speaker enclosure connected to the LEFT output and your high frequency unit connected to the RIGHT, as putting low frequencies through a high frequency only unit could destroy it.

PPA300



The PPA300 is a rack mounting 150 watts per channel stereo (dual channel) power amplifier. It is 2 U in height and uses passive heat sinking for its output stages.
This is a simple power amplifier to use having jack sockets for LINE INPUT and LINE OUTPUT with the speaker outputs being available on both JACK and XLR.

Power switch and mains inlet socket

The PPA300 is internally wired for the voltage marked on the rear panel adjacent to the mains inlet socket, check that this is correct for the supply with which it is to be used prior to connecting the mains cord to the unit.
Once correctly connected the PPA300 may be turned on with the POWER switch. To indicate that the unit is in its powered up condition the LED's at the bottom of the front panel bargraphs will light.

Mains fuse

In the event of having to replace the MAINS FUSE always use the same type and rating as marked on the units back panel.
If the fuse should blow a second time then immediately refer the unit to a TRACE ELLIOT approved service engineer for checking.

Ground lift switch

A GROUND LIFT switch is fitted to the PPA300 to prevent a GROUND LOOP being formed when multiple units are connected together (causing hum through the speakers).
Use this to LIFT the ground from all but one of the interconnected units, the other units will still be grounded via the connecting signal cables so check these carefully.
We provide GROUND LIFT switches on most of our equipment for the above reasons and also to make it unnecessary to remove the earth or ground connection from the mains plug (a common but potentially extremely dangerous practice).
The GROUND LIFT switch on TRACE ELLIOT units disconnect the ground from the internal signal circuits only while still maintaining a permanent ground connection to all metal parts of the amplifier chassis and casing. In this way the casing of the unit can never become LIVE under any circumstances. This is one reason why you should never remove the earth from the mains plug.

Speaker outputs 'A' and 'B'

Each channel of the PPA300 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 has higher current carrying capacity than the JACK socket.
Each channel can deliver up to 150 watts into a speaker of 4 Ohms and slightly less into an 8 Ohm impedance.
A simple bargraph display is provided to indicate signal through the power amplifier with the top LED indicating clipping of the output signal.

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.
In the event of having to replace this fuse, first check your speaker cables for short circuits (the most likely and common 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 and line output sockets

The LINE INPUT jack sockets are used for connection of signals into channels 'A' and 'B' of the PPA300. If a jack plug is inserted into one of these sockets only, then the signal will automatically be fed to both channels 'A' and 'B'. If jack plugs are inserted into both sockets then the channels will operate independently of each other.
With either connection the level of both channel 'A' and 'B' is adjusted independently using the front panel 'A' and 'B' level controls.
The LINE OUTPUT socket are connected in parallel with the LINE INPUT sockets and are for connection to further power amplifiers.

Using the PPA300 with a TRACE ELLIOT rack preamp

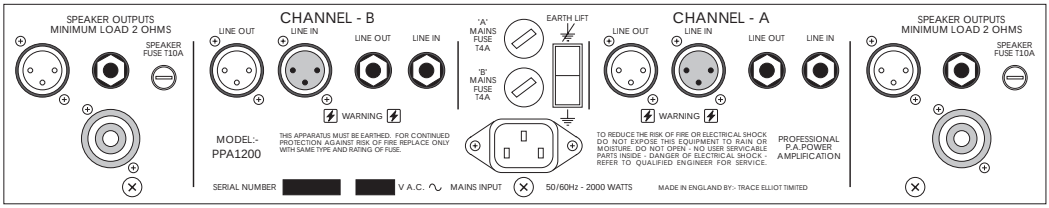
For a FULL RANGE system using a GP7SM preamplifier connect the LINE OUT from the GP7SM to channel 'A' LINE INPUT on the PPA300, this will then drive both channels of the PPA300. Turn both channel 'A' and 'B' controls up full and use the OUTPUT LEVEL control on the GP7SM to set the playing volume.
For a FULL RANGE STEREO system using a GP12SMX preamplifier connect the FULL RANGE RIGHT line output from the GP12SMX to channel 'A' of the PPA300 and the FULL RANGE LEFT to channel 'B'. Turn both channel 'A' and 'B' controls up full and use the OUTPUT LEVEL control on the GP7SM to set the playing volume.
For a BI-AMP MONO system using a GP12SMX connect the HIGH PASS RIGHT crossover line output to channel 'A' of the PPA300 and the LOW PASS crossover line output to channel 'B'. Make sure your high pass speaker is connected to channel 'A' of the PPA300 and the low pass speaker to channel 'B'. Turn up channel 'B'. Turn up channel 'B' control fully and use channel 'A' control to adjust the amount of TOP END. Use the OUTPUT LEVEL control on the GP12SMX to set the playing volume.
For this set up use the effects in MONO otherwise half of your effects signal (the half going to the LEFT RETURN socket) will not be reproduced.
For BI-AMP STEREO it is necessary to have two dual channel power amplifiers, one to reproduce the stereo top end (high pass) of the signal and the other to reproduce the bottom end (low pass) signal with both halves of the second power amplifier running in MONO to give sufficient bass in proportion to the top end.

PPA600

The PPA600 is a rack mounting 300 watts per channel stereo (dual channel) power amplifier. It is 2 U in height and uses intelligent D.C. fan cooling for its output stages.
This is a fully professional power amplifier having balanced signal LINE INPUTS on both XLR and JACK sockets.
Balanced LINE OUTPUTS are also provided on both XLR and JACK for the easy interconnection of further power amplifiers.
Speaker outputs are provided on JACK, XLR and SPEAKON connectors and a switch on delay is built in to prevent any power up thump from occurring.

Power switch and mains inlet socket

The PPA600 is internally wired for the voltage marked on the rear panel adjacent to the mains inlet socket, check that this is correct for the supply with which it is to be used prior to connecting the mains cord to the unit.



Rear PPA 300/600/1200 diagram

Once correctly connected the PPA600 may have either of its channels turned on with the POWER switches on the front panel. To indicate that the channel is in its powered up condition the LED at the bottom of the front panel bargraph for that channel to light.

Mains fuse

Both channel 'A' and channel 'B' of the PPA600 are individually fused as they are in fact entirely separate amplifiers with their own separate power supplies.
In the event of having to replace a MAINS FUSE always use the same type and rating as marked on the units back panel.If the fuse should blow a second time then immediately refer the unit to a TRACE ELLIOT approved service engineer for checking.

Ground lift switch

A GROUND LIFT switch is fitted to the PPA600 to prevent a GROUND LOOP being formed when multiple units are connected together (causing hum through the speakers). This simultaneously lifts the ground from both internal power amplifiers.
Use this to LIFT the ground from all but one of the interconnected units, the other units will still be grounded via the connecting signal cables so check these carefully.
We provide GROUND LIFT switches on most of our equipment for the above reasons and also to make it unnecessary to remove the earth or ground connection from the mains plug (a common but potentially extremely dangerous practice).
The GROUND LIFT switch on TRACE ELLIOT units disconnect the ground from the internal signal circuits only while still maintaining a permanent ground connection to all metal parts of the amplifier chassis and casing. In this way the casing of the unit can never become LIVE under any circumstances. This is one reason why you should never remove the earth from the mains plug.

Speaker outputs 'A' and 'B'

Each channel of the PPA600 is provided with an XLR a JACK and a SPEAKON socket for speaker connection. It is recommended that the SPEAKON socket be used whenever possible as this has higher current carrying capacity than the XLR or JACK socket. If the SPEAKON cannot be used the XLR socket only for the main output power cable, the JACK is only there for ancillary connection of an additional horn or high frequency unit.
Each channel can deliver up to 300 watts into a speaker of 4 Ohms and slightly less into an 8 Ohm impedance.
A simple bargraph display is provided to indicate signal through the power amplifier with the top LED indicating clipping of the output signal regardless of the impedance of the load.

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.
In the event of having to replace this fuse, first check your speaker cables for short circuits (the most likely and common 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 and line output sockets

The balanced LINE INPUT XLR and JACK sockets are used for connection of signals into channels 'A' and 'B' of the PPA600. Both channels operate entirely independently and will have to be linked with an XLR or stereo jack cable for mono use. Channels 'A' and 'B' are adjusted independently using the front panel 'A' and 'B' level controls.

The balanced LINE OUTPUT sockets are connected in parallel with the LINE INPUT socket and are for easy connection to further power amplifiers.

As stated above both the XLR and the JACK inputs are BALANCED inputs, however the amplifier may still be used with an unbalanced connection merely by inserting a mono jack plug into the jack input socket. This automatically switches the input to an unbalanced connection suitable for use with a GP12SMX or GP7SM preamplifier.

If the power amplifier is being used with a balanced input into the XLR sockets then do not use a mono jack cable for linking or this will short out half of the balanced input connection. It is however quite acceptable to use a stereo jack cable for linking if required.

Using the PPA600 with a TRACE ELLIOT rack preamp

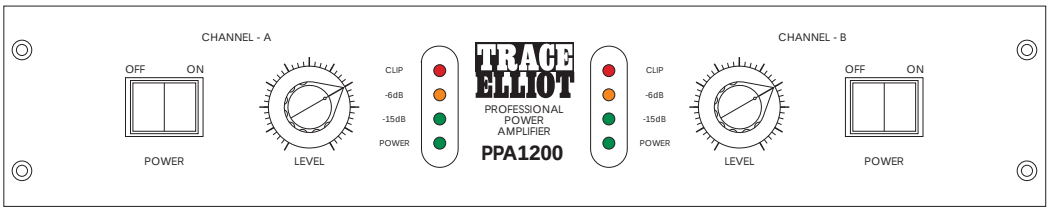
For a FULL RANGE system using a GP7SM preamplifier connect the LINE OUT from the GP7SM to channel 'A' LINE IN on the PPA600 with a jack to jack cable, link the channel 'A' LINE OUT to channel 'B' LINE IN with another jack to jack cable , this will then drive both channels of the PPA600. Turn both channel 'A' and 'B' controls up full and use the OUTPUT LEVEL control on the GP7SM to set the playing volume.

For a FULL RANGE STEREO system using a GP12SMX preamplifier connect the FULL RANGE RIGHT line output from the GP12SMX to channel 'A' of the PPA600 and the FULL RANGE LEFT to channel 'B'. Turn both channel 'A' and 'B' controls up full and use the OUTPUT LEVEL control on the GP7SM to set the playing volume.

For a BI-AMP MONO system using a GP12SMX connect the HIGH PASS RIGHT crossover line output to channel 'A' of the PPA600 and the LOW PASS crossover line output to channel 'B'. Make sure your high pass speaker is connected to channel 'A' of the PPA600 and the low pass speaker to channel 'B'. Turn up channel 'B' control fully and use channel 'A' control to adjust the amount of TOP END. Use the OUTPUT LEVEL control on the GP12SMX to set the playing volume. For this set up use the effects in MONO otherwise half of your effects signal (the half going to the LEFT RETURN socket) will not be reproduced.

For BI-AMP STEREO it is necessary to have two dual channel power amplifiers, one to reproduce the stereo top end (high pass) of the signal and the other to reproduce the bottom end (low pass) signal with both halves of the second power amplifier running in MONO to give sufficient bass in proportion to the top end.

PPA1200



Front PPA 1200/600 Diagram

The PPA1200 is a rack mounting 600 watts per channel stereo (dual channel) power amplifier. It is 2 U in height and uses intelligent D.C. fan cooling for its output stages.

This is a fully professional power amplifier having balanced signal LINE INPUTS on both XLR and JACK sockets. Balanced LINE OUTPUTS are also provided on both XLR and JACK for the easy interconnection of further power amplifiers.

Speaker outputs are provided on JACK, XLR and SPEAKON connector and a switch on delay is built in to prevent any power up thump from occurring.

Power switch and mains inlet socket

The PPA1200 is internally wired for the voltage marked on the rear panel adjacent to the mains inlet socket, check that this is correct for the supply with which it is to be used prior to connecting the mains cord to the unit.
Once correctly connected the PPA1200 may have either of its channels turned on with the POWER switches on the front panel. To indicate that the channel is in its powered up condition the LED at the bottom of the front panel bargraph for that channel to light.

Mains fuse

Both channel 'A' and channel 'B' of the PPA600 are individually fused as they are in fact entirely separate amplifiers with their own separate power supplies.
In the event of having to replace a MAINS FUSE always use the same type and rating as marked on the units back panel.If the fuse should blow a second time then immediately refer the unit to a TRACE ELLIOT approved service engineer for checking.

Ground lift switch

A GROUND LIFT switch is fitted to the PPA1200 to prevent a GROUND LOOP being formed when multiple units are connected together (causing hum through the speakers). This simultaneously lifts the ground from both internal power amplifiers.
Use this to LIFT the ground from all but one of the interconnected units, the other units will still be grounded via the connecting signal cables so check these carefully.
We provide GROUND LIFT switches on all of our equipment for the above reasons and also to make it unnecessary to remove the earth or ground connection from the mains plug (a common but potentially extremely dangerous practice). The GROUND LIFT switch on TRACE ELLIOT units disconnect the ground from the internal signal circuits only while still maintaining a permanent ground connection to all metal parts of the amplifier chassis and casing. In this way the casing of the unit can never become LIVE under any circumstances. This is one reason why you should never remove the earth from the mains plug.

Speaker outputs 'A' and 'B'

Each channel of the PPA600 is provided with an XLR a JACK and a SPEAKON socket for speaker connection. It is recommended that the SPEAKON socket be used whenever possible as this has higher current carrying capacity than the XLR or JACK socket. If the SPEAKON cannot be used the XLR socket only for the main output power cable, the JACK is only there for ancillary connection of an additional horn or high frequency unit.
Each channel can deliver up to 600 watts into a speaker of 2 Ohms and 450 watts into a 4 Ohm impedance.
A simple bargraph display is provided to indicate signal through the power amplifier with the top LED indicating clipping of the output signal regardless of the impedance of the load.

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.
In the event of having to replace this fuse, first check your speaker cables for short circuits (the most likely and common 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 and line output sockets

The balanced LINE INPUT XLR and JACK sockets are used for connection of signals into channels 'A' and 'B' of the PPA1200. Both channels operate entirely independently and will have to be linked with an XLR or stereo jack cable for mono use. Channels 'A' and 'B' are adjusted independently using the front panel 'A' and 'B' level controls.

The balanced LINE OUTPUT sockets are connected in parallel with the LINE INPUT socket and are for easy connection to further power amplifiers.
As stated above both the XLR and the JACK inputs are BALANCED inputs, however the amplifier may still be used with an unbalanced connection merely by inserting a mono jack plug into the jack input socket. This automatically switches the input to an unbalanced connection suitable for use with a GP12SMX or GP7SM preamplifier.
If the power amplifier is being used with a balanced input into the XLR sockets then do not use a mono jack cable for linking or this will short out half of the balanced input connection. It is however quite acceptable to use a stereo jack cable for linking if required.

Using the PPA600 with a TRACE ELLIOT rack preamp

For a FULL RANGE system using a GP7SM preamplifier connect the LINE OUT from the GP7SM to channel 'A' LINE IN on the PPA1200 with a jack to jack cable, link the channel 'A' LINE OUT to channel 'B' LINE IN with another jack to jack cable, this will then drive both channels of the PPA600. Turn both channel 'A' and 'B' controls up full and use the OUTPUT LEVEL control on the GP7SM to set the playing volume.
For a FULL RANGE STEREO system using a GP12SMX preamplifier connect the FULL RANGE RIGHT line output from the GP12SMX to channel 'A' of the PPA1200 and the FULL RANGE LEFT to channel 'B'. Turn both channel 'A' and 'B' controls up full and use the OUTPUT LEVEL control on the GP7SM to set the playing volume.
For a BI-AMP MONO system using a GP12SMX connect the HIGH PASS RIGHT crossover line output to channel 'A' of the PPA1200 and the LOW PASS crossover line output to channel 'B'. Make sure your high pass speaker is connected to channel 'A' of the PPA1200 and the low pass speaker to channel 'B'. Turn up channel 'B' control fully and use channel 'A' control to adjust the amount of TOP END. Use the OUTPUT LEVEL control on the GP12SMX to set the playing volume. For this set up use the effects in MONO otherwise half of your effects signal (the half going to the LEFT RETURN socket) will not be reproduced.
For BI-AMP STEREO it is necessary to have two dual channel power amplifiers, one to reproduce the stereo top end (high pass) of the signal and the other to reproduce the bottom end (low pass) signal with both halves of the second power amplifier running in MONO to give sufficient bass in proportion to the top end.

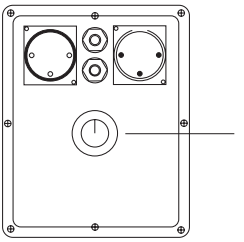
PPA power amplifier technical specifications

	PPA300	PPA600	PPA1200
Output power per channel	150 watts RMS into 4 Ohms 300 watts peak	300 watts RMS into 4 Ohms 600 watts peak	600 watts RMS into 2 Ohms 1200 watts peak
Total harmonic distortion (THD)	Less than 0.05% at rated power	Less than 0.05% at rated power	Less than 0.05% at rated power
Frequency response	20Hz to 30kHz - 1dB	20Hz to 30kHz - 1dB	20Hz to 30kHz - 1dB
Power bandwidth	10Hz to 40kHz at rated power	10Hz to 40kHz at rated power	10Hz to 40kHz at rated power
Slew rate	50 volts/uS	50 volts/uS	50 volts/uS
Damping factor	Greater than 200 at 4 Ohms	Greater than 200 at 4 Ohms	Greater than 200 at 4 Ohms
Input details (except PPA300)	Balanced 600 Ohms on XLR and STEREO JACK both with link through facility for simple chaining of power amps. Sensitivity = 0bBv for full output		
Output connections	JACK	SPEAKON 1+ & 1- XLR & JACK	SPEAKON 1+ & 1- XLR & JACK

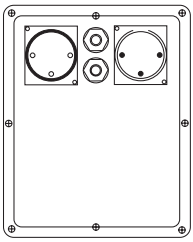
Loudspeaker cabinets

Each cabinet has one of two connector panels depending on whether a high frequency horn unit is included or not:-

Horn loaded cabinets



Non-horn loaded cabinets



Each cabinet has its own characteristic sound and different combinations should be tried to arrive at your ideal system. Adding an extension cabinet to a combo amplifier will significantly improve its performance in terms of power output and tonal versatility.
Recommended applications are shown below:-

Type	Speaker configuration	Sound character / Application
1048H	4 x 10" + high frequency horn	Tight bass, punchy mid range. Extended HF response. Good for percussive playing styles.
1048	4 x 10"	As above, but without extended HF response.
1518	1 x 15"	Balanced, full range sound. Suitable for a broad range of bass styles.
1524	2 x 15"	Good low end - suitable for hard rock sound.
1818	1 x 18"	Extended low frequency characteristics, but still with plenty of punch. Particularly good for low end of a bi-amp set-up.
1048H	8 x 10" + HF horn	Tight bass, punchy mids, extended HF range.
1084	8 x 10"	As above without extended HF response.
2103H	2 x 10" + HF horn	Tight bass, good mid range, extended HF response. Portable add-on cab, particularly suitable as combo extension cab or as mid / high end of bi-amp system.
1153	1 x 15"	Compact, portable extension cab particularly suitable as add-on for combos. Balanced all round sound.
HF horn box	1 x high frequency horn	Add on extended high frequency only.
4052H	4 x 5"	As above, but with slightly more upper mids.

Generally, a bigger cabinet will acheive better low frequency performance but careful attention to porting has brought better performance to all TRACE ELLIOT's bass speaker enclosures.

Where possible use XLR leads, as they provide a more reliable connection and less signal loss than jack to jack leads.
Most TRACE ELLIOT cabinets have an 8 ohms impedance (the exceptions are the 1524, 1084H and 1084 models which have an impedance of 4 ohms).
This means you can connect two cabinets to each output channel of a TRACE ELLIOT amplifier (In the case of the 4 ohm cabinets, only one can be connected per channel).
Never connect two amplifier out put channels into one speaker connector panel.

Adding a high frequency horn unit or 4052H "Bright Box"

If you wish to improve the high end frequency response of your system, simply add one of either of these models and connect one of the jack sockets on your full range cabinet. You can ignore the impedance of the HF horn or the 4052H, which means you can use them in addition to two cabinets already connected to the output stage of any TRACE ELLIOT bass amplifier.
You can also add one of these units to a combo amplifier by connecting it to the combo extension speaker output (N.B. except the 715, BLX80 and BLX150 models which have no extension speaker facility).

Speaker enclosure tuning

All TRACE ELLIOT speaker enclosures have the facility of variable tuning, allowing any system to be uniquely tailored by the user to their particular preference or to better suit a particular venue.
A short description follows outlining the thinking behind this feature its principal and a few suggestions as to its practical use.
Firstly each speaker enclosure has two reflex ports tuned to appropriate lengths depending on the internal volume of the particular enclosure. These are easily identifiable by the 'Through the Grill' custom moulded surround that neatly finishes the outer face of the port.
The tuning of the enclosure can be modified by plugging or unplugging either one or both of these ports, the resultant tuning is as follows:-

Both ports plugged = Infinite baffle enclosure

One port plugged = Reflex enclosure tuned to 35Hz

Both ports open = Reflex enclosure tuned to 45Hz

The only exception to this are the 1518 and the 1818 enclosures that are tuned to 25Hz and 35Hz respectively.

How does the tuning affect the sound

An INFINITE BAFFLE (both ports plugged) type of enclosure means a cabinet that is completely sealed i.e. nowhere for air to enter or be exhausted from the cabinet.
In terms of sound this gives an extended low frequency response that is very even across the lower frequency range i.e. it has no peaks or dips in the bass response.
However although the low end bass is very even and it extends further down the frequency range (below both the other tuning options) there is generally less of it than with either of the ported options.
A REFLEX enclosure has ports for the air from the rear of the speaker to be exhausted from the cabinet or be drawn back into the cabinet. The air in the port in fact oscillates back and forth through the port or ports and can either be in phase with the motion of the speaker and provide a boost to the level of sound or can be out of phase with the speaker in which case it in fact causes a cancellation in air movement and consequently a reduction in volume level.
REFLEX enclosures are specially 'Tuned' with the size and length of the port to a particular frequency that provides the correct rear loading to the speaker itself allowing it to work efficiently and safely and secondly to provide a bass boost at lower frequencies by using the air from the rear of the speaker through the port to add to the air from the front of the speaker, thus boosting the overall level of volume from the enclosure. This only happens when the air from the port is in phase with the air from the front of the speaker and this occurs at a frequency just above the tuning frequency of the enclosure.

However as with everything else in life you do not get something for nothing because at high frequency directly below the tuned frequency of the enclosure the air from the port is actually out of phase and consequently reduces the volume from the enclosure, this is usually at such a low frequency that in fact does not really matter when considering the range of frequencies to be amplified.
Providing the variable tuning facility gives the user the opportunity to experiment with tunings at both 35Hz and 45Hz to find out which works best for them in a particular instrument. Remember that the bass boost is at a frequency just above the tuned frequency and that cancellation occurs at just below the tuned frequency.

How can this be used in a live situation

Bass sound changes a great deal from one venue to another, for instance if your speaker enclosure is situated in the corner of a room you will get a natural emphasis in low end from the walls of the room being at right angles. This can easily double the amount of bottom end in your sound just from the natural acoustics of the room. In this situation it would be best to plug both ports and use the infinite baffle response providing extended low end but less of it.
If on the other hand your speaker is situated backed on to the flat wall and not near a corner then less bass will be apparent, it would now be better to use the 45Hz tuning (both ports unplugged) to provide a bottom end boost. I suggest the 45Hz rather than the 35Hz because the speaker is better able to handle frequencies from the 45Hz upwards than from 35Hz upwards and you will consequently be able to have your amplifier louder before the speaker complains than with the 35Hz option.
If you are however playing at lower volumes or in a studio recording situation you may well find the 35Hz tuning useful as it will give natural boost to the bottom 'E' string (42Hz) and above.
Generally speaking, the loudness of your system will be in direct proportion to the number and size of the speaker cabinet you use.
Here are a few simple rules, which apply to any bass amplification system, however designed:-

1. If you need more volume, buy more cabinets (An AH300-7SM with two cabs will be louder than an AH400-7SM with one, for example).

2. The bigger the cabinet, the better the low end response.

3. A small combo is designed for sound quality with portability. Do not expect it to compete with a 'stack' for more volume, add an extension 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 a system. (A 200 watt amp does not sound twice as loud as a 100 watt amp).

6. Bass frequencies are hard to amplify and are punishing on loudspeakers. To compete with a 100 watt guitar stack adequately you should use an AH400-7SM or AH400SMX with 2 cabinets.

SAFETY INSTRUCTIONS

Warning

For continued protection against the risk of fire, replace fuses only with fuses of the same type and rating.
To reduce the risk of fire or electric shock, do not expose this equipment to rain or moisture.
In the event of a suspected malfunction, always refer this equipment to a qualified service engineer.
This apparatus must be earthed. The wires in this mains are coloured in accordance with the following code:-

***Green& Yellow* - Earth** ***Blue* - Neutral** ***Brown* - Live**

As the colours of the wires in the mains lead of this appliance may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:-
The wire which is coloured Green & Yellow must be connected to the terminal in the plug which is marked with the letter E or by the earth symbol or coloured green or Green and Yellow.
The wire which is coloured Blue must be connected to the terminal which is marked with the letter N or coloured Black.
The wire which is coloured Brown must be connected to the terminal which is marked with the letter L or coloured Red.
If A 13 amp (BS1363) plug is used a 13 amp fuse must be fitted, or if any other type of plug is used a 15 amp fuse must be fitted either in the plug or adaptor or at the distribution board.

EMC Warning

It is inherent in the design of a loudspeaker and in the design of guitar pickups that they should emit or be affected by electro magnetic fields. Trace Elliot loudspeaker enclosures should not be used less than 2 metres away from equipment which is likely to be affected by electro magnetic interference.
Likewise, guitars fitted with electro magnetic pickups should not be used less than 2 metres away from any source of electro magnetic emissions such as loudspeakers.
Emissions from loudspeakers are dependent on the frequency characteristic of the drive unit.
Levels were measured direct from the drivers of 30 dBuV.
These levels are reduced to a safe level at a distance of 1.27 metres from the drivers.

SICHERHEITS-ANWEISUNGEN

Warnung

Zum fortdauernden Schutz gegen Feuerrisiken die Sicherungen nur durch Sicherungen desselben Typs und derselben Nennleistung austauschen.
Um das Risiko von Feuer oder Elektroschock zu reduzieren, dieses Gerät keinem Regen und keiner Feuchtigkeit aussetzen.
Im Fall eines vermuteten Defekts muß dieses Gerät einem qualifizierten Service-Techniker übergeben werden.
Dieses Gerät muß geerdet werden. Die Drähte im Stromkabel wurden dem folgende Code nach koloriert:

***Grün & Gelb* - Erde** ***Blau* - Neutral** ***Braun* - Stromführend**

Da die Farben der Drähte dieses Geräts nicht notwendigerweise den Farbmarkierungen der Pole in Ihrem Stecker entsprechen, sollten Sie wie folgt vorgehen:
Der grün/gelbe Draht muß an den Pol im Stecker angeschlossen werden, der mit dem Buchstaben E oder dem Erde-Symbol oder der Farbe Grün oder Grün/Gelb markiert ist.
Der blaue Draht muß an den Pol angeschlossen werden, der mit dem Buchstaben N oder schwarz markiert ist.
Der braune Draht muß an den Pol angeschlossen werden, der mit dem Buchstaben L oder rot markiert ist.
Falls ein 13 amp (BS1363) Stecker benutzt wird, muß eine 13 amp Sicherung eingesetzt werden; und falls ein Stecker anderer Art benutzt wird, muß eine 15 amp Sicherung entweder im Stecker selbst oder an der Verteilertafel eingesetzt werden.

EMC Warnung

Es liegt im Design eines Lautsprechers und im Design von Gitarrenaufnehmern, daß sie elektromagnetische Felder abgeben oder von solchen beeinflußt werden. Trace Elliot Lautsprechergehäuse sollten daher nicht in unter 2 Metern Entfernung von Geräten benutzt werden, die durch elektromagnetische Störungen beeinflußt werden könnten.
Auch sollten Gitarren, die mit elektromagnetischen Aufnehmern ausgestattet sind, nicht in unter 2 Metern Entfernung von Quellen elektromagnetischer Emissionen, wie z.B. Lautsprechern, benutzt werden.
Die Lautsprecheremissionen sind von der Frequenzcharakteristik der Treiber-Einheit abhängig.
Die Werte wurden direkt von den Treibern von 30 dBuV gemessen.
Diese Werte reduzieren sich in einer Entfernung von 1,27 Metern von den Treibern auf ein sicheres Maß.

CONSIGNES DE SECURITE

Attention

Pour une protection continue contre les incendies, ne remplacez les fusibles que par des fusibles du mÍme type et du mÍme courant nominal.
Pour réduire le risque diincendie ou de décharge électrique, níexposez jamais cet équipement à la pluie ou à líhumidité.
Si vous soupÁonnez une défaiillance, faites toujours appel à un ingénieur qualifié.
Cet appareil doit Ítre mis à la masse. Les fils de cette conduite díamenée de secteur sont colorés selon le code suivant:

***Vert & Jaune* - Masse** ***Bleu* - Neutre** ***Marron* - Tension**

Etant donné que les couleurs des fils de la conduite díamenée de secteur de cet appareil risquent parfois de ne pas correspondre aux couleurs identifiant les bornes de votre fiche, procédez comme suit:
Le fil Vert & Jaune doit Ítre relié à la borne de la fiche marquée de la lettre E, du symbole de terre ou colorée en Vert et Jaune.
Le fil Bleu doit Ítre relié à la borne marquée de la lettre N ou colorée en Noir.
Le fil Marron doit Ítre relié à la borne marquée de la lettre L ou colorée en Rouge.
Si vous utilisez une fiche 13 amp (BS1363) vous devez utiliser un fusible 13 amp. Si vous utilisez un autre type de prise, installez un fusible 15 amp dans la prise, dans líadaptateur ou dans le tableau de distribution.

Compatibilité électromagnétique - avertissement

La conception d'un haut-parleur et des pickups de guitare est telle qu'ils sont affectés par des champs électromagnétiques ou en émettent les enceintes de haut-parleur Trace Elllot ne devraient pas être utilisées à moins de 2 mètres de l'équipement susceptible d'être affecté par les parasites électromagnétiques.
Les émissions en provenance de haut-parleurs dépendent de la caractéristique fréquentielle de l'émetteur piloté.
De même, les guitares équipées de pickups électromagnétiques ne devraient pas être utilisées à moins de 2 mètres de toute source d'émissions électromagnétiques telles que des haut-parleurs.
Les niveaux ont été mesurés directement à partir des drivers de 30 dBuV.
Ces niveaux sont réduites à un niveau sûr à une distance de 1,27 mètre des drivers.

INSTRUCCIONES DE SEGURIDAD

Advertencia

Para una protección continua contra el riesgo de incendio, reemplace siempre los fusibles con otros del mismo tipo y valor.
Para reducir el riesgo de incendio o descarga eléctrica, no exponga este equipo a la lluvia o a la humedad.
En caso de que sospeche que exista un desperfecto, refiera siempre este equipo a un ingeniero de servicio calificado.
Este aparato debe tener conexión a tierra. Los cables de esta toma se colorean según el código siguiente:-

***Verde & Amarillo* - Tierra** ***Azul* - Neutro** ***Marrón* - Vivo**

Como los colores de los cables de la toma principal de este aparato pueden no corresponder con los colores marcados que identifican los terminales en su enchufe, proceda como se indica a continuación:-
El cable verde y amarillo debe conectarse al terminal del enchufe marcado con la letra E, por el símbolo de tierra, o pintado de verde o verde y amarillo.
El cable azul debe conectarse al terminal marcado con la letra N o pintado de negro.
El cable pintado de marrón debe conectarse al terminal marcado con la letra L o pintado de Rojo.
Si se usa un enchufe de 13 amperios (BS 1363), se deberá poner un fusible de 13 amperios, o un fusible de 15 amperios si se usa cualquier otro tipo de enchufe, ya sea en el enchufe, en el adaptador o en la placa de distribución.

Advertencia EMC (de compatibilidad electromagnética)

Es inherente en el diseño de un altavoz y en el de las pastillas de guitarra que emitan o se vean afectados por campos electro magnéticos. Los recintos de los altavoces Trace Elliot no deberán usarse a menos de 2 metros de distancia de cualquier equipo que pueda ser afectado por interferencias electromagnéticas.
Asimismo, las guitarras que tienen pastillas electromagnéticas no deberán usarse a menos de 2 metros de distancia de ninguna fuente de emisiones electromagnéticas tales como los altavoces.
Las emisiones de los altavoces dependen de la característica de frecuencia del equipo de accionamiento.
Los niveles se midieron directamente desde unidades de accionamiento de 30 dBuV.
Estos niveles se reducen a un nivel seguro a una distancia de 1,27 metros desde las unidades de accionamiento.

SIKKERHETSANVISNINGER

Advarsel!

For å hindre fare for brann må du alltid skifte en røket sikring ut med en av samme type og størrelse.
For å redusere faren for brann eller støt må høyttaleren ikke utsettes for regn eller fuktighet.
Hvis du har den minste mistanke om feil må høyttaleren repareres av en kvalifisert tekniker.
Høyttaleren må jordes. Ledningene har følgende fargekode:

Grønn og gul - jord **Blå - nøytral** **Brun - strømførende.**

Hvis fargekoden ikke stemmer overens med støpselets fargekoder, går du frem slik:
Den grønne og gule ledningen må kobles til støpselets terminal merket E eller med jord–symbolet, eller farget grønn og gul.Den blå ledningen må kobles til terminalen merket N eller farget sort.Den brune ledningen må kobles til terminalen merket L eller farget rød.Høyttaleren må kobles til en 16 ampere krets.

Advarsel – elektromagnetisk forenlighet

Alle høyttalere og pick–up'er til gitarer gir nødvendigvis fra seg eller påvirkes av elektromagnetiske felter. Trace Elliot–høyttalerkabinetter må ikke brukes mindre enn 2 m fra utstyr som trolig kan påvirkes av elektromagnetisk støy.
Gitarer med elektromagnetisk pick–up må likeledes ikke brukes mindre enn 2 m fra en elektromagnetisk kilde, som f.eks. høyttalere.Utstrålingen fra en høyttaler avhenger av frekvenskarakteristikken til driver–enheten.Nivåene ble målt direkte fra utganger på 30 dBuV.
Disse nivåene faller til et trygt nivå i en avstand av 1,27 m fra utgangene.

VEILIGHEIDSVOORSCHRIFTEN

Waarschuwing

Voor bestendige bescherming tegen het gevaar van brand dienen zekeringen alleen vervangen te worden met zekeringen van hetzelfde type en van dezelfde waarde.
Om het risico van brand of elektrische schok te verminderen, wordt aanbevolen dat de uitrusting niet wordt blootgesteld aan regen of vocht.
In het geval van een verdacht defect dient altijd de hulp ingeroepen te worden van een bevoegde onderhoudsmonteur.
Deze apparatuur moet geaard worden. De draden in deze netspanning zijn gekleurd in overeenstemming met de volgende code:

Groen & Geel - Aardverbinding **Blauw - Neutraal** **Brown - Stroomvoerend**

Daar de kleuren van de draden in de netspanning niet overeenkomen met de gekleurde markeringen van de klemmen in uw stekker, dient u als volgt te werk te gaan:
De Groen & Geel gekleurde draad dient verbonden te worden met de klem in de stekker die gemarkeerd is met de letter E of met het aardesymbool of groen of Groen en Geel gekleurd is.
De Blauwe draad dient verbonden te worden met de klem die gemarkeerd is met de letter N of zwart gekleurd is.
De Bruine Draad dient verbonden te worden met de klem die met de letter L gemarkeerd of Rood gekleurd is.
Wanneer 13 amp. (BS1363) stekker gebruikt wordt dient een 13 amp. zekering aangebracht te worden, wanneer een ander type stekker wordt gebruikt dient een 15 amp. zekering aangebracht te worden in de stekker of adapter of in de verdeelkast.

EMC (Electromagnetic compatibility) [bestendigheid tegen elektromagnetische storingen]
Waarschuwing

Het is inherent in het ontwerp van een luidspreker en in het ontwerp van guitaar tastelementen dat zij elektromagnetische velden emitteren of er door beïnvloed worden. Trace Elliot luidspreker omkastingen dienen niet gebruikt te worden op een afstand van minder dan 2 meter van de uitrusting, daar deze beïnvloed zouden kunnen worden door elektromagnetische storing.
Evenzo dienen guitaren uitgerust met elektromagnetische tastelementen niet gebruikt te worden op een afstand van minder dan 2 meter van een bron van elektromagnetische emissies, zoals luidsprekers.
Emissies van luidsprekers zijn afhankelijk van de frequentie die kenmerkend is voor de aandrijfinrichting.
Niveaus van 30 dBuV werden rechtstreeks van de aandrijvers gemeten. Deze niveaus zijn verminderd tot een veilig niveau op een afstand van 1.27m van de aandrijvers.

SÄKERHETSFÖRESKRIFTER

Varning

För oavbrutet skydd mot brandrisk, byta ut säkringar endast med samma typ av säkring och styrka.
För att minska risken för brand eller elektriska stötar, utsätt inte utrustningen för regn eller fukt.
I händelse av en oförutsedd felaktig funktion så end er alltid en behörig serviceingenjör.
Denna apparat måste vara jordad. Ledningarna i stickproppen har färger enligt följande kod:

Grön och gul - Jordning **Blå - Neutral** **Brun - Spänningsförande**

Eftersom färgerna i apparatens sladd kanske inte överensstämmer med färgmarkeringarna som identifierar terminalerna i stickproppen, gör enligt följande:
Den ledning som är grön och gul måste anslutas till den terminal i stickproppen som markeras med bokstaven E eller genom jordsymbolen eller grön och gul färg.
Den ledning som är blå måste anslutas till den terminal som är markerad med bokstaven N eller svart färg.
Den ledning som är brun måste anslutas till den terminal som är markerad med bokstaven L eller röd färg.
Om en A 13 amp (BS1363) stickpropp används måste en 13 amp säkring användas eller om någon annan sorts stickpropp används måste en 15 amp säkring användas i stickproppen eller i en förgreningspropp eller i fördelningstavla.

Emissionsströmsvarning

Det är ingår i konstruktionen på högtalare och gitarrers pick-uper att de skall påverkas av elektromagnetiska fält. Trace Elliots högtalarlådor skall inte användas närmare än 2 meter från utrustning som kan påverkas av elektromagnetiska störningar.
Gitarrer som har elektromagnetiska pick-uper monterade skall heller inte användas mindre än två meter bort från någon källa med elektromagnetisk emission, som t ex högtalare.
Emissionen från högtalare beror på drivenhetens frekensfunktion.
Nivåer uppmätta direkt från drivenheten var på 30 dBuV.
Dessa nivåer reduceras till en säker nivå på ett end av 1,27 meter från drivenheterna.

TURVAOHJEET

Varoitus

Palovaaran välttämiseksi käytä aina samantyyppisiä ja -tehoisia sulakkeita.
Vähentääkseksi tulipalo- ja sähköiskuvaaraa pidä tämä laite poissa sateesta äläkä altista sitä kosteudelle.
Jos epäilet laitteen toimivan virheellisesti, ota aina yhteys ammattitaitoiseen huoltohenkilöön.
Tämä laite täytyy maattaa. Tämän laitteen johdot on koodattu seuraavasti:

Vihreä & keltainen - maa **Sininen - neutraali** **Ruskea - jännitteinen**

Koska tämän laitteen verkkojohdon värit saattavat erota liittimen värimerkinnöistä, toimi seuraavasti:
Vihreä & keltainen johto täytyy yhdistää pistokkeen liittimeen, joka on merkattu E:llä tai maattosymbolilla tai joka on väriltään vihreä tai vihreä ja keltainen.
Sininen johto täytyy yhdistää liittimeen, joka on merkattu N-kirjaimella tai joka on väriltään musta.
Ruskea johto täytyy yhdistää liittimeen, joka on merkattu L-kirjaimella tai joka on punainen.
Käytettäessä 13 ampeerin (BS1363) pistoketta täytyy siihen laittaa 13 ampeerin sulake. Jonkin muun tyyppistä pistoketta käytettäessä täytyy 15 ampeerin sulake laittaa joko pistokkeeseen, adapteriin tai jakelutauluun.

Sähkömagneettista virtaa koskeva varoitus

Kaiuttimien ja kitaran mikrofonin suunnitteluun kuuluu lunnostaan se, että
niiden tulee säteillä sähkömagneettista kenttää tai tämän tulee vaikuttaa niihin. Trace Elliot -kaiuttimia ei saisi käyttää 2 metriä lähempänä sellaisia laitteita joihin sähkömagneettinen kenttä vaikuttaa häiritsevästi.
Myöskään kitaroita, joissa on sähkömagneettiset mikrofonit ei saisi käyttää 2 metriä lähempänä mitään sähkömagneettista lähdettä, kuten kaiutinta.
Kaiuttimien päästöjen voimakkuudet ovat riippuvaisia teholähteen taajuudesta.
Voimakkuustasot mitattiin suoraan 30 dBuV:n lähteestä.
Nämä tasot laskevat turvalliselle tasolle oltaessa 1, 27 metrin etäisyydellä teholähteestä.

INSTRUÇÕES DE SEGURANÇA

Aviso

Para protecção contÌnua contra o risco de fogo, substitua os fusíveis só com fusíveis do mesmo tipo e taxação.
Para reduzir o risco de fogo ou de choque elèctrico, não exponha este equipamaento a chuva ou humidade.
No caso de suspeita de mau funcionamento, consulte sempre um mecânico de serviço devidamente qualificado.
Este aparelho deve ser ligado à terra. Os fios neste sector são coloridos em conformidade com o seguinte código:-

Verde e Amarelo - Terra **Azul - Neutro** **Castanho - Vivo**

No caso das cores dos fios no cabo deste aparelho não corresponderem com as marcações em cor que identificam os terminais na ficha proceda como se segue:-
O fio Verde e Amarelo deve ser ligado ao terminal na ficha marcado com a letra E ou pelo simbolo à terra ou com a cor verde ou Verde e Amarela.
O fio Azul deve ser ligado ao terminal marcado com a letra N ou com a cor Preta.
O fio castanho deve ser ligado ao terminal marcado com a letra L ou com a cor Vermelha.
Se for usada uma ficha de 13 amp (BS1363) deve ser montado um fusível de 13 amp, se for usada qualquer outro tipo de ficha tem de ser montado um fusível de 15 amp ou na ficha, ou no adaptador ou no quadro de distribuição.

Aviso CEM

É inerente ao design de alto-falantes e ao design de reprodutores de guitarras que devem emitir ou ser afectados por campos electromagnéticos. As coberturas dos alto-falantas Trace Elliot não devem ser usadas a menos de 2 metros do equipamento que pode ser afectado pela interferíncia electromagnética.
Igualmente, as guitarras equipadas com reprodutores electromagnéticos não devem ser usadas a menos de 2 metros da fonte de emissões electromagnéticas tais como alto-falantes.
As emissões dos alto-falantes dependem da característica de frequíncia da unidade accionadora.
Os níveis foram medidos directamente de accionadores de 30 dBuV.
Estes níveis são reduzidos para um nível seguro a uma distância de 1,27m dos accionadores.

ISTRUZIONI PER LA SICUREZZA

Avvertenza

Per assicurarsi di essere sempre protetti contro il rischio di incendi, sostituire i fusibili soltanto con altri dello stesso tipo e potenza.
Non esporre l'attrezzatura alla pioggia o umidità per ridurre il rischio di incendi o shock elettrici.
Se si sospetta una malfunzione, consultare sempre un tecnico esperto in questo settore.
L'attrezzatura deve essere messa a terra. I fili sono stati colorati secondo il codice seguente:

Giallo e verde - Terra **Blu - Neutro** **Marrone - Sotto tensione**

Dato che i colori dei fili nel cavo elettrico del prodotto possono non corrispondere ai segni colorati che identificano i terminali della spina, procedere come segue:–

Il filo di color giallo e verde deve essere collegato al terminale nella spina marcata con la lettera E o con il simbolo terra, oppure di colore verde o verde e giallo.
Il filo di colore blu deve essere collegato al terminale che mostra la lettera N oppure di color nero.
Il filo di color marrone deve essere collegato al terminale che mostra la lettera L oppure di color rosso.
Con una una spina di 13 amp (BS1363), si deve usare un fusibile di 13 amp. Con qualsiasi altro tipo di spina inserire un fusibile di 15 amp nella spina, nell'adattatore o nel quadro di distribuzione.

Avvertenza EMC (per la compatibilità elettromagnetica)

Nel design di altoparlanti o di fonorivelatori di una chitarra, è inerente il fatto che raccoglieranno o saranno influenzati da campi elettromagnetici. Le custodie per altoparlanti Trace Elliott non dovrebbero essere poste lontano meno di 2 metri dall'attrezzatura che potrebbe risentire dell'interferenza elettromagnetica.
Allo stesso modo, non usare le chitarre con fonorivelatori elettromagnetici ad una lontananza inferiore a 2 metri da qualsiasi sorgente di emissioni elettromagnetiche come altoparlanti.
Le emissioni da altoparlanti dipendono dalla caratteristica di frequenza dell'unità di comando.
I livelli sono stati misurati direttamente da unità di comando di 30 dBuV; il livello sicuro è ad una distanza di 1,27 metri dalle unità.

SIKKERHEDSINSTRUKTIONER

Advarsel

For vedvarende beskyttelse imod risikoen for brand, må sikringerne kun udskiftes med sikringer af samme type og størrelse.
For at reducere risikoen for brand og elektrisk chok må dette udstyr ikke udsættes for regn eller fugt.
Hvis man har mistanke om, at der er en fejl i udstyret, skal man altid henvende sig til en faguddannet servicetekniker.
Dette apparat skal have jordforbindelse. Lederne i el–ledningen er farvet efter følgende kode:

Grøn og gul - Jord **Blå - Nulleder** **Brun - Spændingsførende**

Fordi ledernes farver i dette apparats el–ledning evt. ikke svarer til de farvede afmærkninger, der identificerer klemmerne i stikket, skal man gå frem på følgende måde:
Den leder, som er farvet grøn/gul, skal forbindes med klemmen i stikket, der er afmærket med bogstavet E eller med jordsymbolet eller som er grøn eller grøn/gul.
Den blå ledning skal forbindes med den klemme, der er afmærket med bogstavet N eller som er sort.
Den brune ledning skal forbindes med den klemme, der er afmærket med bogstavet L eller som er rød.
Hvis der anvendes et 13A (BS1363) stik, skal der monteres en 13A sikring. Hvis der anvendes en anden type stik, skal der sættes en 15A sikring i stikket eller snydeproppen eller på strømfordelingstavlen.

EMC advarsel

Højttalere og guitar–pickups er konstrueret således, at de udsender eller påvirkes af elektromagnetiske felter. Trace Elliot højttalerkabinetter må ikke placeres mindre end 2 meter fra udstyr, der sandsynligvis vil blive påvirket af elektromagnetiske forstyrrelser.
Ligeledes bør guitarer, som er udstyret med elektromagnetiske pickups, ikke anvendes mindre end 2 meter væk fra en kilde til elektromagnetiske emissioner som f.eks. højttalere.
Emissioner fra højttalere afhænger af drivaggregatets frekvens. Niveauer måles direkte fra drivaggregater på 30 dBuV.
Disse niveauer reduceres til et sikkert niveau i en afstand af 1,27 m fra drivaggregaterne.

ÖRYGGISRÁÐSTAFANIR.

Aðvörun.

Viðvarandi vernd gegn eldhættu gerir nauðsynlegt að endurnýja öryggi einvörðungu með nákvæmlega samskonar öryggjum.
Til að draga úr eldhættu eða því að fá rafstraum ber að gæta þess að rigning eða komist ekki að tækinu.
Ef grunur leikur á bilun ber jafnan að leita til löggilts viðgerðarmanns.
Tækið verður að vera jarðtengt. Leiðslurnar í rafmagnið eru litaðar samkvæmt eftirfarandi kerfi:

Grænar og gular - jörð **Blaár - núll** **Brúnar - straumur**

Með því litirnir á leiðslum tækisins kunna að vera í ósamræmi við litamerkingar á innstungu yðar ber að fara pannig að:
Leiðsluna, sem er græn og gul, ber að tengja í innstungu par sem merkt er E eða jörð eða er græn og gul að lit.
Leiðsluna, sem er blá, ber að tengja í klemmuna par sem merkt er N eða sem er svört.
Leiðsluna, sem er brún, ber að tengja í klemmuna par sem merkt er L eða sem er rauð.
Ef A 13 amp. (BS1363) innstunga er notuð ber að hafa 13 amp. öryggi eða ef önnur innstungugerð er notuð ber að hafa 15 amp. öryggi annað hvort á innstungunni eða millistykkinu í töflunni.

EMC aðvörun.

það er föst regla við hönnun hátalara og gítargrípa að peir gefi frá sér eða verði fyrir áhrifum af rafsegulsviðm. Trace Elliot hátalarakerfi ætti ekki að nota í innan við 2 metra fjarlægð frá tækjum, sem kynnu að verða fyrir áhrifum rafsegultruflana.
Ekki ætti heldur að nota gítara með rafsegulgrípa í innan við 2 metra fjarlægð frá hverskyns rafsegulútsendingum eins og hátölurum.
Útsendingar frá hátölurum fara eftir tíðnieinkennum driftækisins.
Hávaðamörkin voru mæld beinlínis frá drifum 30 BuV.
Hægt er að lækka pau að öruggum mörkum í 1.27 metra fjarlægð frá drifunum.

ΟΔΗΓΙΕΣ ΑΣΦΑΛΕΙΑΣ

Προειδοποιη

Για συνεχη προστασία από τον κινδυνο φωτιάς, αβτικαταστήστε τις ασφάλειες μόνο με αοφάλειες του ίδιου τύπου και της ίδιας αναλογιας.
Για να μειωσετε τον κίνδυνο της φωτιάς ή την ηλεκτροπληξία, μην εκτίθετε τον εξοπλισμό στη βροχή ή οτην υγρασία.
Σε περίπτωση που υποψιάζεστε κάπιοια δυσλειτουρλία, πάντοτε να παραπέμπετε αυτή το συσκευή σε καταρτισμένο μηχανικό σέρβις.
Η συσκευή αυτή πρέπει να διαθέτει γείωση. Τα σύρματα στην κεντρική παροχή ρεύματος ειναι έγχρωμα σύμφωνα με τον ακόλουθο κωδικό:

Πράσινο & Κιτρινο – Γείωση **Μπλέ – Ουδέτερο** **Καφέ – Ηλεκτροφόρο**

Μια και τα χρώματα στο σύρμα της κεντρικής παροχής αυτής της συσκευής μπορεί να μην αντιστοιχούν με τα έγχρωμα σημάδια που ταυτιζουν τους ακροδέκτες στην πρίζα σας, προχωρήστε ως εξής:–
Το σύρμα που έχει χρώμα Πράσινο & Κιτρινο πρέπει να σονδέεται με τον ακροδέκτη στην πρίζα που είναι σημειωμένος με το γράμμα Ε ή με το σύμβολο γείωσης ή με το πράσινο χρώμα ή με το Πράσινο & Κίτρινο.
Το αύρμα που έχει χρώμα Μπλε πρέπει να συνδέεται στον ακροδέκτη που είναι σημειωμένος με το γράμμα Ν ή το Μαύρο χρώμα.
Το σύρμα που έχει χρώμα Καφέ πρέπει να συνδέεται με τον ακροδέκτη που έιναι σημειωμένος με το γράμμα L ή το Κόκκινο χπώμα.
Εάν ξρησιμοποιείται πρίζα Α 13 αμπέρ (BS1363) θα πρέπει να εφαρμόζεται ασφάλεια των 13 αμπέρ, ή εάν χρησιμοποιείται οποιοδήποτε άλλο είδος πρίζας θα πρέπει να εφαρμόζεται ασφάλεια των 15 αμπέρ είτε στην πρίζα ή στο μετασχηματιστή ή στον πίνακα διανομής.

Προειδιποιηση της ΕΜC

Ει΄ναι αναγκαίο όπως στο σχέδιο του μεγαφώνου και στο σχέδιο πικάπ κιθάρας πρέπει να εκπέμπουν ή να επηρεάζονται από τα ηλεκτρομαγνητικά πεδία. Τα εσώκλειστα μελαφώνου της TRACE ELLIOT να μην χρησιμοποιούνται λιγότερο απο 2 μέτρα μακριά από το συσκευή που πιθανόν να επηρεάζονταιι από ηλεκτρομαγνητική παρέμβαση.
Επίοης, οι κιθάρες που εφαρμόζονται με ηλεκρρομαγνητικά πικάπς δεω πρέπει να χρησιμοποιούνται λιγότερο από 2 μέτρα απόσταση από πηγή ηλεκτρομαγνητικής εκπομπής, όπως τα μεγάφωνα.
Εκπομπές από μεγάφωνα εξαρτώνται από το χαρακτηριστικό της συχνότητας της συσκευής μετάδοσης κίνησης.
Οι βαθμοί καταμετρήθηκαν απευθείας από το επιπεδο οδηγού των 30 dBuV.
Αυτα τά επίπεδα μειώνονται για ασφαλές επίπεδο σε ασφαλή βαθμό απόστασης 1,27 μέτρα από τους οδηγούς.