

amp one



Register your
amp one:
www.aer-amps.com
> product registration

amp one

user manual

Contents	Page
1. Introduction	3
2. Safety Instructions	4
3. Controls and Connections	4
3.1 Front Side	4
3.2 Rear Side	5
4. Starting-up	6
4.1 Cabling and Switching-on	6
4.2 Level Adjustment	6
5. Functional Characteristics	7
5.1 Mute	7
5.2 Tone Control Networks	7
5.2.1 colour	7
5.2.2 bass boost	7
5.2.3 parametric equalizer	7
5.2.4 tone balance	7 - 8
5.3 Compressor	8
5.4 Rear Side Features	9
6. Technical Specifications	10
7. Circuit Diagram	11



1. Introduction

Welcome to **AER**!

Thank you for choosing the **amp one** out of the **AER bottom-line-series**.

This series has been specially developed for the modern bass player who values performance, versatility and easy handling.

Please take a few minutes to read through these instructions. We want you to understand just what the **amp one** can do and how to set it up so that you can get maximum benefit out of it.

The **amp one** is an „all-rounder“, designed for the „Top 40“ bassist who is used to switch between several styles and who sets value on weight, dimensions and easy operation. The 10-inch high performance bass-loudspeaker supports this versatility whilst simultaneously adding some tube-like compression. The design of the power-amp especially supports the impulse response and provides impressive power at short term, exceeding significantly the specified 200 W on 8 ohm, which you can clearly hear.

Amp one is professionally and richly equipped and, of course, it produces the unmistakable **AER** sound character. Technically speaking, the **amp one** is designed for high-impact and extreme dynamics. From the musical point of view, the bass combo is clear, differentiated, assertive, punchy and inspiring.

At this point we would like to thank Paul Sips for his „final blessings“.

Read on and have fun with your **amp one**!

2. Safety Instructions

The following instructions help to minimize the risk of injury through fire and electric shock.

1. Read these safety instructions carefully prior to using the device.
2. Keep these safety instructions in a safe place.
3. Do not install or use your device in close proximity to water, liquids or with wet hands!
4. Use your device in a safe place where nobody can step on cables or trip over them – damaging the cables, the device or themselves!
5. Pay attention to air flow and cooling – never obstruct any air vents or grilles or cover it and allow it to overheat.
6. Unplug from the mains before cleaning the device. Use only a dry cloth for cleaning – no detergents or cleansers – ensure that no liquid ever enters the unit.

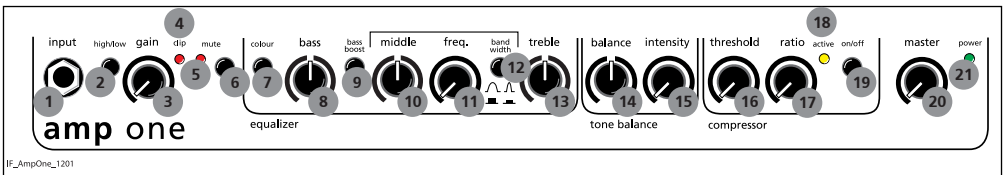
7. Never install your device close to devices with strong electromagnetic fields such as large mains transformers, electrical motors, neon illumination etc. Do not lay signal cables parallel to power current cables.

8. There are no user-serviceable components inside your device. To avoid the hazard of an electric shock, the unit must not be opened. All maintenance, adjustment and repair work must be performed by qualified technicians only. Any unauthorized tampering will void the 2-year warranty.

9. To comply with the EMV requirements, shielded cables with correctly fitted connectors must be used for all signal connections.

10. Please connect audio connections before powering the unit.

3. Controls and Connections



3.1 Front Side

- | | |
|---|--|
| <p>1) input
2) high/low
3) gain
4) clip
5) mute LED
6) mute</p> | <p>signal input - socket für 6.3 mm mono jackplug
input sensitivity switch, attenuator: <input type="checkbox"/> deactivated <input type="checkbox"/> active
input level control
overload indicator
channel mute indicator
channel mute switch: <input type="checkbox"/> deactivated <input type="checkbox"/> active</p> |
|---|--|

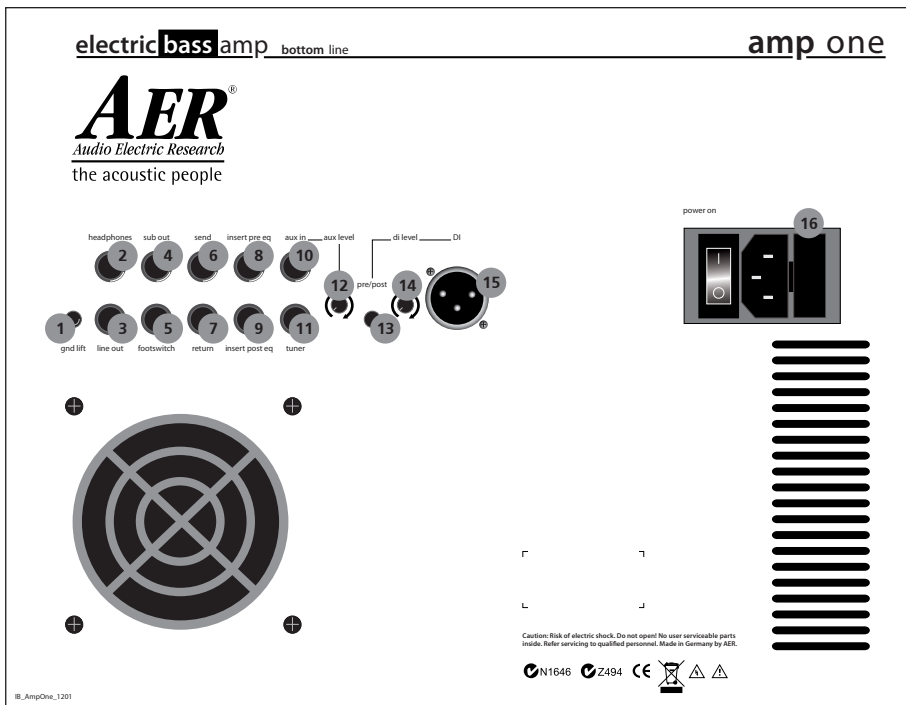
- | | | |
|--|--|------------------|
| <p>7) colour
8) bass
9) bass boost
10) middle
11) freq.
12) bandwidth
13) treble</p> | <p>tone colour filter activation switch: <input type="checkbox"/> deactivated <input type="checkbox"/> active
low frequency level control
low frequency boost: <input type="checkbox"/> deactivated <input type="checkbox"/> active
middle frequency level control
middle frequency control
middle bandwidth switch
treble frequency level control</p> | <p>equalizer</p> |
|--|--|------------------|

- | | | |
|--------------------------------------|---|---------------------|
| <p>14) balance
15) intensity</p> | <p>tone balance emphasis control
tone balance level control</p> | <p>tone balance</p> |
|--------------------------------------|---|---------------------|

16) threshold threshold control input signal
 17) ratio compression ratio control
 18) active compressor active mode indicator
 19) on/off compressor activation switch: deactivated active

compressor

20) master master level control
 21) power on/off status indicator



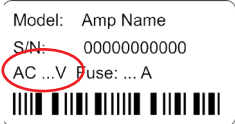
3.2 Rear Side

- | | |
|-------------------|--|
| 1) gnd lift | signal-/protective-ground disconnecting switch: <input type="checkbox"/> deactivated <input type="checkbox"/> active |
| 2) headphones | stereo headphones socket |
| 3) line out | signal output socket |
| 4) sub out | subwoofer output socket |
| 5) footswitch | stereo footswitch socket (on/off-switch) |
| 6) send | effects output socket |
| 7) return | effects input socket |
| 8) insert pre eq | insert socket pre equalizer |
| 9) insert post eq | insert socket post equalizer |
| 10) aux-in | stereo input socket for additional signal sources (e.g. for CD player) |
| 11) tuner | tuner output socket |
| 12) aux level | aux signal level control |
| 13) DI pre/post | DI signal sequence switch <input type="checkbox"/> pre <input type="checkbox"/> post equalizer |
| 14) DI-level | DI signal level control |
| 15) DI-out | signal output, symmetrical, XLR socket |
| 16) power on | power on/off switch with fuse holder (ref. to technical data: mains fuse) |

4. Starting up

4.1 Cabling and Switching on

Before connecting to the mains, please ensure that your local mains voltage is suitable for the voltage of the device (e.g. 120V in the USA, 230V in Europe). The relevant specs and safety symbols are printed on the rear side of the unit.



Connect all cables as desired and switch the amplifier on. The green **power** control LED indicates operational readiness.

Just like the **gain** control, the **high/low** switch (attenuator de-/activation) also serves to adjust the signal. Start at **high** with the switch not pressed down. If the input signal is too strong and you cannot avoid clipping even when you adjust with the **gain** control, then select the **low** setting.

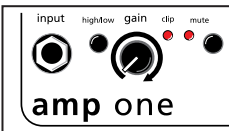
When you have adjusted the sound level, then you can set the desired final volume with the **master** control.

4.2 Level Adjustment

Note: Level adjustment

By setting the level correctly we mean the signal level in one or several devices in a signal chain is neither too high nor too low. This applies equally to all components of a unit (e.g. **equalizer**, **tone balance**, **compressor**).

Consequently, care must be taken that no part of the circuit is overloaded or that distortion is unintentionally added to the signal. We have carefully designed the circuit to achieve this objective whilst also providing controls (**gain**, **master**, **level**) for manual intervention.



First ensure, that the **mute** switch is deactivated and the **master** level control is zeroed (over to far left), so that the signal passes through the electronics

but does not reach the loudspeaker, while you are adjusting the level.

Turn the **gain** control clockwise until the red **clip** indicator flashes momentarily when playing with a strong attack. Thus you make sure that your signal source (e.g. instrument) provides the input-stage of the amplifier with the necessary input level.

An illuminated **clip**-LED indicates an overload. A short flicker is no danger to AER devices. During operation a short flicker can be accepted, to be on the safe side you should reduce the **gain** slightly to achieve an optimal and distortion-free performance.



5. Functional Characteristics

5.1 Mute

The **mute** switch turns the appliance to mute as required. The function can also be activated by a standard footswitch (on/off switch).

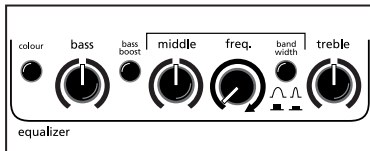
5.2 Tone Control Networks

As with all AER products, the **amp three** is fitted with an excellent basic tone thanks to the selection of components, circuits and pre-equalizations. In addition, various equalizer networks enable you to adjust the basic tone to suit your personal requirements. With **amp three** you can activate fixed filters (**colour**, **bass boost**) and two adjustable filter networks (**equalizer** and **tone balance**).

Note:

Basically, instruments reproduce their typical frequency spectrum, but this is not necessarily what you want, or there are some sounds you want, which the instrument doesn't „naturally“ reproduce or can play, but not in the appropriate ratio. There are all kinds of electronics can make these things possible, but in certain circumstances the price you have to pay can be a bad signal-to-noise ratio.

In this case the advice is quite simple: in general, go easy with the many equalizer possibilities. Sometimes less is more!



5.2.1 Colour

The **colour** switch activates a fixed, pre-set contouring „voicing“-filter, which reduces mids slightly at 360 Hz and strongly emphasises trebles at 3.8 KHz.

5.2.2 Bass Boost

The **bass boost** strengthens the low frequencies at 55Hz. This gives the **amp three** enormous sound pressure, so that it produces rich bass tones both when it is placed on the ground and on a stand.

5.2.3 Parametric Equalizer

With the **amp three** 3-band equalizer, **bass** and **treble** are fixed, the sensitive mids band can be adjusted in the frequency range of 200 Hz to 2 kHz. The bandwidth is adjustable between 1 octave resp. 1.6 octaves. It remains constant whatever the selected frequency.

Note:

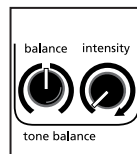
A **parametric equalizer** is a filter network in which all the parameters of a filter (amplitude/level i.e. increase or decrease; frequency i.e. tone pitch, Q-factor/**bandwidth** i.e. filter quality) are adjustable.

This means that increase and decrease, position and width of the frequency range can be adjusted independently and over a wide range.

In this way, the **parametric equalizer** enables you to equalize frequency response errors – hence the name **equalizer** – and to combat feedback and resonance rises. On the other hand you can use it as a flexible tool to change specific tones.

5.2.4 Tone balance –

How does it work?



The tone balance is served by the two controls **balance** and **intensity**. The **intensity** control determines the degree to which bass and treble are increased simultaneously and are mixed to the original signal (parallel mode). If the **intensity** control is far over to the left (**min**), then the original signal is not influenced (**flat**). (see fig. above) Turning the control to the right (--> **mid** --> **max**) mixes the relevant bass and treble mix to the original signal.

The **balance** control influences the relationship between bass and treble. If it is in middle setting, bass and treble are balanced. The **tone balance** is now in equation. (siehe Fig. 1)

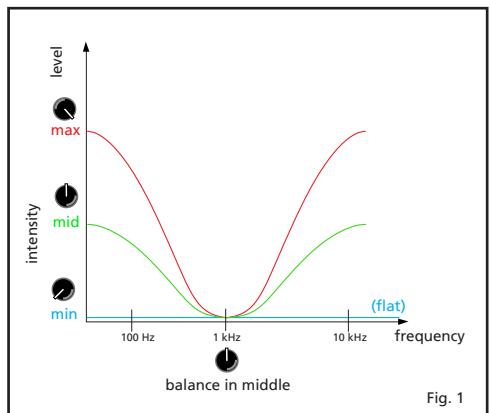


Fig. 1

If you turn the **balance** control to the left (Fig. 2), the bass range is further increased, but the treble is decreased by max. 0dB.

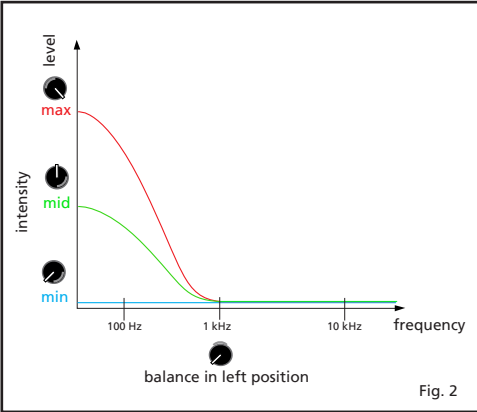


Fig. 2

A turning to the right (Fig. 3) affects an increase in treble whilst at the same time reducing the bass.

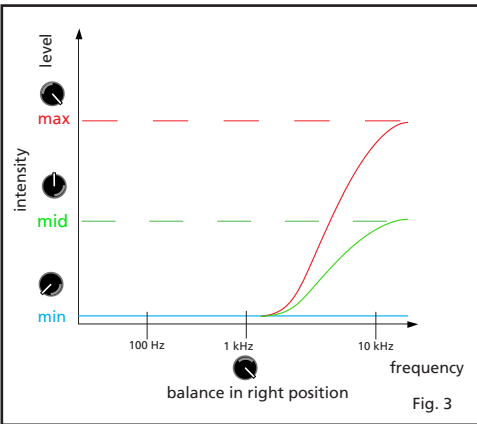
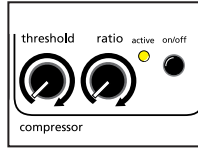


Fig. 3

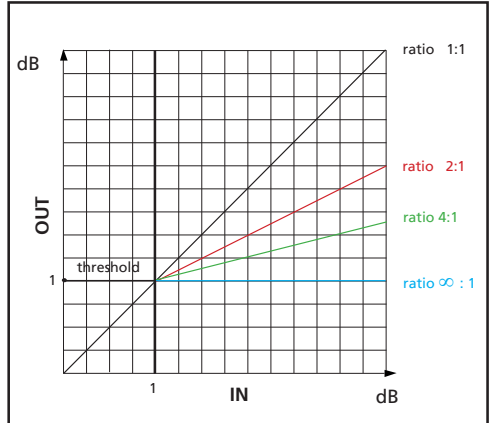
In its function and signal path the **tone balance** is deliberately designed as a somewhat „different“ **equalizer**. It offers a comfortable way of giving the original signal more zip without distorting it. Especially on those occasions, when the **equalizer** has to be used to suppress resonance or feedback.



5.3 Compressor

A compressor is an electrical circuit (a device) which you can use to influence the dynamic behaviour of a signal. The aim can be, for example, to minimise the risk of distortion.

In use the signal level change can be kept constant at a set **ratio** from a set **threshold**. The following figure illustrates the correlation.



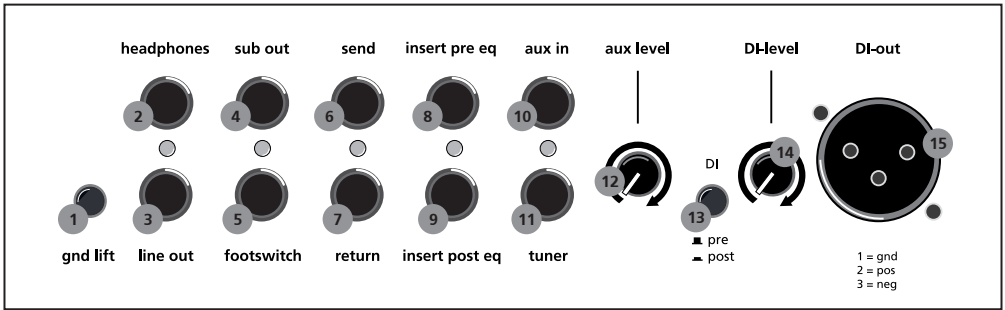
On axes the input level (X axis = **IN**) and the output level (Y axis = **OUT**) are shown in dB.

Along the 45° line the input and output levels are the same – that means a compression (**ratio**) of **1:1** – therefore: no compression.

A compression of e.g. **ratio 4:1** means that further increase in level above the **threshold** will be maintained at a constant ratio of 4:1. In other words: if the input level increases by a factor 4, then the output level only increases by a factor 1.

This means that loud signals are muffled and the overall signal level becomes quieter. This difference in level can mostly be compensated by increasing the **master** setting without any difficulty. Then the signal is louder and more compressed in total, because soft and loud signals come closer together.

For a compression ratio of „infinite“ to 1 (**ratio ∞ : 1**) we no longer talk about compression, but about limiting. Die AER compressor switch here offers compression ratios of 1:1 to 5:1.



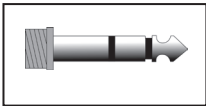
5.4 Rear Side Features

1) gnd lift

The **ground lift** switch separates the earth conductor from the signal ground and suppresses humming.

2) headphones

This output enables you to connect **stereo headphones** and switches the loudspeaker over to mute. The device is a quality stereo headset amplifier which outputs 2 x 50 mW and 32 Ohm.



!!!Warning: Only use headphones with stereo jack plugs in this output socket!!!

3) line out

The **line out** provides the pre-amp signal for conduction to other appliances with 0 dBV.

4) sub out

This socket provides a frequency-adjusted output signal for operating an active **subwoofer**.

5) footswitch

The **footswitch** socket enables the connection of a stereo footswitch (on/off switch) which can be used to switch the amplifier to **mute** or to switch the **effect loop** on or off. The switches are: **TIP = mute**, **RING = effect loop**.

6) send

This socket connects the **amp three** to the input of an external effect device. Together with **return**, **send** forms an effect loop path. The effect can be switched on or off via a footswitch.

7) return

Being part of the effect loop path, **return** represents the input for an external effect device (from the output of the effect device). **Return** on it's own may also be used as quasi auxiliary signal input (-10 dBV).

8 and 9) insert pre eq / insert post eq

Insert pre/post eq are two more effect loop paths to loop additional external effects (filter, compressor etc.) into the signal path, either **pre** or **post** equalization.

10 and 12) aux in / aux level

The **aux in** is an additional stereo-input for connection of external signal sources (e.g. CD-player). With the **aux level** control you adjust the signal strength of the **aux** signal.

11) tuner

Output socket (-6 dBV) with **pre master** signal to connect an external tuner to the **amp three**.

13, 14 and 15) DI

The **DI-out** (XLR socket) delivers a symmetrical pre-amp signal **pre master**. The **DI-Level** control adjusts the signal output level and with the **DI pre/post** switch you can choose between pre- and post-equalizer signal.

Power on



Combined mains switch with mains socket and integrated fuse holder to switch your **amp three** on and off.

P.S.: For questions or suggestions contact us: tachauch@aer-amps.com

6. Technical Data

Inputs (notes 1, 4)	
input	High-impedance instrument input Mono jack, ¼" (6.35 mm) Sensitivity: 21 mV (-34 dBV) Impedance: 1 Megohm Equivalent input noise: 1.4 µV (-117 dBV), A-weighted high / low switch: 10 dB attenuation clip indicator: 8 dB headroom
aux in	Stereo jack, ¼" (6.35 mm) L + R mixed and added pre master, but after tone controls. Level control. Sensitivity: 2 x 170 mV (-15 dBV) Impedance: 22 k (each channel)
return	Return for external, parallel effect loop Mono jack socket, ¼" (6.35 mm) Sensitivity: 360 mV (-9 dBV) Impedance: 10 k
Outputs (note 2)	
headphones	Headphones output. When connected, internal speaker is muted. Stereo jack, ¼" (6.35 mm) Output power: max. 100 mW into 32 ohms Input sensitivity for 2 x 50 mW / 32 ohms: 25 mV (-32 dBV) at instrument input <u>For stereo headphones only. Connecting mono plugs causes overload and may damage the amp.</u>
line out	Preamp output, post master (note 6) Mono jack, ¼" (6.35 mm) Output voltage: 1.9 V (+6 dBV)
sub out	Subwoofer output without filter Mono jack, ¼" (6.35 mm) Output voltage: 1.9 V (+6 dBV)
send	Send for parallel effect loop Mono jack, ¼" (6.35 mm) Output voltage: 760 mV (-2 dBV)
tuner	Tuner output, not affected by mute Mono jack, ¼" (6.35 mm) Output voltage: 800 mV (-2 dBV)
DI out	Balanced XLR output, pre-master, switchable pre or post tone controls / effect / aux (note 6). Output voltage (adjustable): 33...330 mV (-30 dBV ... -10 dBV)
Insert points	
insert pre eq	Insert loop before tone controls and compressor Stereo jack, ¼" (6.35 mm) Output voltage: 800 mV (-2 dBV) tip = send, ring = return
insert post eq	Insert loop after tone controls Stereo jack, ¼" (6.35 mm) Output voltage: 760 mV (-2 dBV) tip = send, ring = return
Footswitch connections	
footswitch	Stereo jack, ¼" for dual footswitch tip = switch for input muting ring = on/off switch for external effect loop (send and return) sleeve = common (ground) mute switch disabled when footswitch is plugged in
Tone controls	
colour	-1 dB at 360 Hz, +14 dB at 3.8 kHz
bass	±9 dB at 80 Hz
bass boost	+10 dB at 55 Hz
middle	±15 dB at 200...2000 Hz (adjustable) Bandwidth (switchable, note 3): wide: 1.6 octaves narrow: 0.6 octaves
treble	±12 dB at 6 kHz

tone balance	Flat if Intensity is set fully anticlockwise. The following values apply if Intensity is set fully clockwise: balance left: +12 dB at 50 Hz balance center: +9 dB at 50 Hz, and +10 dB at 10 kHz balance right: -2 dB at 50 Hz, and +11 dB at 10 kHz (shelf-type frequency response)
Compressor (note 5)	
Characteristics	Soft-knee, RMS-responding, gain reduction
Threshold adjustment range	≈ 0.25 mV...78 mV (-72 dBV ... -22 dBV) at instrument input
Ratio adjustment range	1 : 1 ... 5 : 1
RMS Time constant	40 ms
Indicator LED	Lights up at ca. 1 dB gain reduction.
Power	
Power amp	200 W / 8 ohms, discrete bipolar transistor output. Dynamic range, A-weighted: 102 dB (note 4)
Limiting threshold	160 W
Analog signal processing	Subsonic filter, low distortion RMS limiter
Speaker system	10" (250 mm) woofer, bass reflex enclosure
Mains power	Mains voltage (depending on model): 100, 120, 230, or 240 V AC, 50-60 Hz Power consumption: max. 500 W
Mains fuse	5 x 20 mm slow 3.15 A for 230 and 240 V models slow 6.3 A for 100 and 120 V models
General	
Cabinet	15 mm (0.59") birch plywood
Finish	waterbased acrylic, black spatter finish
Dimensions	325 mm (12.8") high 375 mm (14.8") wide 295 mm (11.6") deep
Weight	13.5 kg (29.8 lbs)

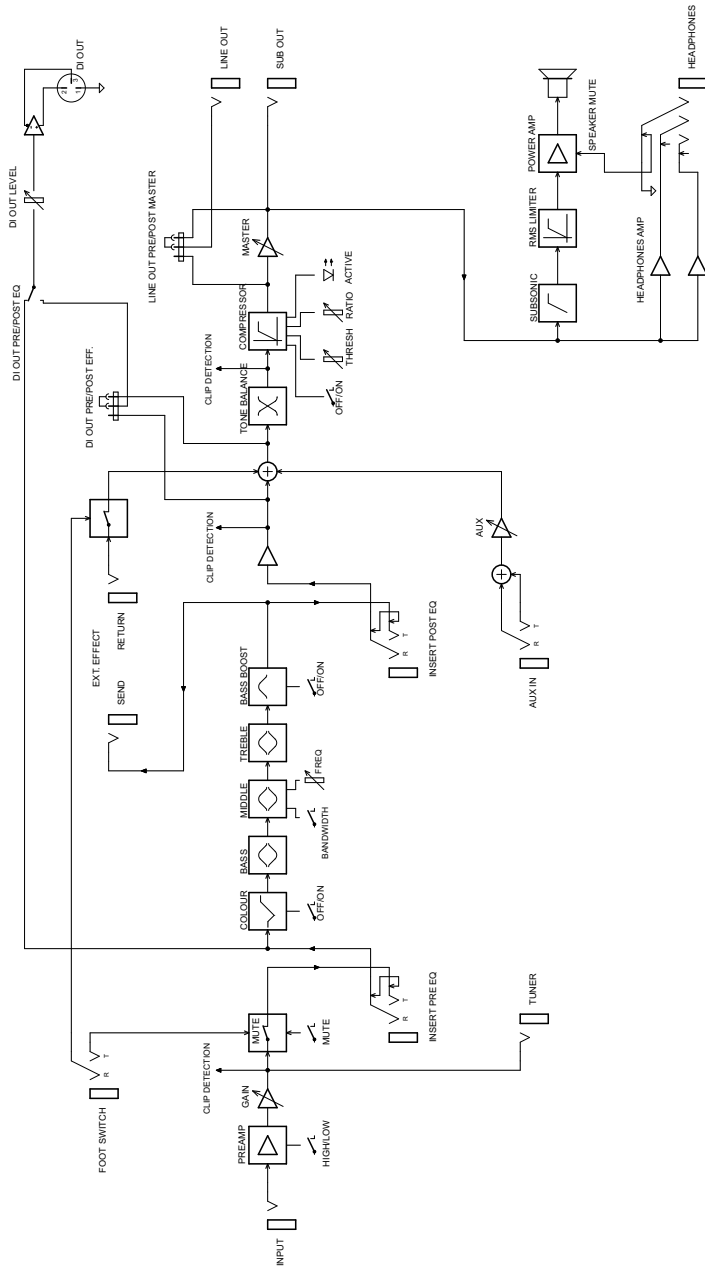
Notes:

- Input sensitivities refer to 160 watts into 8 ohms at full gain and volume settings, neutral tone control settings (**Intensity** fully anticlockwise), and 1 kHz sine-wave test signal.
- Output levels refer to -25dBV (56.2 mV) / 1 kHz at instrument input, unless stated otherwise. Earlier models have a **DI out** adjustable down to zero.
- Bandwidth of tone controls refers to one-half of gain at center frequency, in decibels. For example, if a tone control has 15 dB center gain, then bandwidth refers to the 7.5 dB points.
- Equivalent input noise voltage obtained by measuring noise voltage at speaker output and dividing by the voltage gain of the amplifier for white noise. Full gain and volume settings, neutral tone control settings, input shorted, frequency range 20 Hz - 20 kHz.
Dynamic range of power amplifier is defined as ratio of output voltage at limiter threshold to A-weighted noise voltage at **master** volume in zero position.
- Compressor threshold refers to 1 dB gain reduction and input gain fully clockwise, ratio refers to 20 dB gain reduction. Ratio varies with gain reduction due to soft-knee compression.
- If required, **aux in** and **return** signals can be disconnected from **DI out** by an internal jumper even in the **post** switch position.
line out can be made master-independent by an internal jumper.
Specifications and appearance subject to change without notice.



TD20110627

7. Circuit Diagram



B660725E_20110229

