Bridge-Mode Amplifier A

! INPUT SIGNAL MUST BE BALANCED !

Power Amp A Input
J8

Damping factor reduction
output ballast resistors.

Each side of the bridge-mode
amp "sees" half of the load.
So for 8Ω load it "sees" 4Ω.
The ballast DF resistor
is 4Ω for each side.
The damping factor formula is
load divided by output impedance
of the the amplifier (ballast
resistors dominate here).
So for example: 4Ω load / 4Ω ballast = 1 DF
1 DF or less is similar to a
tube guitar power amplifier.

Resistors are installed
on a heatsink. I even installed
4x of 4r 100W resistors for both
A and B amplifiers on a single
heatsink, it gets warm at proper
volumes but never too hot.
No need for active cooling,
passive cooling is more
than enough.

HS3
DF heatsink

Inductance value is unknown,
probably a tiny one will do,
just for RF.

In a shielded metal case,
one side (radiator top)
is open for fan cooling.

M1
12V cooling fan
Cooling the amps power supply

PS1
3V-12V adjustable power supply

You can adjust fans speed with a knob
or turn them off completely, depending on
how hard you push the amps.
So that you don't need to deal with fan noise
when amps are barely working.

J1
AC power in

With on/off switch
and 3A fuse

J4
±40V / 500W
Switching-Mode Power Supply

Case shield

M2 12V cooler
Amp A heatsink
HS4

Bridge-Mode Amplifier B

! INPUT SIGNAL MUST BE BALANCED !

Power Amp B Input
J2

Damping factor reduction
output ballast resistors.

Each side of the bridge-mode
amp "sees" half of the load.
So for 8Ω load it "sees" 4Ω.
The ballast DF resistor
is 4Ω for each side.
The damping factor formula is
load divided by output impedance
of the the amplifier (ballast
resistors dominate here).
So for example: 4Ω load / 4Ω ballast = 1 DF
1 DF or less is similar to a
tube guitar power amplifier.

Resistors are installed
on a heatsink. I even installed
4x of 4r 100W resistors for both
A and B amplifiers on a single
heatsink, it gets warm at proper
volumes but never too hot.
No need for active cooling,
passive cooling is more
than enough.

HS2
DF heatsink

HS1
Amp B heatsink

M3 12V cooler

TR1
Custom impedance transformer
Primary 8Ω

TR2
Custom impedance transformer
Primary 8Ω

Custom Tector.it impedance transformers.
50W RMS, 50Hz corner frequency.

You connect amplifier speaker output
jack into primary 8Ω port of the transformer.
Connect the speaker load to appropriate
port, 8Ω to 8Ω secondary port, 16Ω speaker
load to 16Ω secondary port.

This way your load for the amp always "looks"
like 8Ω, providing you with predictable
damping factor value.

NEVER TURN ON THE AMPLIFIERS CONNECTED TO
TRANSFORMER PRIMARY WHILE SECONDARY IS
FLOATING (WITHOUT THE LOAD)!
YOU'LL FRY THE TRANSFORMER!

CAB1
SERIES
PARALLEL
CAB2

Cabinet/speaker series/parallel
merging utility ports.

Connect one cabinet to CAB1
and the other to CAB2.
If you want to merge them in parallel
(e.g. 16Ω + 16Ω to get 8Ω merged load)
simply connect the amplifier output
(or the transformer secondary 8Ω port)
to the PARALLEL jack.
If you want them in series
(e.g. 8Ω + 8Ω to get 16Ω merged load)
connect the amplifier output
(or the transformer secondary 16Ω port)
to SERIES jack.

NEVER PLUG BOTH SERIES AND PARALLEL
AT THE SAME TIME!

NEVER TURN ON THE AMPLIFIERS CONNECTED TO
TRANSFORMER PRIMARY WHILE SECONDARY IS
FLOATING (WITHOUT THE LOAD)!
YOU'LL FRY THE TRANSFORMER!

A pair of tweaked Class AB amplifiers
installed into a Blackstar HT-112 OC MK III Box.
The amplifiers have damping factor <=1, which is similiar to a tube power amplifier.
The transformers and output capacitors add sound&feel coloration and some level of sag.

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Title: Wenzel's Powered Guitar Cabinet 2510

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