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**From:** Mark Abbott ([abbottmark@hotmail.com](mailto:abbottmark@hotmail.com))**Date:** 3/24/2002 9:24 AM**Subject:** Favourite Fender Blackface mods?

I am curious about the various Blackface amp mods out there that work.

What is the general recommendations?

Thanks for your assistance.

Yours Sincerely

Mark Abbott.

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**From:** Soundguy**Date:** 3/27/2002 7:52 AM**Subject:** Re: Favourite Fender Blackface mods?

Here is one Mark. This one comes from Dave funk. I Never let this one out of the bag for years so enjoy.

Start with the first input tube of the reverb channel.

Step I

Pin 2 Input from jack (standard 68k,1m)

Pin 3 1.5k,25uf

Pin 6,1,7 Here is the kicker!!!!!! 100k across the tube like a standard marshall cathode follower.

The B+ in at pin 6, From pin 6, 100k to pin 1, then jumper to pin 7.

Pin 8 100k to ground and insert the tone network.

(All the wiring on the tone controls remain stock, do not change,just replace into the cathode follower circuit.)

Step II

The tube I am talking about is reverb send that has all the pins jumpered.1&6 2&7 3&8 That baby

Cut the jumpers to pin 1,2,3 of the tube to free up a stage and leave pins 6,7,8, alone for the reverb.

Pin 2 comes from wiper 2 of the volume pot.

Pin 1 add a 100k plate load resistor.

Pin 3 820ohm,25uf

You are done. This mod Take 10 minutes to do and the results are amazing. I like is mod on twins and supers. This mod really is pure in tone because of two reasons 1. a Low impedance,wide frequency range front end.

Come on other techs give those mods up !!!!!!!

Your # 1 can't keep a secret Nickname Mod Wrecker

SoundGuy

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**From:** Mark Abbott ([abbottmark@hotmail.com](mailto:abbottmark@hotmail.com))  
**Date:** 3/27/2002 10:36 AM  
**Subject:** Re: Thanks SoundGuy

Again thanks for the mod.

This mod may also be possible using a FET as described by R.G. Keen at:

<http://www.geofex.com>

"uses for mosfet in tube amps"

This is more than I was expecting, I thought I would get advice regarding cathode bypass caps, and coupling caps.

I'll give it a go on the weekend and post results.

Yours Sincerely

Mark Abbott.

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**From:** Mark Abbott ([abbottmark@hotmail.com](mailto:abbottmark@hotmail.com))  
**Date:** 4/3/2002 12:42 PM  
**Subject:** Re: PI cap mod?

Has anyone tried the mod where you put a 250pF cap in parallel with the 0.001 to 0.022uF cap coupling into the P.I. stage?

What is the difference in tone?

Yours Sincerely

Mark Abbott.

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**From:** Mike Conner ([rmconner80@hotmail.com](mailto:rmconner80@hotmail.com))  
**Date:** 4/4/2002 12:59 PM  
**Subject:** Re: PI cap mod?

Hey Mark,

Do you know what this might accomplish tonewise?

Mike

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**From:** Mark Abbott ([abbottmark@hotmail.com](mailto:abbottmark@hotmail.com))  
**Date:** 4/9/2002 12:32 PM  
**Subject:** Re: Attn Speedracer, or Trace.

Dear Mike

I first heard of this mod from Trace (Voodoo amps) on an Ampage thread, I also recall Joe Pampel saying he had tried it.

I imagine this mod uses the different discharge rates of the two caps to provide some tonal quality. I think I've heard some HiFi types turn their noses up at this kind of thing saying it "smears" the waveform being reproduced.

I'll just have to try it, and get back to you.

Yours Sincerely

Mark Abbott.

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**From:** SpeedRacer  
**Date:** 4/13/2002 8:46 PM  
**Subject:** Re: Attn Speedracer, or Trace.

Randall Aiken among others took a stab at explaining the phenomenon back a ways. IIRC you're probably hearing a change in the phase shift product when you add that second cap. Most (all?) rolloffs are due to phase shift vs. freq (this is the fundamental mechanism behind EQ), and it's not a linear effect wrt freq and level. Probably has something to do with the "sound" of certain kinds of caps I'd guess. Anyhow I thought it was getting on the fringe to put a tiny pF cap in || with say a .02uF - I mean mathematically it means squat. But Trace came down to the lab and made a believer out of me. Interestingly you see a large mfr like Korg do it in the SLP RI amp. That would give it a little more merit in my book. (eg: you mean we're not crazy???)

But the proof is in the listening. Try it out, try a range of different values and see if you hear it and if you hear it if you like it. In the end, that's all that matters IMHO.

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**From:** SoundGuy  
**Date:** 4/3/2002 3:16 PM  
**Subject:** Re: correction Sorry

Sorry for the mistake. I was writing the mod off the top of my head. The output of the cathode follower goes to the input of the volume, tone network which would be the bright switch. The output comes off the middle leg of the treble control into the extra stage freed up from half the reverb tube. Sorry guys Respond if you have tried the mod just to get some opinions

SoundGuy

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**From:** Steve A. ([steve\\_ahola@yahoo.com](mailto:steve_ahola@yahoo.com))  
**Date:** 4/5/2002 4:53 AM  
**Subject:** Re: correction Sorry

SoundGuy:

*Respond if you have tried the mod just to get some opinions*

The Mesa Boogie Maverick uses a switch on the rhythm channel to drive the tone stack from the anode of the first stage or the cathode of the second stage (they are a dc-coupled pair). I wonder if R Smith borrowed that trick from D Funk???

So the reverb works just fine with only half of the 12AT7 driving it? 2k2 on the cathode is okay? And the Vib channel sounds okay going through the 12AT7 after the volume control? I'm not crazy about 12AT7's for audio circuits... is there a way to use one stage of a 12AX7 to drive the RT?

So what is the end result... a thicker sound?

Sounds like fun... Thanks for posting it!

Steve Ahola

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<b>From:</b>	<b>SoundGuy</b>		
<b>Date:</b>	4/6/2002 10:26 AM		
<b>Subject:</b>	<b>Re: The Tone</b>		

This is the closest thing I have come across to what You could call a SRV Mod. Big, Round and Funky is the best way to describe it. What makes this mod different is a real nice full clean sustain without crunching up like a modern high gain amp. It just sounds like a bad ass vintage amp x10. Some other things to mention.

1. The character of the guitar and pickups stand out and combine with the amp. Very pure sounding.
2. The amount of breakup with this mod comes more from the output of your pickups than turning the amp up.
3. Using an overdrive with the amp works in my opinion the way it should. Very transparent and really adds without having any negative results. It's seem to be "IN STEP" with the gain structure also. A perfect balance that is hard to achieve.
4. Tone controls work Better.

The Difference with this mod is

The amp input is straight into a cathode follower, then right into the tone controls. A very wide frequency response and low impedance driving the front end of the amp.

Hope that helps

SoundGuy

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<b>From:</b>	<b>SoundGuy</b>		
<b>Date:</b>	4/6/2002 10:37 AM		
<b>Subject:</b>	<b>Re: One other Notice</b>		

This mod must be in a fender reverb amp or the you could experience your signal going into cut off in your preamp. Not that anything is funky or out of wack with the mod. The reverb circuit has a loading effect in the circuit and without it will change things.

SoundGUY

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<b>From:</b>	<b>Mark Abbott</b> ( <a href="mailto:abbottmark@hotmail.com">abbottmark@hotmail.com</a> )		
<b>Date:</b>	4/7/2002 12:52 AM		
<b>Subject:</b>	<b>Re: Again thank you.</b>		

Dear SoundGuy

thanks for your assistance.

Yours Sincerely

Mark Abbott.

P.S. I'll have to do a posting about all the mods I've been able to find out about.

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<b>From:</b>	<b>Mark Abbott</b> ( <a href="mailto:abbottmark@hotmail.com">abbottmark@hotmail.com</a> )		
<b>Date:</b>	4/7/2002 12:58 PM		
<b>Subject:</b>	<b>Re: One other Notice</b>		

Dear SoundGuy

Could you please give me another description of this mod.  
Perhaps I'm a bit slow today, but after reading all posts, I'm a little confused as to the order of it all.

Much thanks for the post.

Yours Sincerely

Mark Abbott.

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<b>From:</b>	<b>Mikko</b>		
<b>Date:</b>	4/8/2002 8:48 PM		
<b>Subject:</b>	<b>Re: One other Notice</b>		

So is it bullshit or not?

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<b>From:</b>	<b>SoundGuy</b> ( <a href="mailto:ckemp@aol.com">ckemp@aol.com</a> )		
<b>Date:</b>	4/9/2002 12:49 AM		
<b>Subject:</b>	<b>Re: No Bs</b>		

This mod came from one of my customers who send his Fender Super off to nashville and had it modded by Dave Funk. I have kept this mod to myself for several years because I seriously felt first of all the mod sounded too good just to let everyone have it. Second Dave Funk was still in the amp Business and out of respect I wasnt gonna give away his work. Since then Dave does not in the amp business anymore and it has become lost

knowledge.

One last time for all you guy's who think I am Full of BS. Having a closed mind and not investigating really limits what can be learned.

The Mod

Start With V2 on a Fender Reverb Amp.

Disconnect The wire on pin 8 V2 that runs to pin 8 V1. Give V1 pin 8 it's own 1.5k/25uf.

Make V2 a Cathode Follower with a 100k across the socket. B+ in on pin 6.

Add a 100k to ground on pin 8 of V2 and the tone caps should be 250pf Silver Mica, 100k, .022, .002. This connect to 100k resistor you ran to ground off of pin 8 V2.

V3 which is a 12AT7, remove jumpers off of pin 1,2,3.

V3 pin 3 make 820ohm/25uf

V3 pin 1 add 100k plate load resistor and connect the .02 that go's to the 500pf reverb input cap control

Place a 100pf SM on your bright switch. Place the cap on the legs of the switch, Not one leg of the cap to the switch and one to the volume pot.

Leg one of the volume control runs to the bottom of the bright switch.

The top of the bright switch connects to pin 2 of the volume control and also runs to pin 2 V3.

If you bright switch is wired wrong it will act more like a volume boost than a bright switch.

do theses Details spound like Bs

Take Care

SoundGuy

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<b>From:</b>	<b>Steve A.</b> ( <a href="mailto:steve_ahola@yahoo.com">steve_ahola@yahoo.com</a> )		
<b>Date:</b>	4/9/2002 2:07 AM		
<b>Subject:</b>	<b>No BS</b>		

SoundGuy:

*Do these Details sound like BS?*

It sounds like a great mod to me... any objections if I draw it up on a Fender layout so that it is easier to see? Something like the "Cool Mod for the Normal Channel":

<http://www.blueguitar.org/coolnorm.pdf>

--Thanks!

Steve Ahola

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**From:** SoundGuy ([ckenp@aol.com](mailto:ckenp@aol.com))  
**Date:** 4/9/2002 2:59 AM  
**Subject:** Re: To Steve

I was just about to ask you if you would be interested in drawing the mod up for me. Once most people see it on a drawing they won't believe how easy the mod is.

No Problem, Draw Away

Thanks

SoundGuy

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**From:** ed guidry ([edguidry@lafourche.com](mailto:edguidry@lafourche.com))  
**Date:** 4/12/2002 7:15 PM  
**Subject:** Re: To Steve

Would someone post in here or in "general discussion" when the mod is posted to your page, Steve? I have an idea what it entails, but your illustrations are just great.

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**From:** Mark Abbott ([abbottmark@hotmail.com](mailto:abbottmark@hotmail.com))  
**Date:** 4/9/2002 12:27 PM  
**Subject:** Re: I've got it this time!

Dear SoundGuy

I don't think anyone really doubted you, it's just most people have heard the usual mods which are normally some means of combatting the blocking distortion problem in Fender amps.

Getting off the point:

I think Randall Aiken has really hit the nail on the head with his article (at his site) on blocking distortion. A lot of the fixes have unwanted side effects.

I was working with a friend on his amp, and he wanted to get rid of the blocking distortion, he decided to go with the Ken Fisher (my friend saw the mod in the Trainwreck pages in the Groove tubes book) mod, and reduced the coupling caps between the P.I., and the output stage from 0.1uF to 0.022uF, my friend was pleased that the amp sounded tighter when pushed, but I wasn't keen on the loss of bass response which was apparent when the amp was also played clean.

There does seem to be two schools of thought on this subject, one is guys who prefer to reduce the bass response in the preamp stages, and stick with the 0.1uF couple caps in the output stage, (Dumble, and Lee Jackson come to mind).

The other school of thought is to attack the problem at the source, and reduce the values of the coupling caps, and grid resistors.

Does anyone have any thoughts on the matter?

Soundguy once again thanks for all your help.

Yours Sincerely

Mark Abbott

P.S. Just out of curiosity does separating the cathodes and giving them their own cathode resistors ( two 1.5 K resistor Vss one 820 Ohm resistor) really make any difference, I did this mod to my Bandmaster, and I certainly don't remember hearing any difference, (mind you it was 6 years ago I did this mod).

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<b>From:</b>	<b>Steve A.</b> ( <a href="mailto:steve_ahola@yahoo.com">steve_ahola@yahoo.com</a> )
<b>Date:</b>	4/9/2002 2:14 AM
<b>Subject:</b>	<b>Maybe the 3M3/10pF reverb splitter helps?</b>

SoundGUY:

*This mod must be in a fender reverb amp or you could experience your signal going into cut off in your preamp.*

Sounds like the voice of experience speaking! I guess the 3M3/10pF reverb splitter would keep the grid voltages at a reasonable level... someone might try something like that even if they don't actually have reverb in their amp (like on a Bassman head).

--Thanks!

Steve Ahola

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<b>From:</b>	<b>SoundGuy</b> ( <a href="mailto:ckenp@aol.com">ckenp@aol.com</a> )
<b>Date:</b>	4/9/2002 3:08 AM
<b>Subject:</b>	<b>Re: Maybe the 3M3/10pF reverb splitter helps?</b>

Yes, The first time I tried this in a non reverb amp it had me scratching my head for awhile. I solved the problem by adding a 220k resistor to ground in the circuit. I will have to think of the placement because it's been awhile since I did it. I will get back with you on that.


SoundGuy

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<b>From:</b>	<b>Michael Tousek</b>
<b>Date:</b>	4/9/2002 5:30 AM
<b>Subject:</b>	<b>Re: Maybe the 3M3/10pF reverb splitter helps?</b>

Well, funny you should say that Steve. I happen to have something very similar to what Soundguy is describing in my SF Bassman head at the moment.

My Bass channel is like a typical two-stage BF "normal" channel, except that I've got the first stage feeding a cathode-follower which in turn serves as a low-impedence driver for the tone stack. I thought this seemed like a pretty tricky mod at the time, but now I feel especially clever knowing that it's one of Dave Funk's tricks! 

Anyway, this arrangement seemed like a nice way of getting out some more gain from the circuit without adding much clutter (the CF only required the addition of its cathode resistor to the board), and indeed it did do this. The bass channel is now noticeably louder than the other channel (which is a

stock 2-stager), though the difference isn't huge -- maybe 3 or 4 dB. Certainly an audible boost, but not too much.

Also, since adding the CF, the Bass channel is brighter and more midrangey, **but**, I changed my tone cap values (from the typical 250pf/.047/.1uF to 330pf/.022/.022uF) at the same time, so it's hard to say what's doing what.

A great experiment would be to go back to the stock values on the Bass channel and then do an A/B taste test versus the normal channel. It'd be ideal -- the two would be identical except for the CF, so I could really get a good idea of how that low driving impedance was affecting the tone.

Maybe I'll do it and report back...

MT

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<b>From:</b>	<b>Joe Gallman</b>		
<b>Date:</b>	4/11/2002 3:28 AM		
<b>Subject:</b>	<b>Re: Maybe the 3M3/10pF reverb splitter helps?</b>		

If this mod can only be done on reverb channels, what about the 6G6 Bassmans that have the bass channel configured: CF - tone stack - gain stages? I've heard that these channels sound great. By the way, what would be the sonic difference between modding the bass channel of my AB165 to a 5F6-A style preamp vs. the 6G6-style w/ the CF on the front end?

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<b>From:</b>	<b>kidblue</b> ( <a href="mailto:kidblooze@hotmail.com">kidblooze@hotmail.com</a> )		
<b>Date:</b>	4/11/2002 6:05 AM		
<b>Subject:</b>	<b>Re: Favourite Fender Blackface mods?</b>		

would V3 remain the standard 12AT7, or does it get changed to a 12AX7? I ask because I tried this mod and it seems to be harder on the 12AT7 in V3 - I had two of them go microphonic and start howling by themselves. Thanks for the info!

kidblue

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<b>From:</b>	<b>Mark Abbott</b> ( <a href="mailto:abbottmark@hotmail.com">abbottmark@hotmail.com</a> )		
<b>Date:</b>	4/12/2002 1:20 PM		
<b>Subject:</b>	<b>Re: Typical Fender mods</b>		

As far as I have been able to notice, the typical mods for Blackface Fenders are;

1 Reducing the value of the coupling caps between P.I., and output stage to a value of 0.022uF to .047uF.

2 Reducing the cathode bypass caps to 1uF to 5uF, on the early stages of the preamp.

I have heard a particular book recommend putting a 100uF cap across the first cathode resistor to increase bass response, I did try this but I didn't hear any increase in bass response. From this I believe there is no need to have a cathode bypass cap any greater than 25uF.

3 Replacing the 0.047uF, and 0.1uF caps in the tone control stage with either 0.022uF, and 0.047uF respectively, or two 0.022uF caps. The 250pF cap is either replaced with a silver mica cap, or replaced with a cap around the 330pF to 390pF.

In my limited experience, I have found the effect of increasing the size of the treble cap is to take the edge off the treble response. I did try using two 0.022uF tone caps in my Bandmaster (which uses 0.1uF, and a 0.022uF), I preferred the original values.

4 Coupling cap values; In Kevin O'Conner's book "The Ultimate Tone", he gives examples of bass roll off (4-7), the 0.022uF cap rolls off bass at 80hz, while the 0.01uF rolls bass off at 193hz.

I haven't yet tried hearing the difference between Fender's stock value of 0.047uF, and 0.022uF, but I shall be giving it a go. I am wondering if 0.047uF is an excessively large value?

5 Cathode resistors: I experimented with cathode resistors some years ago.

In Dave Funks book he states his preference for cathode resistor values is 3.3K, with a 1K resistor for the first stage.

My findings were that the large value cathode resistor sounded good when the amp was driven hard, but the clean tones didn't have the warmth I liked, I found I preferred 2.2K as a good compromise.

6 Power supply cap values: This is something that I haven't done much experimenting with. I have found that larger value filter caps at the output stage do increase the bass response when the amp is pushed. I have heard some people complain that the amp sounds stiff with the larger filter caps, this is something I really haven't any experience with.

I do have a Boogie (S.O.B. converted to a Mark 1) which has a 110uF main filter cap(s), which does sound stiffer than my 6G7A Bandmaster which uses 50uF main filter cap. I wouldn't call the stiffness an annoying trait, but.....

Preamp filter cap values: I have tried increasing the value of the preamp filter cap from 20uF to as high as 60uF, and I didn't hear any change in bass response, I did find the greater capacitance did however reduce/eliminate crosstalk problem I was having.

I have noticed some of the reissue Fender amps do use larger values of preamp filter caps than was originally used. Perhaps I'm wrong, but I'd put this down to the crosstalk thing.

The reverb gain mod: On Fender amps with the 3.3M resistor which goes to the 220K grid leak resistor. If you increase the 220K resistor to 470K this will give the amp a bit more bite.

Feedback resistor value: A popular mod is to increase the size of the feedback resistor (O/P secondary to P.I. stage) from 820 ohms to 1.5K/5.6K. I haven't really experimented with this one.

Okay these are about all the mods I can think of off the top of my head, this is by no means definitive.

I've stated the mods, and my experience with them, to get some feedback from others about their experience with various Fender mods.

Yours Sincerely

Mark Abbott.

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<b>From:</b>	jpl ( <a href="mailto:jimlorber@hotmail.com">jimlorber@hotmail.com</a> )		
<b>Date:</b>	4/12/2002 8:30 PM		
<b>Subject:</b>	<b>Re: Typical Fender mods</b>		

Mark,

Here are some more-

- 1.change the value of the slope resistor in the tone stack 10k to 150k/or 100k pot in series w/10k
  - 2.replacing the tail resistor (6.8k) in the tone stack with a 15k or 25k pot
  - 3.remove the 47pf bright caps on the vibrato volume control (BFDR)or similar
  - 4.replace the intensity pot with a pot with a spst switch.the switch can be used to remove the pot from the circuit when fully CCW
  - 5.The BFDR 6L6 mod (6L6 outputs w/ss rect)see MachineGun Amps site for more details
  - 6.change the values of the reverb mix network(typically 10pf/3.3M)
  - 7.Separate cathode circuits for each gain stage instead of shared
  - 8.Remove the 6.3v center tap from ground. Replace with 2 100r .5W to form a virtual CT
  - 9.Remove death cap, install a properly grounded AC cord
  10. Convert the AC receptacle to a 3-prong grounded
  - 11.the old "ice cube" mod,10r across the rev xformer and a 270k from the rev output to rev input (don't even ask)
  - 12.If you don't use reverb...disconnect the 500pf feeding the rev drv.disconnect the yellow wire coming from the rev pot from the .003 then attach this end to point Z  
(refer to the 763 layout)connect the brown wire from the rev pot to the other end of the 470k. now remove the 10pf/4.7M...you can replace reverb pot with a higher value for more gain
  - 13.
  - 14.replace the second 10k (depending on model) in the B+ circuit with 4.7k
- okay there are probably more but time is short...I have performed all of these with varying results  
some are very subtle and some sound like crap IMO.My favorite is #5,and I have never had an amp fail after this mod.  
Remember-never drill or deface your BF amp...

jl

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<b>From:</b>	<b>Mark Abbott</b> ( <a href="mailto:abbottmark@hotmail.com">abbottmark@hotmail.com</a> )		
<b>Date:</b>	4/13/2002 1:58 AM		
<b>Subject:</b>	<b>Re: Speakers, and master volume controls</b>		

Dear JPL

Thank you for your reply, and the mods you have added to the list.

I shall have to give some of the mods you mentions a try.

One thing I have found to be important when implementing mods is to be aware of the characteristics of the speaker(s) you are using.

I was trying to get rid of this buzzy tone from my amp (the Bandmaster) when I was overdriving it.

The speaker in question was a Kendrick 12" Blackframe, it sounded quite nice when the amp was clean, and strangely enough sounds very good if the amp you are using develops it's distortion from the preamp stage, but when I was driving it with amp on ten, it has this buzzy tone. Basically, I eventually got hold of a Celestion speaker, and the problem was over.

I didn't mention master volume pots. I have found that those master volumes that are placed before the P.I. do mess with your clean tone, should you use the amp for distorted use then you probably won't notice the difference in tone. Kevin O'Conner has a mod in TUT where he put a 100K resistor from the wiper of the pot to the input cap to the P.I. I have found this to be effective in reducing bass roll off when turning the master volume down.

The best master volume design that I've tried is the type where you have four caps, and the dual pot between the P.I., and the output tubes.

The only down side with this design is that the presence control ceases to work as you turn the master volume down, Dan Torres tried to get over this problem by using 100pF caps across the hot side of the pot, and the wiper.

I have tried the master volume type where you use a single gang pot, and a cap between the plates of the P.I. (like a Vox treble cut control). I really don't like this design, I feel it is only useful if you wish to reduce the amps volume marginally.

Once again these are my findings, and of course I could be wrong. So if anyone has had different experiences with the circuits I've discussed, please add to the thread.

Yours Sincerely

Mark Abbott.

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Dear JPL

I have tried point seven, separate the cathodes so each triode has it's own 1.5K resistor, and bypass cap.

I have done this mod to my Bandmaster, and I can't say I've heard any difference in tone after I did this mods.

What were your findings?

Perhaps I'm missing something here?

Yours Sincerely

Mark Abbott.

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Mark

try using both channels at the same time...you may hear a difference. The point of this mod is to voice each channel a little different,try a 2.7k/.68uf on one cathode and leave the other 1.5k/25uf

jl

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