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Subject: Repairing a Kustom TBR400

Posted by [weezykid](#) on Tue, 24 Oct 2023 14:53:30 GMT

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Hello all,

New to the board, but not to amp repair, but prefer to work on tube amps usually.

This amp came to me from a friend and it is blowing fuses when powered on. After some testing and inspection, I have found it is in the line of the red wires from the transformer. Bridge rectifier test good, 10000uf caps test good (but have a slight bulge and since they are 23 year old, may replace) with my blue esr. R314 and R337 were dark, board is a little toasty under those resistors so started testing around that area and find that the a970 (Q11 on the board, Q311 on the schem) is testing bad. However they are not available anymore and need to source a replacement.

Any suggestions on a replacement to the a970? Anyone have a newer schem than the one dated 4/16/2000 and also any update sheets as well?

And any other suggestions on things to look for in this model while I have it open?

Thank you!

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Subject: Re: Repairing a Kustom TBR400

Posted by [stevem](#) on Tue, 24 Oct 2023 19:10:47 GMT

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The A970 crosses over to a NTE 383.

If you go to the NTE parts direct site you can order it there.

If the main rail filters are swelling they should be replaced.

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Subject: Re: Repairing a Kustom TBR400

Posted by [weezykid](#) on Tue, 24 Oct 2023 19:15:46 GMT

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stevem wrote on Tue, 24 October 2023 15:10The A970 crosses over to a NTE 383.

If you go to the NTE parts direct site you can order it there.

If the main rail filters are swelling they should be replaced.

Thank you @stevem!

Was really surprised that Kustom got back to me and they have an a970 in stock. However they

want \$15 shipped. They did send the schematic, but was the same one I already had. Although they did send the XRAY foil side placement schem which is cool.

So far i havent found any other parts that may have cause the a970 to fail. Part failure or any suggestions of other items to check?

Always change caps when I have them out if they are old or bumped like this, for \$7ea, it is worth it.

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Subject: Re: Repairing a Kustom TBR400  
Posted by [steven](#) on Wed, 25 Oct 2023 10:49:24 GMT  
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If you go for the NTE replacement be sure to check if the E and C leads are reversed .

nTE does this a lot some times.

When you fire the amp back up use a veriac to bring the ac up slow if you have one and monitor the dc voltage on the speaker output.

If you start to see a dc level approaching 1 volt then you have output stage issues.

For the first fire up I would also derate the fuses to one half there normal value so that at fire up they blow faster and limit any further harm from taking place.

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Subject: Re: Repairing a Kustom TBR400  
Posted by [weezykid](#) on Tue, 31 Oct 2023 15:55:19 GMT  
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Kustom has them in stock and are sending out a replacement which I imagine are NOS.

Have new caps coming as well for it, Will let you know how it goes.

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Subject: Re: Repairing a Kustom TBR400  
Posted by [weezykid](#) on Wed, 08 Nov 2023 16:00:21 GMT  
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Replaced the r314 and R337 4.7k with 1 watts. Replaced the c321/322 since they were humped and replaced the a970 transistor.

Bringing up the volts on the variac, the variac reset pops at 70v so there is still an issue.

When I had the rest apart I pulled the rectifier and it tests good. When I pll the red lines for the transformer, the amp powers on happy, fan blowing and all "seems" good. Red lines off the transformer measure 106v at 113v ont he variac. Pulled the power lines for the output board to try and narrow down the area, but the variac still pops so the issue is on the main board.

During the test up to 70v, I did not see DC on the outputs.

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Subject: Re: Repairing a Kustom TBR400  
Posted by [weezykid](#) on Wed, 08 Nov 2023 16:01:01 GMT  
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dup msg, sorry

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Subject: Re: Repairing a Kustom TBR400  
Posted by [stevem](#) on Wed, 08 Nov 2023 22:11:09 GMT  
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Right now I can't find my schematic for this amp, but I do recall mine blowing up about 12 years ago and mine burned up those same two resistors.  
This was with all of about 10 hours of play time on the amp.

Fortunately it did it at home and to this day I still gig with my 1971 K250 head, talk about a testimonial to build quality!

I just can't recall what more I did back then to fix the whole issue.

I think there are power supply voltage regulators on the left side of the heat sink as seen with the output transistors facing you, might be worth checking those.

What I do recall is that the traces on that board lifted very easily and even with a desoldering station had to jump a few connections back to working.

Give me a few days to think about this.

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Subject: Re: Repairing a Kustom TBR400  
Posted by [weezykid](#) on Thu, 09 Nov 2023 15:02:51 GMT  
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stevem wrote on Wed, 08 November 2023 17:11  
Right now I can't find my schematic for this amp, but I do recall mine blowing up about 12 years ago and mine burned up those same two resistors.  
This was with all of about 10 hours of play time on the amp.

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I think there are power supply voltage regulators on the left side of the heat sink as seen with the

output transistors facing you, might be worth checking those.

What I do recall is that the traces on that board lifted very easily and even with a desoldering station had to jump a few connections back to working.

Give me a few days to think about this.

I do have a schem on my google drive I can share, but havent hit 10 posts yet..

[//drive.google.com/drive/folders/1Qfi\\_7JfqRgA7SxN\\_jAwzftUt9g\\_sWHFr3?usp=sharing](https://drive.google.com/drive/folders/1Qfi_7JfqRgA7SxN_jAwzftUt9g_sWHFr3?usp=sharing)

Going to start digging into the transistors on the heat sink and I think there is one on the left side that goes up into the heatsink..

So far the traces have been good, nothing like the old, early 70's Ampegs. Although I do have a Hakko FR-301 to make life a little easier.

Not looking forward to pulling all of the transistor on the heat sink haha

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Subject: Re: Repairing a Kustom TBR400  
Posted by [stevem](#) on Thu, 09 Nov 2023 16:42:14 GMT  
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There's only one schematic I have ever seen for these.

If I recall right that transistor up in the belly of the heat sink is doing something to the bias voltage.

Sometimes it's easier to cut thru a trace to isolate a component and test it and then just solder it back together.

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Subject: Re: Repairing a Kustom TBR400  
Posted by [weezykid](#) on Tue, 21 Nov 2023 20:39:00 GMT  
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Steve was awesome enough to reach out via PM and we discussed the schematic and he gave me some great input.

For those who are working on this same issue, my case the amp was popping the power fuse on the back of the amp. Replaced the a970 transistor, r314 and R337 4.7k with 1 watts and replaced some caps as well. Venturing into the output transistors I found one bad 2sc5200 so I have a replacement coming.

Since i have all of the output transistor out, I will also redo the thermal paste for them and the thermal pads on the heat sink.

Once I have the new 2sc5200 in I will update all with the results.

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Subject: Re: Repairing a Kustom TBR400  
Posted by [stevem](#) on Wed, 22 Nov 2023 12:04:08 GMT  
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When you get it up and running make sure the fan is good.  
The fan in these amps runs all the time just so you know.

I am curious, did this transistor that blew happen to be on the side of the heat sink and dead center in front of the blade?

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Subject: Re: Repairing a Kustom TBR400  
Posted by [weezykid](#) on Fri, 05 Jan 2024 13:56:04 GMT  
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When you get it up and running make sure the fan is good.  
The fan in these amps runs all the time just so you know.

I am curious, did this transistor that blew happen to be on the side of the heat sink and dead center in front of the blade?

Hey Steve, I apologize I missed your response. The transistor that blew was in the center and at the end of the first bank of 4. Fan was in good working order as well.

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