I Measured the resistance and it was about the same as Dan's readings. Then I looked at ratio of Ohms to voltage. (assumed the red to blue primary is about 350Vp???)

From	To	Ohms Dan	Ohms 8842A	Vp out	Vp/Ohm Dan	Vp/Ohm 8842A
Red	Blue	1.67	1.703	350	210	206
White	Orange/W	1.16	1.1786	250	216	212
White	Green/W	0.5	0.5021	100	200	199
White	Yellow/W	0.1	0.0886	12	120	135
White	Brown/W	0.53	0.5269	100	189	190
White	Green HV1	200.47	206.06	3000	15	15
Green HV1	Green HV2	0.1	0.0866	1.2	12	14

Both Dan and my readings are about the same, It looks like two or three wire sizes are used. Small for HV and larger for other windings and maybe a third even larger for the 12V.

Then Measured the Impedance with a GR 1657 that I had repaired which I have measured lots of caps on and have a good feeling that it's working and some inductors but not enough to be totally sure of the results.

From	To	GR 1657 1Khz S		GR 1657 120hz S		Vp out	Vp/mh(1khz)	Vp/mh(60hz)	Rs(1khz)	Rs(60hz)
		mh	Q	mh	Q					
Red	Blue	2.107	6.86	2.154	0.93	350	166	162	90.82	12.59
White	Orange/W	1.0748	5.25	1.096	0.69	250	233	228	35.45	4.75
White	Green/W	0.1783	2.14	0.182	0.26	100	561	549	2.40	0.30
White	Yellow/W	0.0048	0.31	0.004	0.03	12	2500	3000	0.01	0.00
White	Brown/W	0.1787	2.05	0.128	0.25	100	560	781	2.30	0.20
White	Green HV1	164.2	4.58	168.1	0.61	3000	18	18	4725.18	644.28
Green HV1	Green HV2	0.0005	0.03	0	0	1.2	2400		0.00	0.00

I was expecting a similar mh/Turn that would relate to Turns and volts.

So to double check I used one of the cheep "Transistor indicators/capacitor ESR indicators"

From	To	Transistor Indicator mh	ESR	Vp out	Vp/mh
Red	Blue	1.97	2.1	350	177.665
White	Orange/W	0.99	0.7	250	252.5253
White	Green/W	0.03	0.7	100	3333.333
White	Yellow/W	0	0.11	12	#DIV/0!
White	Brown/W	0.03	0.7	100	3333.333
White	Green HV1	157	208	3000	19.10828
Green HV1	Green HV2	0	0.21	1.2	#DIV/0!

The three mh readings are similar to the GR, the lower uH look like they are out of range. But still there was not a good relationship between mh and Volts.

The I looked at the transformer with the generator resistor inductor scope setup.
See: http://meettechniek.info/passive/inductance.html Measuring with a sinewave

Took a while to get the math in my brain and then in an excel spread sheet (ULx is the same as VLx) using a few "known" inductors and just a signal generator. (which I did before so I did not do any test on the 503 transformer with just the generator).

> For the setup I ran the signal generator into about 100W PA amp that has a transformer output for 4Ohms, 8Ohms, 25V line and 75V line
>
> The output voltage is fairly flat and drops off as the frequency goes up
>
> | | 8ohm output I maxed at | 75V line output I maxed at |
> |---|---|---|
> | 1Khz | 76V p-p | 176V p-p |
> | 20Khz | 68V p-p | 154V p-p |
> | 30Khz | 58V p-p | 136V p-p |
>
> Not enough to drive the primary directly.

To measure the high voltage winding I have a rectifier and capacitor connected to a 6000VDC probe.

So for the test using the 12V winding as the input connected to Rs = 1ohm and then back to the 8ohm output
At 20khz, I got:
Vg of 14.73 Vp-p
Vx of 6.40 Vp-p
Phase shift of -2.5 us
If my math is correct that results in

Lx	0.002948759	mH
Rx	0.619434241	ohm

The HV output voltage would be 421Vp

The ratio should be 3000Vp out for 12Vp in, 250:1
And I have 421Vp out for 6.40 Vp-p or 3.2Vp in or 131:1 which is too low.

I lost some readings but my notes At 1Khz show:

Lx	0.0048 mH
Rx	.1657 ohm

The HV output voltage would be 552 VP

With an unloaded HV I then ran 4 frequencies

Then I did	20Khz,		25Khz,		30Khz		and 35Khz	
Lx	0.005165269	mH	0.00509058	mH	0.005330941	mH	0.00472669	mH
Rx	0.209024834	ohm	0.271973036	ohm	0.183689987	ohm	0.403652777	ohm (??)

These are with the transformer at room temp and a short test so there was not a large temp change during the test.

Then I looked at just if I could drive the voltage up driving the 12v with the 8 ohm output

From	To	in to Y/W 12V 25Khz Vac rms Fluke 87V	Vp	Expected Vp out	Ratio
Red	Blue	52.7	74.53	350	4.70
White	Orange/W	36.7	51.90	250	4.82
White	Green/W	11.4	16.12	100	6.20
White	Yellow/W	2.51	3.55	12	3.38
White	Brown/W	12.1	17.11	100	5.84
White	Green HV1	542	766.50	3000	3.91
Green HV1	Green HV2			1.2	

I reached a power input limit and could not push over 750V on the HV diode, here the HV ratio looks proper but the +100v and – 100V are not right

Then I tried the primary with the 70V line output

From	To	in to R/W primary from 1 ohm, 70V line 25Khz Vac rms	Vp	Expected Vp out	Ratio
Red	Blue	54	76.37	350	4.58
White	Orange/W	39.76	56.23	250	4.45
White	Green/W	15.28	21.61	100	4.63
White	Yellow/W	1.97	2.79	12	4.31
White	Brown/W	15.2	21.50	100	4.65
White	Green HV1	149	210.72	3000	14.24
Green HV1	Green HV2			1.2	

Driving the primary the HV ratio is way off but the other voltages are more in line. Note that the driving voltage is low because there was a large current draw (unfortunately I did not measure it)

I was unable to get the HV output over 1000V with any medthod, I think I tried the 100V which should have gotten close on the 70V line output of the PA. but I don’t see my notes on that now

Then I look to see if I could see the distributed capacitance by looking at two resonant frequencies with two capacitors, I looked at

http://www.cliftonlaboratories.com/measuring_distributed_capacitance.htm (note that C1 is the smaller capacitor and C2 is the total of the smaller capacitor + the added capacitance)

Link missing of what I mainly used, that had a great explaining, but it was the same as the above with the two capacitors defined differently
(note that C1 is the smaller capacitor and C2 is the difference between C1 and the total larger capacitance)

And I looked at:
http://www.g3ynh.info/zdocs/magnetics/appendix/Toroid_selfC.html

After spending some time getting the math right and correcting for the two ways the capacitors were defined, with the two papers I tried to sweep the primary and look for a peak, with some adjustment for the roll off of the PA amp.

That did not work for me.

Then I looked at the resonant decay, the Dick Smith tester schematic can be found here:
https://www.flippers.com/pdfs/k7205.pdf
but I don't know where I got my copy which is in color and Dicks head is smaller. Anyway I did not build the whole circuit Just R8=100ohms, R9=1K, D2 a diode on the table, and C3 .01uF, with a signal generator, set at square, 500Hz, 5V, 0V offset going in and a scope on the "Hot".

The 503 had a few mv rings at best.

A 647had 18 some rings from 4Vp-p to 0. Other transformers had plenty of rings.

So the 503 looks like a shorted turn.

I built a inductor/core checker something like:
http://elm-chan.org/works/lchk/report.html
http://www.vk2zay.net/article/200
http://ludens.cl/Electron/lmeter/lmeter.html

But it's only half baked and have not figured out how that might be used to see if there is a shorted turn or too much self capacitance or too lossy a capacitance with a transformer.

As a Side I then tried to look at the Inductance, parallel capacitance, and resistance with the ringing to find the two resonant frequencies of a working transformer. That seemed to work but I don't understand the limits of the measurements yet.

Then I connected some other transformers/TV flybacks connected them to the PA amp and ran them up. In particular I have what I think is a Tek 628 video monitor (It's late and I would have to research that number) but anyway I think it's the same transformer core with the brown epoxy.

I ran that up to 3000Vp = 3000Vdc output and ran it for a half hour. No load problem, core heated up slowly like I would expect.

My conclusion is that I really wanted a transformer that had a high loss potting compound but no mater how many ways I test it, it looks more like a shorted turn.

So I think I am ready for the oven.

John