



# AWA Newsletter

# 93

October 2013

Affiliated to the SARL



Antique Wireless Association of Southern Africa

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## Reflections:

First of all, let me submit my apologies for the late issue coming out this month.

Unfortunately, work issues have interfered with my radio affairs again this month and things have been extremely tight for the period since the beginning of October.

That being said, October of this year has been quite busy. With the 2nd leg of the AWA Valve QSO party having taken place, a visit to the Magalies Radio Club to do a presentation there and all the work activities, life has been quite hectic.

In November, things will start to slow down and life will become less hectic as the silly season approaches and all the way through to January, life will be slower, but more hectic, if you get my drift.

This month sees the AGM and it will be held at the SAIEE in Observatory. For those of you who have been there, you will know what an interesting site this is with lots of radio heritage and some of the finest displays of valves and old radios I have seen in a while. Well worth taking the time to join us there.

Of course, this is also time to be thinking about who you want to head up the AWA for the next period. Richard has given notice to step down this year after doing a 2 year stint at the helm and so we need to be thinking about a replacement to steer the AWA into the next few years.

Send us some of your ideas by mail if you are not able to attend the AGM, only because you stay too far away to attend of course.

The rest of the committee is still available to be elected, but if you decide that other nominations should be made for the portfolios of Secretary/PRO, Technical Advisor and Editor for the Newsletters, please feel free to do so.

It has been a good 10 years for the AWA and we certainly have not experienced any of the problems that most clubs would experience, and we believe it is due to the way in which the AWA operates.

Thanks to all of you for the support that we have garnered over the years and the strength that we have been able to grow to. The AWA is certainly a club to be reckoned with in SA at the moment with one of the largest memberships of them all.

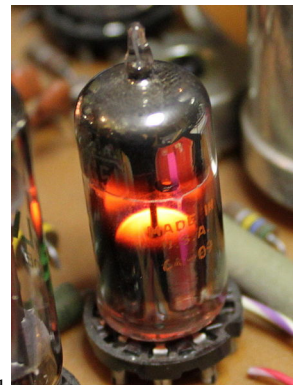
Best 73  
DE Andy ZS6ADY

### AWA Committee:

- \* President—Richard ZS6TF
- \* Technical Advisor—Rad ZS6RAD
- \* Secretary/PRO—Andy ZS6ADY
- \* Western Cape—John ZS1WJ

## WIKIPEDIA

Some special-purpose tubes are constructed with particular gases in the envelope. For instance, voltage-regulator tubes contain various inert gases such as argon, helium or neon, which will ionize at predictable voltages. The thyratron is a special-purpose tube filled with low-pressure gas or mercury vapor. Like vacuum tubes, it contains a hot cathode and an anode, but also a control electrode which behaves somewhat like the grid of a triode. When the control electrode starts conduction, the gas ionizes, after which the control electrode can no longer stop the current; the tube "latches" into conduction. Removing anode (plate) voltage lets the gas de-ionize, restoring its non-conductive state. Some thyratrons can carry large currents for their physical size. One example is the miniature type 2D21, often seen in 1950s jukeboxes as control switches for relays. A cold-cathode version of the thyratron, which uses a pool of mercury for its cathode, is called an ignitron; some can switch thousands of amperes. Thyratrons containing hydrogen have a very consistent time delay between their turn-on pulse and full conduction; they behave much like modern silicon-controlled rectifiers, also called thyristors due to their functional similarity to thyratrons. Thyratrons have long been used in radar transmitters.



An extremely specialized tube is the krytron, which is used for extremely precise and rapid high-voltage switching. Krytrons with certain specifications are suitable to initiate the precise sequence of detonations used to set off a nuclear weapon, and are heavily controlled at an international level.

## CW Net:

The CW net has been going along quite nicely during the month. Regular call in have kept this net running since 2006 and it is always good to hear the call signs of those who come along to join us on a Saturday afternoon.

Of course, we do not have the history of nets like the QRP group, but then we do a similar thing by keeping CW alive on the bands in SA.

Of course we know that CW has taken quite a knock when the decision to make it not part of the licensing for full access was made.

This decision immediately stemmed the voices of those who were totally against CW as part of the licence requirements, but also changed the history of amateur radio of ensuring the preservation of a part of its roots.

Of course, one can argue that it opened up the future of Amateur Radio by allowing many who were possibly well acquainted with Amateur Radio, to advance into full licence acceptance.

It was a pity really that now many did not see a need to even try their hand at using a key, or paddle to use a mode that had forged the shape of Wireless communication.

But it also made no sense in trying to force something upon people who could see no advantage in taking up CW, when they would never use it again after passing on to advanced licence.

Since that time, CW has certainly had its ups and downs. There are still people who have an ardent desire to use CW as a means of communication. There are those who would like to try it some day, but cannot seem to get to grips with it. There are also those who have tried it, but given up half way, because they don't have the tenacity to stick it out.

Well I would just like to say to all of you in any of these categories, there is something worthwhile in sticking it out and actually using CW to communicate on any band.

Whether you become a DX fundi, or just a casual user of the mode, you will find a great amount of satisfaction when you do master and use CW and have a successful QSO with another person.

It is a language of its own, that will break all boundaries of communication.

DE ZS0AWA/CW



Vibroplex Bug

## SSB activity:

Once again the bands have not been in such great condition over this past month. Local communications and contacts to Div 5 have been good, but there has been a definite deterioration in conditions to Div 1.

This has had an effect on the Saturday morning SSB net, making hearing the Div 1 stations quite difficult, but fortunately their local conditions allow the WC net to run quite smoothly on their own, on 3650 at 07:00. Most recently now, the Western Cape net has now changed to 7070 on 40m at 07:00.

The 2nd leg of the valve QSO party also took place this month and so far, only 3 logs have been received. This is rather disappointing as we can see from the logs, there were quite a

few stations on frequency.

If you did take part in the QSO party, send us your log, who knows you may be in good standing for a certificate for placement, and you can still get the 10th anniversary QSL card if you are interested in that sort of thing.

The last two Saturdays we have used the topic about Special events Stations and Field Stations, which has drawn a fair amount of good comment from all on frequency.

We have now said we will look into different dates for special events and reasons, eg Marconi Day, Amateur Radio Day etc. If you have any suggestions, please take the time to let us know and we can look into it.

With all of these, it has been decided that the

ZS0AWA call sign will be used at all times.

If you have a special event you would like to activate, make application to the committee and you could use the Awa call sign to run it.



Drake T-4X

## AM:

The AM net still trundles along at its normal pace with mostly the same group of ardent AM'ers attending the nets. On the odd occasion, there is a new call sign heard, or an old one that has not been up for a while, but mostly the same group.

Of course things are quite different when it gets around to the Valve QSO Party and many new call signs can be heard on the band calling in. Whether it is just to test out their plug and play rigs on Am to see if they can really work on AM, or if its and old boat anchor that has had the cobwebs and spiders blown out, just to try out and see if it still works.

Whatever the reasons, AM still is a mode not for sissies. And I am talking about the rigs, not the operators.

Many people would try their rigs out on AM just thinking its another mode of operation, without realizing what it can actually do to your radio.

The straight power output on AM can cause havoc in the final stages of your radio if it has not been built to handle it. Its always best to read the operating manual first, before trying out Am to see how to set the radio up to get the most out of your signal, without causing damage to the rig.

Now of course, the guys with valve rigs would be smiling and saying to themselves that valve boatanchors can take the punch. But they still have to be set up properly to get maximum smoke, otherwise there is a chance you may still see a fair amount of it escaping the fold.

Remember, you need to tune your radios and set them up correctly to get the most out of them.

Join us at 06:00 on a Saturday morning on 3615 and get back to radio as it was.



Geloso G212

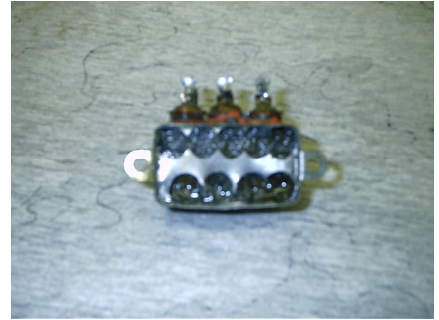
# AR88 DECOUPLING CAPACITOR REPLACEMENT

During refurbishment of an AR88D several years ago, I needed to replace all the leaky decoupling capacitors. RCA used components manufactured by Aerovox. These capacitors consist of 3 components in a sealed tinned copper can. In my very first refurbishment attempt, I simply cut the wires going to the terminals, and wired in external replacements. This worked but looked very untidy!! When the second set arrived, I decided to keep the underside of the chassis as near to original as possible. This is the method I adopted and have done this on several other examples of this famous set.

**PHOTO 1:** The back of the capacitor housing is soldered in place, in sardine can fashion.



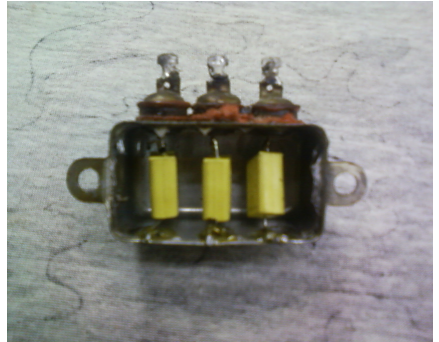
**PHOTO 2:** I drilled a series of 10mm holes in the back of the capacitor block, holding the body of the block in a drill press vice. The depth of the holes was set so that the tip of the drill bit just protruded through the back plate.



**PHOTO 3.** Taking a pair of side cutters, I cut the remaining sections away and cleaned up the rough edges. Inside I found 3 individual capacitors wrapped in paper and immersed in oil. These were dug out with a screwdriver and the lead out wires cut. A good wipe left a clean enclosure ready for fitting of new components.



**PHOTO 4.** The terminals are insulated on the outside with what looks like red wax, which tends to melt if excessive heat is applied while soldering. I cut the original lead out wires to a length of about 6mm. Replacement capacitors were Philips components, of which I still have plenty in stock. Any other 400v capacitors will work, provided that they will fit comfortably in the housing.



The leads of the replacements were cut to about 6mm on the one end and the other side bent at right angles to the body, The lower inner surface of the can is tinned in 3 places in line with the terminals on the top. The bent end of the capacitors is soldered to the case, making sure that the cut ends line up with the original wires on the terminals. A small soldering iron tip is needed to solder the upper connections. The finished article looks neat, and other than fresh solder on the terminals, look original.

All decouplers of the Aerovox variety in every AR88 I have worked on has been leaky, some giving leakage readings of about 2 Megohms. I would be very interested to hear from any restorers who have a similar way of restoring this type of component.

**JOHN NORMAN**

**ZS5JX**



# ANNUAL GENERAL MEETING

## ANTIQUÉ WIRELESS ASSOCIATION OF SOUTHERN AFRICA

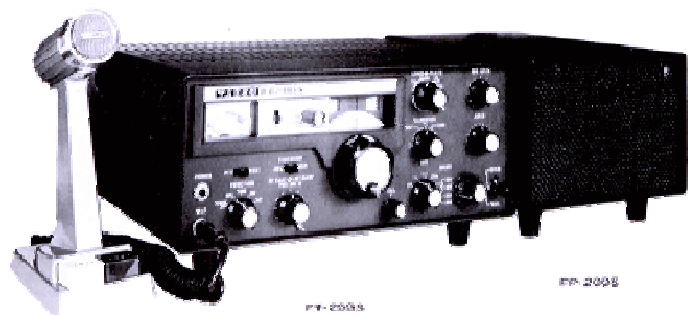
Date: Saturday 16 November

Time: 09:00

Place: Institute of South African Electrical  
Engineers.

(18A Gill Street; Observatory; Johannesburg)

Flea Market  
Meeting  
Socialise



## President's Corner by Richard ZS6TF

### HERITAGE

The AWA mission statement speaks of the maintenance and preservation of our amateur heritage but what does this really mean? Andy and I had the privilege of being invited to do a presentation on the AWA to the Magalies radio club at their monthly meeting on Saturday 19<sup>th</sup> October. Despite the compact venue we managed to shoe-horn several radio artefacts into the meeting room to convey to the audience what heritage in the AWA context is all about. These were not just generic examples of “AWA” rigs just to give a bit of background atmosphere to the talk. Each and every one had a story associated with it that was worthy of comment.

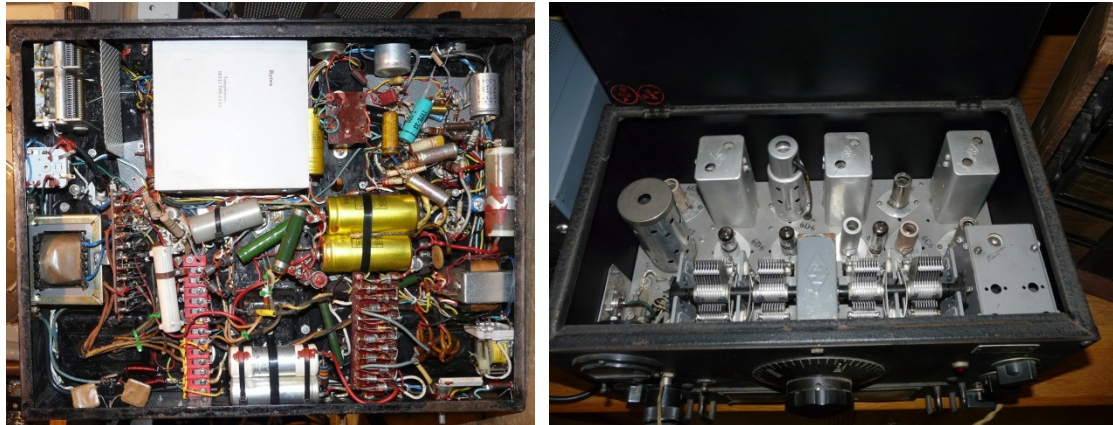
“Heritage (heritage) generally denotes things of special architectural, historical, or natural value, valued objects, property and possessions, qualities, cultural traditions, and historic and literary items that have been passed down or inherited from previous generations, including a traditional brand or product regarded as emblematic of fine craftsmanship worthy of preservation”.

Whether you are looking at a Collins 75A4 receiver or a home brew 60's AM transmitter, they can be appreciated for their appearance, workmanship, and functionality in their own right, but they really mean a lot more to us if their provenance is known.



On the left is a homebrew AM transmitter constructed in the 1960's by Munro ZS5IN. It is a classic 6146 rig using a pair in the modulator and a pair in the PA, built around a Geloso VFO like many constructed at that time. It has a second input to the “speech” amplifier used to play “MF’s” in period.

On the right is an HRO-MX. The serial number confirms it to have been part of a UK wartime government order in 1942 and was probably issued to a monitoring station and retained by the ham operator after the war. It was modified in the 60's by OM George ZS1YZ (SK) with miniature valves. The mods are beautifully documented and the wooden coil box was an original accessory “under the bonnet” so to speak, good workmanship is in evidence. The soldered joints on Munro's transmitter are individually tabbed with red paint just like Collins practise, and the HRO has been sympathetically modified with well-made blanking plates over the UX6 base holes to carry the B9A valveholders.



Purists can throw up their hands in horror but the reality is that these units are representative of what the more knowledgeable hams of the era built and modified and will be preserved as a working station together, to demonstrate our amateur radio heritage.

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Erratum: President's corner September 2013

The first version of the R1155 slow motion tuning drive was called the type 13 not type 21, and the ratio was 100:1. Thanks to Ian GM0UHC for this correction.

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### **Awa valve QSO Party October 2013**

Well, the results are out and what a disappointing entry of log sheets for the 2nd run of the QSO Party.

Only one log sheet was received, besides the logs from the 2 stations who controlled the AWA call sign, and that is of OM Johan ZS4DZ. He recorded 25 stations on 40m and 2 on 80m. Well done Johan, your certificate will be in the post shortly.

My Question is, what happened to the log sheets of the other 25 stations ?

ZS0AWA recorded 11 Stations on 40m on AM and 6 stations on 80m. Operated by ZS6TF.

ZS0AWA recorded 43 stations on 40m and 6 on 80m. Operated by ZS6RAD.

Thanks guys for your support and of course to all who participated in keeping the band alive with some good action.

Remember, if you had contact with ZS0AWA and would like to get one of the 10 year anniversary QSL cards, send us your QSL with a self stamped return envelope and we will get one off to you. This is the last chance to get one of these special event QSL cards. The next one will only be available in 5 years time.

Best 73

Andy ZS6ADY

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## AC SETS: THE SPEAKER AND AUDIO STAGE

By Ken Owens  
1932-2009

Like the battery sets that preceded them, the earliest AC sets used a separate high impedance magnetic speaker or horn. Majestic pioneered the later practice of employing low-impedance electrodynamic (sometimes called simply "dynamic") speakers for better sound quality. Such speakers have a field coil which replaces one of the power supply chokes. The B + current through the coil generates the speaker's magnetic field. Much later, PM (permanent magnet) speakers—which do not have a field coil—replaced the dynamics. If your set uses such a speaker, its field coil must be connected to the power supply before you can make the tests described in the instalment on servicing a.c. power supplies. Check the coil with your ohmmeter; it may be open or shorted to the frame. If so, you have several options: replace the speaker with a modern PM and add a separate choke; rewind the coil yourself; have it done. Coil winding is beyond the scope of this series. Because the electrodynamic speaker is normally mounted away from the chassis, a short between the field coil and the speaker frame will place the full B + voltage on the frame—creating a serious hazard. Be sure to check for this condition. If there is no apparent short, test further by connecting a wire from the speaker frame to the chassis. (After you apply power to the set as described below.) If the field winding breaks down at this point, it will blow the fuse I will tell you about later instead of endangering you.

### THE AUDIO OUTPUT STAGE

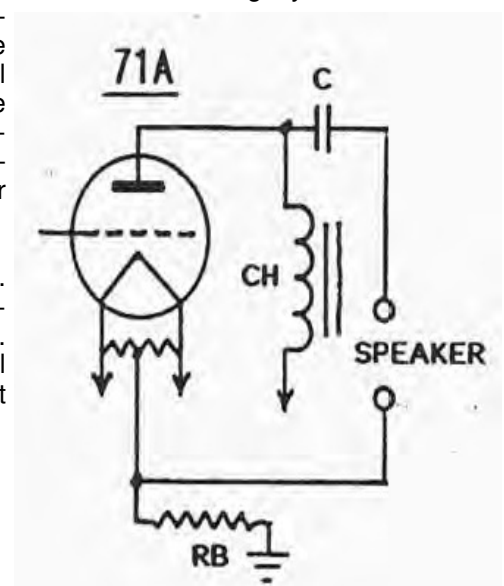
In battery sets, plate voltage for the output tube was usually fed through the horn or magnetic speaker. Makers didn't feel that 90 volts or so on the cord and speaker would be hazardous. But the higher plate voltages of AC sets were a different matter. RCA used an output transformer to isolate the plate voltage from the speaker. (Voltage was fed to the plate of the tube through the primary of the transformer; the audio signal flowed to the speaker through the secondary.) Atwater Kent used the arrangement shown in the diagram. Note that the 71A plate voltage is fed through choke CH, which blocks the audio signal—preventing it from being shunted away through the power supply. Instead, the audio goes to the speaker through paper capacitor C. If C shorts, the resulting presence of B+ (plate voltage) on the 71A filament will prevent the set from playing. Check this capacitor. If it shows any leakage at all, replace it with a 0.47 uF "Mylar" unit. The AK capacitor is potted into a flat metal box and can be melted out. You will have to use a 400V capacitor to replace it; because a 600V one won't fit in the box.

### POWERING UP

With the rectifier tube plugged in and using the lamp test rig described in the installment "Power For A.C. Sets," connect the power supply to the set (if it was disconnected) and turn the set on. From here on, use the same procedure you learned for battery radios. Measure the voltage at each tube socket to make sure that B + and filament voltages are present. B + will be higher than with the tubes inserted. Turn off the set and insert the tubes. Be careful! If you mistakenly put a type 26 into the 71A socket, its filament will receive 5 volts instead of 1.5—and burn out when you turn on the set. Connect the test speaker you built earlier and turn the set back on. When it has warmed up, the lamp will glow at about 1/3 brightness. Measure voltages. The 71A should have 140-180 volts on the plate and the RF amplifiers 125-150V. The 27 detector should have 20-40V on its plate. You can remove the lamp test rig now and plug the set directly into the power line. Missing voltages indicate faulty AF transformers or RF coils. Locate and repair such faults before proceeding. If the set is still dead, measure the bias voltage from the center tap of the filament resistors to ground. The voltage for the 26 tubes should be about + 13V and the 71A about + 30V. The 27 will be 0 since this center tap is grounded.

If there is B + on the plates, but no bias voltage at the center taps, both halves of one or more of the centertapped filament resistors are open. This condition can also result from open bias resistors although you should have checked them earlier. If you have a defective filament resistor you can replace it with a pair of 330 1 W carbon resistors wired in series. Remove and discard the bad resistor. If only half the resistor is open, the set will play, the voltages will be correct, but there will be a loud hum. Replace the entire unit. Any remaining problems can be located with the troubleshooting procedures described earlier. Once the set is operating properly, record all voltage readings. In case of future trouble, the record of the proper voltages for that particular set will simplify troubleshooting.

Finally, find a place under the chassis where you can mount a fuse holder. Cut one lead to the transformer primary and route it through the fuse holder. Install a 1.5A fuse. Sets with more than 8 tubes may need a 2A fuse. You will be adding a non-original component to the set, but one that will protect irreplaceable transformers. If the fuse blows, repeat the check out procedures described in this instalment to find out why.





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group/AWA\\_SA/](http://groups.yahoo.com/group/AWA_SA/)

**Antique Wireless Association  
of Southern Africa**

**Mission Statement**

Our aim is to facilitate, generate and maintain an interest in the location, acquisition, repair and use of yesterdays radio's and associated equipment. To encourage all like minded amateurs to do the same thus ensuring the maintenance and preservation of our amateur heritage.

Membership of this group is free and by association.

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**Notices:****Net Times and Frequencies:**

Saturday 06:00—AM Net—3615  
Saturday 07:00—Western Cape SSB Net—7070  
Saturday 08:30— National SSB Net— 7140  
Saturday 14:00— CW Net—7020  
Wednesday 19:00— AM Net—3615

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