Antique Wireless Association of Southern Africa

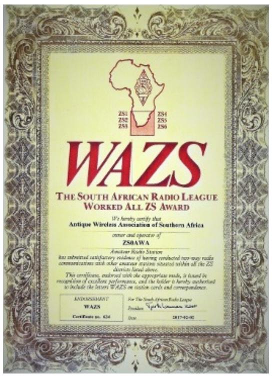
211 March 2024

GELOSO G209 RECEIVER

In 1931 the company, Geloso, started the production not only of radio sets but also most of the electronic components with which they were built and, over time, also developed and patented many others.

After the Second World War, Geloso expanded and expanded his production, becoming from 1950 onwards, a point of reference for enthusiasts of consumer electronics and hobbyists. The many products under the brand name Geloso were known throughout Italy and much appreciated abroad. The output consisted of innovative products known for their high quality, solid construction and reasonable price. The main production consisted of radios, amplifiers, tape recorders, televisions, kits, and professional laboratory instruments. These were complemented by components such as capacitors, resistors, potentiometers, switches, connectors, transformers and microphones.

At death in 1969 of the founder, Geloso had become an empire of eight production plants, with a capillary and efficient sales network. Production continued until 1972, when it closed permanently. There were several reasons for this closure: fierce foreign competition, managerial problems, union demands and massive indebtedness to banks. Emblematic the definition of "Neo to be erased" given by Vittorio Valletta (a person notoriously linked to Mediobanca) in relation to the electronic sector of Olivetti.



Inside this issue:

AWA Committee:

- President—Jacques ZS6JPS
- Vice President—Chris ZS6GM
- Technical Advisor—Rad ZS6RAD
- Secretary/PRO—Andy ZS6ADY
- KZN—Don ZS5DR
- WC—John ZS1WJ
- Historian—Oliver ZS6OG
- Member—Renato ZS6REN Wally ZS6WLY

Visit our website: www.awasa.org.za

Reflections:

I was thinking back some time ago about all of the AWA Presidents I have had the pleasure of being involved with over the period of 20 years that the AWA has been going. Having been classed as one of the founding members of the AWA, I have known them all and thought I could share some points of their tenure,

2003, Cliff ZS6BOX, was our founding president. He was one of the founding members of the Collins Collectors and responsible for the starting of it all. They would meet on air every Saturday morning and talk Collins radio. Cliff was elected the founding president of the AWA having been the founder of the Collins Collectors.

Our next president, Bushy Roode ZS6YQ was also part of the Collins collector group, known in SA as Mr Collins, he knew the radio inside out and had probably one of the biggest collections of radio's and spares. He spent hours rebuilding Collins radios and repairing them too.

In 2005 was Gary ZS5NK, also from the Collins collectors. Gary had a large collection that was kept in a humidity controlled shack in KZN.

2006 was Rod Radford ZS5RK. Rod was also part of the Collins collectors and played a major role in the formation of the AWA. It was mainly due to Rod's instigation that the group decided to change to being a group of Antique collectors with similar interests in radio. Our mission statement was written by Rod.

2007 was Andy ZS6ADY/ ZS3ADY, not much to say about him.

2008/9 Rad ZS6RAD took the reigns. Under him the first "Constitution" was written and then revised later to give Presidents a 2 year stint. We were running short of people wanting to take on the responsibility. Rad has remained ever present by taking over the running of the Saturday morning net and being our Technical Advisor.

2010/11 Don ZS5DR stepped up to the plate and has remained in the AWA as liaison for Div 5.

2012/13 Richard ZS6TF, now F4WCD living in the South of France was elected. Richard introduced the "Topic of the Day" to the Saturday net and was also responsible for the AWA involvement at the SAIEE. With the help of a few dedicated friends, the shack was established in the SAIEE museum with the call sign ZS6IEE.

2014/15 was Ted ZS6TED and then 2016/17 Jacques ZS6JPS who is once again President for 2024. In June of 2014 Jacques was involved in the setting up of the AWA Website and was appointed Webmaster. A lot of work has been put in to maintain and grow the site to what it is today.

2018/19 was the turn of John ZS1WJ. John has always been a collector of antique radio's and today has one of the finest Collins collections, deeply involved in restoration of all types of radio's.

2020 to 2023, our longest serving president, Renato, dived in and got involved in everything to do with the running of the AWA. Renato has been an absolute ambassador at building relationships with other clubs and thanks to his efforts, we have good relationships with many of the clubs in Gauteng.

It is thanks to the efforts of all these Presidents and many more who have assisted them, that we are where we are today

Best 73

DE Andy ZS3ADY

Coronal Mass Ejection (CME) **Wikipedia**

Morphology

In the solar wind, CMEs manifest as **magnetic clouds**. They have been defined as regions of enhanced magnetic field strength, smooth rotation of the magnetic field vector, and low proton temperature. The association between CMEs and magnetic clouds was made by Burlaga et al. in 1982 when a magnetic cloud was observed by Helios-1 two days after being observed by SMM. However, because observations near Earth are usually done by a single spacecraft, many CMEs are not seen as being associated with magnetic clouds. The typical structure observed for a fast CME by a satellite such as ACE is a fast-mode shock wave followed by a dense (and hot) sheath of plasma (the downstream region of the shock) and a magnetic cloud.

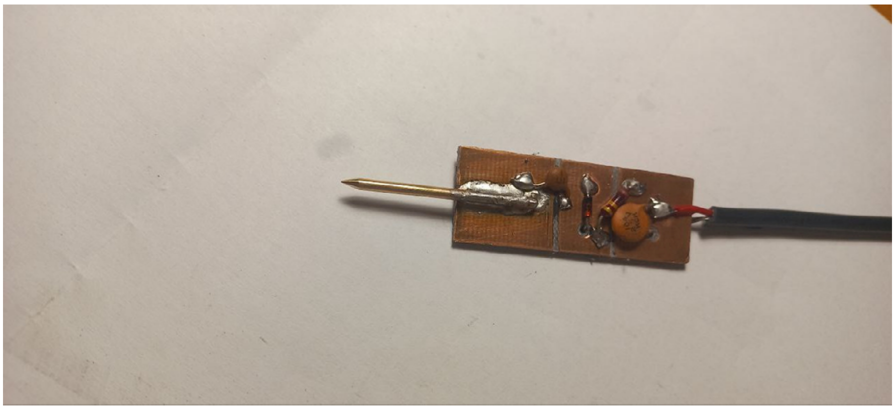
Other signatures of magnetic clouds are now used in addition to the one described above: among other, bidirectional superthermal electrons, unusual charge state or abundance of iron, helium, carbon, and/or oxygen.

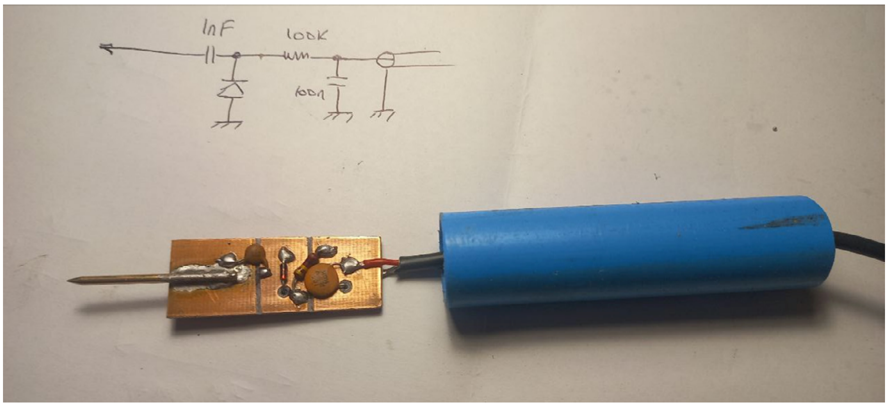
The typical time for a magnetic cloud to move past a satellite at the L1 point is 1 day corresponding to a radius of 0.15 AU with a typical speed of 450 km/s (280 mi/s) and magnetic field strength of 20 nT.

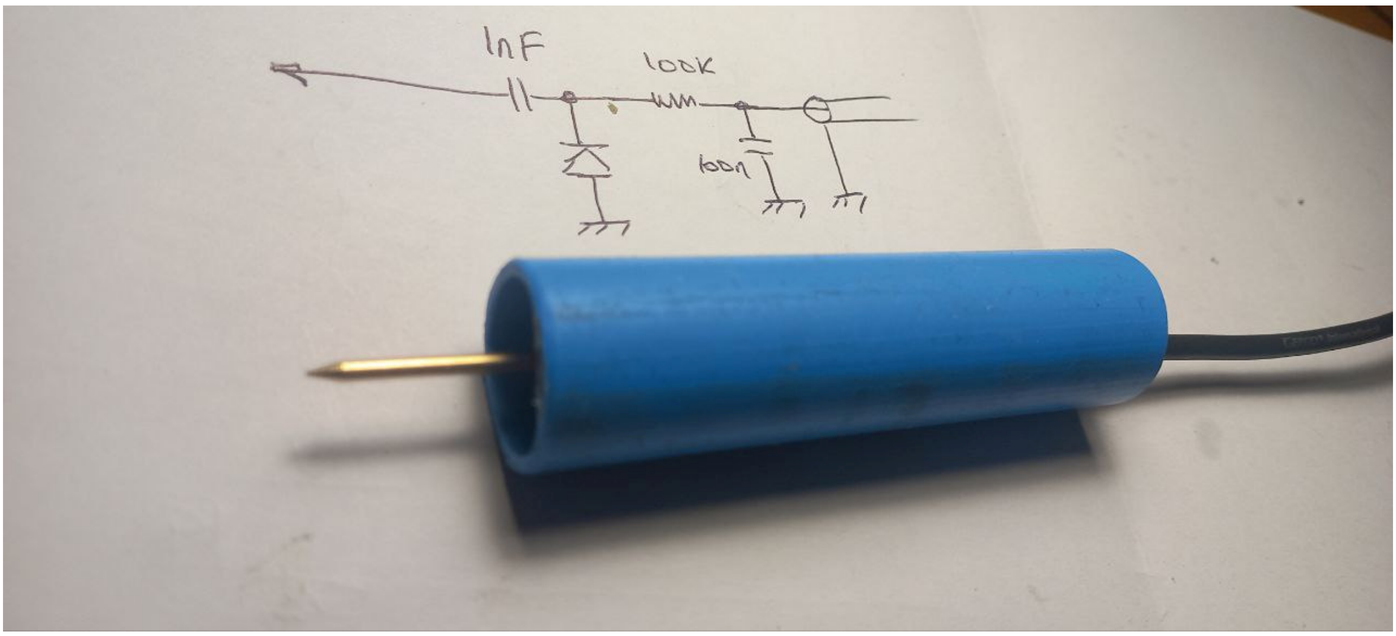
A SIMPLE DESIGN FOR AN RF PROBE
By Chris ZS6GM

Following is a simple design to make your own RF probe to be used in conjunction with any scope.

The probe rectifies RF so you get a DC voltage proportional to the RMS AC voltage. So if you use your scope on DC you have an RF voltmeter. The scope just being a sensitive high impedance voltmeter. If you switch the scope to AC you can use your probe to demodulate an AM signal.







REPAIR AND RESTORATION OF VALVE RADIO'S
INITIAL CHECKS AND TESTS

By Paul Stenning

Before you even consider applying power to your new set, it is essential to give it a general check over to assess the condition of the major components. This should prevent any nasty (and expensive or dangerous) surprises when you do get to showing it some electricity.

What happens if I just plug it in?

This depends on luck and the condition of the set. There are several possible outcomes:

- It manages to work - sort of. Probably not very well and it is highly likely that some components are being stressed and will fail sooner or later (probably sooner).
- Nothing happens, because there is a fault which prevents power getting to much of the set. Or the fuse in the plug blew.
- Something starts smoking or goes bang. Most likely the mains transformer or dropper resistor (smoke) or the smoothing capacitor or anti-modulation-hum capacitor (bang). The checks detailed on this page would have highlighted the faulty capacitor and could have saved the mains transformer.
- You get a nasty electric shock when you try to operate the set. Hopefully it isn't fatal...
  As you can see, just switching it on without carrying out some basic checks and tests is asking for trouble.

  Suppose you obtained a vintage car that hadn't been run for years. Would you just put in some petrol, hook up a set of jump leads and try to start it? No - you would do a few basic checks, change the oil and water, try to charge the battery with a charger, probably remove the rocker cover and check the valves aren't jammed, try to turn the engine manually to make sure it isn't seized... I'm no car expert so I don't know what else you'd check, but I know you wouldn't just try to start it and see what happened. If this situation actually arose I would seek the relevant information and take it carefully, knowing that I could very easily make things a lot worse by being too hasty.

This is why I am giving the relevant information for vintage radios here. You could find and fix a small fault, and thereby prevent it causing expensive or irreparable damage to other parts of the set when power is applied.

Assessing the Condition of the Chassis

Depending on the layout of the set you may have to partially disassemble it before you can get to the chassis sufficiently to make some meaningful checks. See the Disassembly page for more information.

Remove the back. If the set has a removable plate in the bottom of the cabinet remove this too, to get reasonable access to the underside of the chassis.

Start by give it a thorough look over. You may be able to spot likely problems at this stage, and should be able to get a general idea of the work necessary.

You can generally tell whether the set is largely original and untouched, or has had a couple of previous repairs that look tidy and professional, or has been seriously got-at. The untouched example will probably be the easiest one to repair because you do not have previous repairs and bodges to add confusion. A couple of professional repairs are not generally a problem.

Valves

Check that the valves are the correct types. If the type numbers do not match the service sheet or internal label, do not assume they are wrong. Different valve manufacturers use different numbers for the same component, so the valve fitted may be a direct equivalent or a viable alternative (this is where a valve data book or CD-ROM is useful).

Having said that, I have come across cases where the previous owner has swapped the valves around, presumably in an attempt to get the set working! I have also seen sets that are fitted with totally incorrect valves, possibly because the originals were valuable or missing and the seller wanted the set to look complete. These impostors may have had their markings deliberately removed. Such situations are not that common fortunately.

Many sets use similar valve line-ups - so by comparison with the details of similar sets you can get some idea as to whether the included valves seem reasonable. There is much information about this approach and other methods of establishing the type numbers of missing or unmarked valves on Gerard Tel's website (see my Links page for his details).

If the valve markings are missing, there are a couple of tricks you can try to make them show up. Try breathing on the glass to make it steam up, this will sometimes cause some sign of the markings to appear briefly as the steaming clears. Also try rubbing it gently through your hair - some grease may attach itself to the residue where the markings used to be. With experience, you will gradually be able to recognise many common valves just by looking at the innards through the glass.

If any of the valves have what looks like a milky white deposit on the inside of the glass, the vacuum has been lost and the valve must be replaced.

If you have a valve tester you may wish to remove and test the valves at this stage. I don't normally bother unless the set looks like it's had a hard life, has other signs of problems or has been got-at. The main ones to test are the rectifier and output valves; this is where the current, heat and stresses are. Faults in the other valves (with the exception of heater-cathode shorts in AC/DC sets) are unlikely to cause further damage. Don't worry too much if the tester shows the valves as having fairly low emission, chances are they will still work in the set and if not you can change them later. What you are looking for is more serious faults such as inter-electrode shorts, excessive grid leakage current and open-circuit heaters.

Visual and resistance checks

Look closely at any signs of previous repair work or modifications. It is worth comparing the values and positions of any replaced parts with the service sheet.

Look for signs of excessive heat build-up. The high power resistors obviously run very hot, but charred or browned low power resistors should be noted. Check any high power resistors with a test meter. If you have the service information or can read the markings, you can measure the actual resistance, otherwise just check they are not open circuit.

By far the most common causes of problems are capacitors. Many of the types used in valve radios are prone to failure, normally current leakage. On many AC/DC sets, a capacitor is connected directly across the mains after the power switch, and this capacitor will often be found to have blown itself to pieces.

While you have the meter out, check the windings of the mains and output transformers. The actual resistance's are given in the service sheet, but are not important at this stage. We are simply checking that the windings are not open circuit. If the speaker and output transformer are OK, you will probably hear a feint click from the speaker when you measure the resistance of the output transformer primary.

With all the valves in place, connect the test meter between the live and neutral wires of the mains flex. Operate the power switch on the set and note the resistance reading. For an AC/DC set it will probably be somewhere between 500 ohms and 3 k-ohms. For an AC only set using a mains transformer it will be a couple of hundred ohms (the exact figure will be on the service sheet). Anywhere around this area is OK for now. If it is very low (tens of ohms) or short circuit, you have a problem that needs further investigation and correcting before power is applied. See the Power Supplies page for more information.

If it is open circuit you may also have a problem that requires further work. However it is also possible that contacts in the mains switch are tarnished, in which case switching on and off a few times with the mains applied may clear the problem (the low test voltage from the meter cannot burn through the tarnishing but 240V mains can). Check the voltage selector arrangements are working, and on AC/DC sets check the dial lamps. If you can get to the underside of the chassis, a few quick resistance checks should show up where the problem area is. Again the Power Supplies page has more information.

Check the resistance across the HT smoothing capacitor. The meter should initially indicate a low resistance then rapidly increase as the capacitor charges. If it reads short-circuit or remains at a low resistance (anything below about 10 k-ohms) the capacitor is suspect or there is some other fault load-

NEW J.B. 'UNITUNE' CONDENSER – *a triumph of precision*

NEW J.B. PRODUCTS include entirely **new Gang Condensers** in semi- or fully-screened types. **New Gang Condensers for Super Hets. New Illuminated Disc Drive** for use with above gangs.

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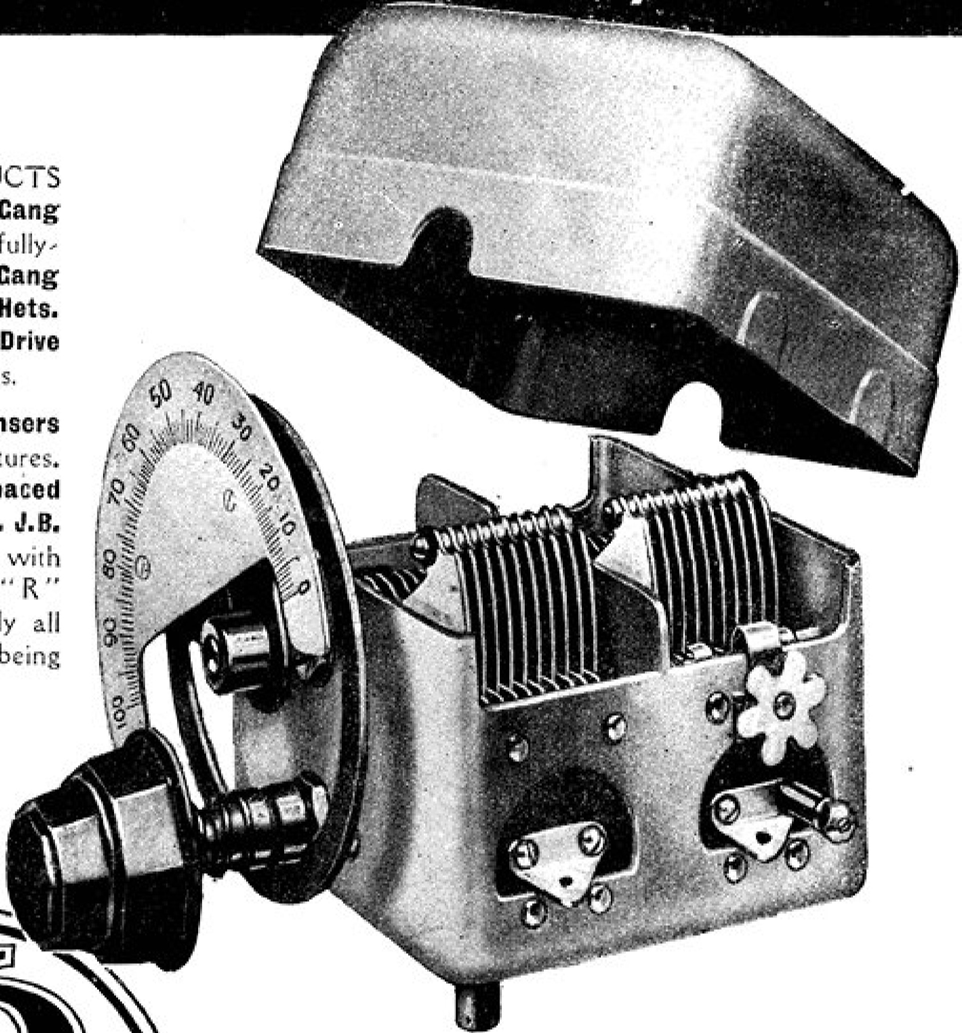
STAND No. 204
NATIONAL RADIO EXHIBITION



REG TRADE MARK

J.B. "UNITUNE" Gang Condenser.

A pre-set trimmer is fitted to one half, while the other half has a trimmer which is operated from the front of the panel. The panel-trimmer control is concentric with the main tuning knob. Capacity ·0005. Complete with disc drive and bakelite escutcheon plate.

2 gang - - **18/6** 3 gang - - **27/-**

PRECISION INSTRUMENTS

Advertisement of Jackson Bros., 72, St. Thomas' Street, London, S.E.1. Telephone: Hop 1837.

ing the HT line - again do not apply power until you have investigated further.

Check the state of the mains lead. Unless it is dangerous or has been cut off, I don't bother to change it at this stage (although of course it is replaced later). On AC/DC sets, make sure the neutral wire (black on old UK cables, blue on newer European cables) is connected to the chassis. It is possible that someone has changed the cable and got it the wrong way round.

Assuming the power supply and output transformer seem OK, the most likely cause of a set giving poor results, drawing excessive current and overheating is a leaky capacitor on the grid of the output valve. Some people might like to give this capacitor the benefit of the doubt and initially test the set with it in place, I know from experience that there is about a 95% chance that it will be leaky. So generally I will disconnect one end of it (by cutting the lead) and temporarily solder a replacement in position.

Also if there is a anti-modulation-hum capacitor connected directly across the mains input after the switch (common on AC/DC sets) that hasn't already blown itself to pieces, I will always cut this out of the circuit now because it almost certainly will go bang when the mains is applied. Later on I will fit a Class X2 suppresser capacitor as a replacement, whether mod-hum is a problem or not.

Applying a Test HT Supply

This section could be regarded as optional but advisable. If you have the equipment (such as a High Voltage Electrolytic Capacitor Reformer) you can do some meaningful checks in a few minutes, and if you repair sets fairly often it is worth building one.

Having checked over the chassis, and put right any glaring problems, it is time to apply some sort of power to it. Rather than applying the mains at this stage, which could cause problems, it is preferable to apply a high impedance supply of about 250V DC to the HT rail. This will show up some leaky capacitors, and will hopefully reform the electrolytics.

My High Voltage Electrolytic Capacitor Reformer unit is ideal for this purpose. Connect the negative lead to a convenient point on the chassis and the positive lead to the positive terminal of the electrolytic capacitor that is connected directly to the cathode of the rectifier valve. This is often the red tag on the main smoothing can.

Nigel Hughes provided the following useful tip:

> *Of course, once you have a working radio, you have access to a DC supply for reforming electrolytics. Just put a current limiting resistor in series with a multimeter and the electrolytic and monitor the current.*
>
> Switch the HT supply on, and watch the current reading. It will probably start high (maybe 30mA), and will hopefully drop after a few seconds as the smoothing capacitors charge up. If you are lucky it will drop to maybe 1mA, which is acceptable leakage for the electrolytics. However it is more likely to remain at a higher level and there can be several reasons for this.
>
> Check for potential divider circuits across the HT supply. Most sets do not have one, but a few do. For this test to be meaningful, the lower one should ideally be temporarily disconnected. However this is generally inconvenient so instead calculate the current this circuit will consume (using Ohms law) and subtract this from the meter reading.

If the current reading is still over 1mA once the potential dividers have been accounted for, we need to establish where it is going. The most likely explanation is leaky capacitors.

Leaky Capacitors

Elderly electrolytics often have high leakage currents. These will sometimes improve if they are left powered by the capacitor reformer for a few hours. I prefer to remove the electrolytics from the chassis (if this can be done fairly easily) for reforming if it is likely to take more than a few minutes. This allows each section of a can to be reformed separately, without the effects of other components. (It also allows me to get on with some other work on the chassis). If the leakage is fairly bad the electrolytic could get warm after a while, in which case switch off the power and allow it to cool down again. The maximum acceptable leakage current is about 1mA for each 30uF.

My attitude is if the capacitor doesn't show signs of reforming within 10-15 minutes, or becomes warm, then it is probably not worth the effort of persisting further.

Further checks

With the reformer connected to the chassis you carry out further checks if you feel so inclined. Personally I generally leave this until I have some real power applied to the set, but this depends on your level of experience and confidence, and the value and general condition of the set in question.

Look for signs of resistors or capacitors getting warm (such as molten wax). However, do not poke your fingers into the chassis with the power on! Any capacitors that are getting warm will need to be replaced. If a resistor is getting warm, work out which capacitor(s) it is supplying.

Even if nothing is getting warm, we can use the same logic to establish the cause of the current consumption. Measure the voltage drop across any resistor (or resistive component such as a transformer winding) that is feeding one or more capacitors. If the capacitor is OK there will be no voltage drop.

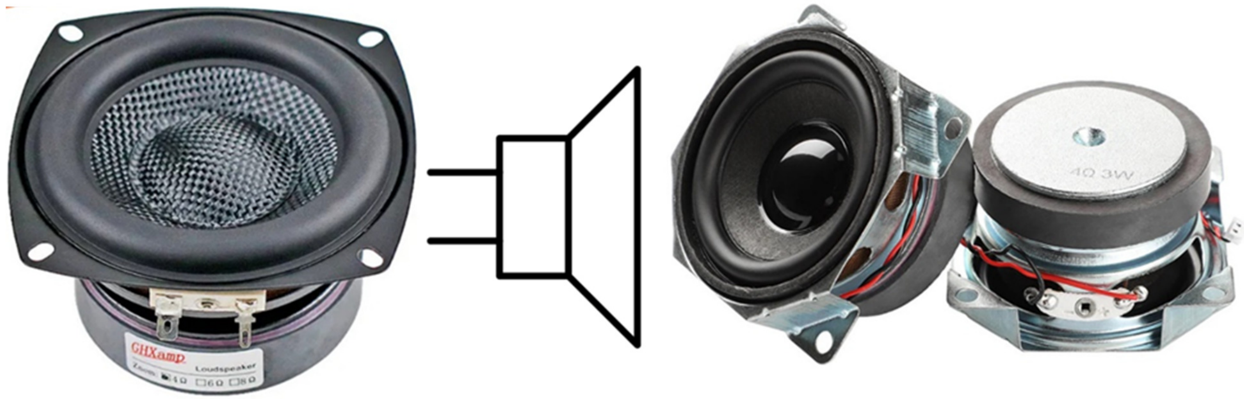
You can also check other potentially leaky capacitors by this method. In particular I would urge you to check the coupling capacitor to the grid of the output valve (if you haven't already replaced it as suggested earlier). Measure the voltage between the grid and the chassis. If it is even slightly positive, change the coupling capacitor.

If there are several leaky capacitors in a set, the chances are that other components of the same type will be in a similar state. In this case, I would change all of that type, to save problems later.

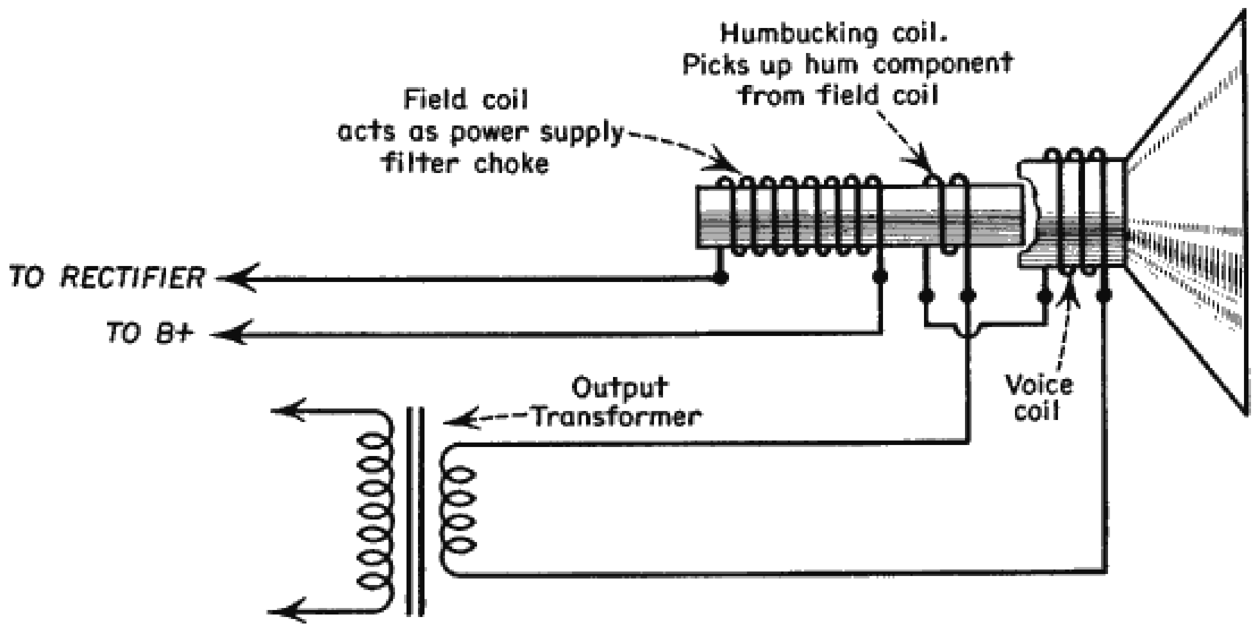
A Speaker With Too Many Wires

by Daniel Romila, VE7LCG

Nowadays we are used with speakers with two terminals, and with a simple schematic symbol.



There are only two wires to be connected to the amplifier, and they come from a mobile coil that moves together with the cone/diaphragm, inside the magnetic field of a permanent magnet. But if somebody opens an old radio, he/she can find big speakers with six wires. This is because there was high voltage available transformed from AC into DC that had to be filtered (so one coil could be used as filter simultaneously with being in place of the today permanent magnet, and there was still room for playing with hum reduction. The schematic looks like this:



The above is what it is called a field coil speaker. A field coil speaker is a loudspeaker that features an electromagnet rather than a permanent magnet. Field coil speakers use DC powered electromagnets as a motor to propel the cone, whereas a standard dynamic speaker will use a permanent magnet for moving the cone. What you see here under is an old Magnavox field coil speaker, 12 inches, that was posted for sale on eBay.

David Carlstrom has a webpage dedicated to old field coil loudspeakers that he last updated in 2020. According to his measurements, the old field coil speakers are more sensitive than the modern speakers. In the same time the sound has a better quality, due to the advances were made in magnets, cones and generally, in designing such devices. His page can be found at: http://djcarlst.provide.net/FieldCoi.htm

In the 1920s permanent magnets that had the necessary strength were simply too heavy, too big, too costly. Meanwhile, field coils were more affordable, lighter and capable of producing sufficient energy by utilizing a power supply that was big enough.

So, it might look like field coil speakers are something from the past. Newer design re-made this old technology, which presents some advantages. The magnetism in permanent magnets is down to an aligned electron spin. Meanwhile, magnetic fields in electromagnets are generated via moving electric charges in which the electron spins aren't all aligned.
A producer of speaker drivers came back to this old technology. I found only about Phantom Audio from Indonesia, but probably there are other companies out there, too. From their website: https://www.phantom-audio.com/field-coil-speakers-field-coil-drivers/

A field coil driver's flux field density will remain constant whenever voice coils move in the motor's gap. Conversely, permanent magnets cannot always achieve this constancy. This means that permanent magnets may experience sags in flux density when the voice coil's magnetic field draws from the field of the permanent magnet when the motive force of current is present. Field coils also have stronger motors that are determined by current and voltage and this makes their power delivery more constant and stable.

Digital Filtering - Switched Capacitor Filters

December 1974 Popular Electronics

When this Digital Filtering article appeared in a 1974 issue of *Popular Electronics* magazine, the concept of switched capacitor filters (SCFs) was just entering the realm of digital circuitry. One author, Carmen Parisi, credits none other than James Clerk Maxwell for initially contriving the idea. Today, variations of the switched capacitor filter are ubiquitously incorporated into integrated circuits of all sorts, but at the time of this piece they were assembled from discrete components including banks of capacitors, digital switches (counters), and transistors. Figure 2 shows an experimental circuit that uses six capacitor values for use at audio frequencies. The earliest IC switched capacitor filters worked in the hundreds of Hertz realm, and gradually increased in frequency until today they reach to around 100 kHz (see Digi-Key SCF offerings).

New technique operates from a digital oscillator and uses no critical elements

By Leslie Solomon, Technical Editor

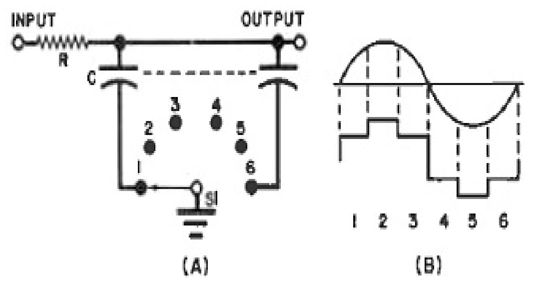


Fig. 1 - At (A) is a simple switch circuit which generates the stepped waveform shown at (B) from a sine wave.

Single frequency filters are important in a number of areas - RTTY, SSTV, radio control, etc. There are two approaches that are usually used to accomplish such filtering: either multi-element passive systems (which use precision components and are somewhat bulky physically) or active filters (which use a few passive components and an op amp). Even with the active filter, to obtain careful control of the selected frequency, it is necessary to select precision passive elements.

Though either of the two approaches works well, there is a new filtering method that is unique and should be of interest to the serious electronics experimenter. Called digital filtering, the new method uses no critical elements and is "tuned" with a digital oscillator. High-Q filters (even at low audio frequencies) can be realized and the circuit is very stable since no regeneration is used. These filters use low-cost TTL logic and some conventional switching transistors.

In the simple circuit shown in Fig. 1A, with the six-position switch in position 1, and with an audio sine wave applied to the input, the first capacitor will start to. charge up toward the signal's peak voltage. If S1 is switched to the next capacitor when the voltage across the first capacitor has reached the average value for that portion of the sine wave, the switch makes another step.

Therefore, as S1 rotates around the six capacitors, each capacitor receives a charge whose value depends on the average value of the sine wave at its portion of the waveform. The charges on the capacitors can be represented by the step curve in Fig. 1B. Of course, the switch must be synchronized with the input sine wave. If the input and switching frequencies are not synchronized, the average voltages stored in each capacitor will differ and will drop very rapidly on each side of the switching frequency. This is the basis of digital filtering; and because of the synchronization system, tuning the filter to any desired frequency is primarily a matter of "tuning" the switching oscillator. Component values for the resistance and capacitance are not very critical.

The circuit of an experimental digital filter for the audio range is shown. in Fig. 2. This circuit consists of a conventional mod-6 counter (7490) driving a BCD-to-decimal counter (7442). The audio input to be filtered is passed through a simple clipper and then coupled to the digital filter consisting of R1 and the six transistor-switched capacitors (C1 through C6). The digital logic and transistors form the switch in Fig. 1A. The digital clock that actually tunes the filter can be any variable-frequency triggering source at six times the required filter frequency.

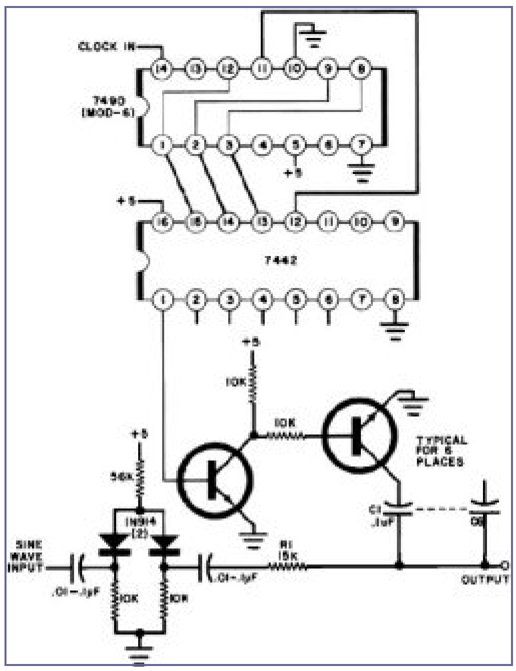
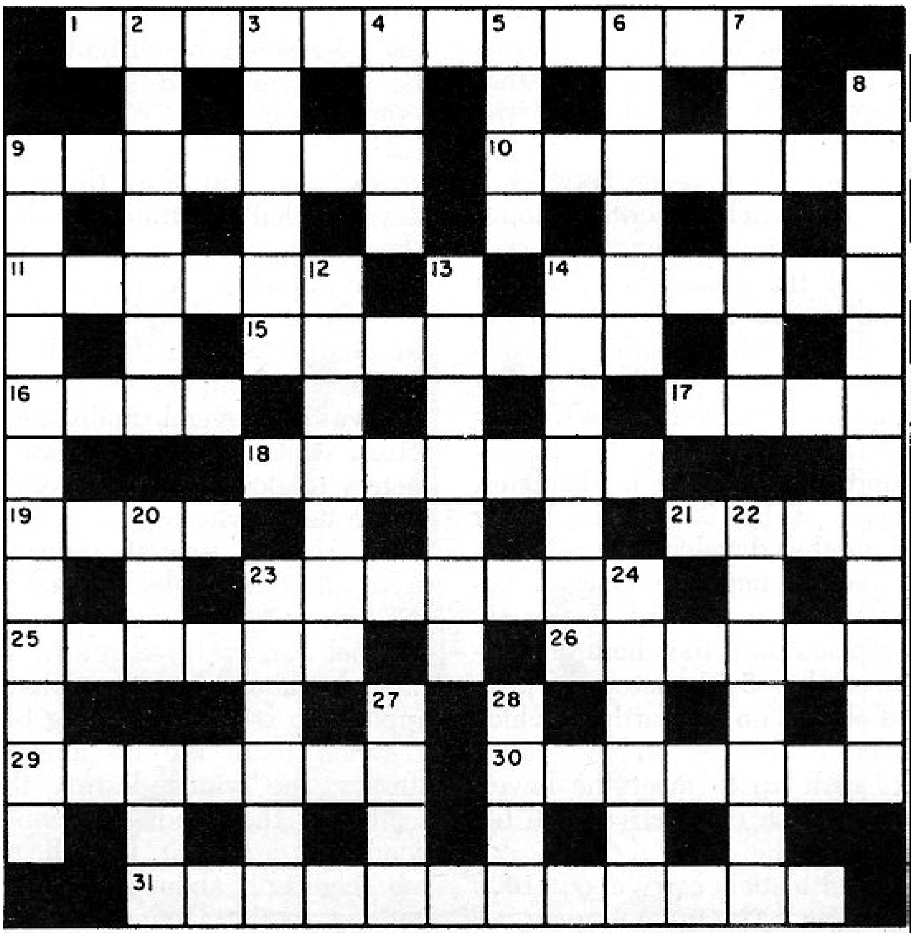


Fig. 2 - Circuit of an experimental digital filter for the audio range.

To tune the filter, connect the audio input to the clipper and a scope to the output. For a dual-channel scope, use the second channel to observe the sinewave input. Care must be taken in tuning the variable clock since the Q of the circuit is high and the filtering action might be missed. As the input is tuned up further in frequency, a peaking in the digitized waveform will be reached at the harmonics of the original setup, with the steps getting coarser each time. This will happen until the harmonic number corresponding to the number of switching positions is reached (six, in this case). There will then be no output, but there will be at the next harmonic. As each harmonic is viewed, it will be lower in amplitude and coarser.

The filtered output signal is a distorted version of the original input so the output can not be used as a sine wave. However, it is useful for triggering other circuits. The bandwidth of the filter remains substantially the same even when the filter frequency is changed. Once built, to change the filter's center frequency, it is only necessary to change the clock frequency to the TTL counter (7490), with the frequency six times the input. The number of switched capacitors is not limited to six but can be any number from a minimum of three to as many as required. The larger the number of capacitors, the smoother the displayed waveform.

The number of capacitors also determines the clock frequency. With six capacitors, the clock must be six times higher in frequency than the input. With five switched capacitors, the clock must be five times higher than the input signal, etc.



Down

2. Applies to mono disc recording.
3. What the yoke does to the beam.
4. Alcoholic radical and gets dopey with acetate.
5. A volt is one.
6. Scruffy appearance of the jack board?
7. Ten ions in stress.
8. A neon checker will perform these with capacitors.
9. Circuit presentation for squares?
12. A pair for vertical deflections.
13. Just a moment!
14. Fate of disc on badly adjusted auto-changer?
20. Loud passage faintly evident in preceding groove.
22. This mariner of old had a nice tan.
23. City of blinding TV interference?
24. The field in a d'Arsonval meter air-gap.
27. A very feminine sort of wave.
28. The board is this with copper.

Across

1. Used a lot with hi-fi tubes, but rarely with hi-f transistors.
9.Cells in series.
10. Avoid this class of radiation.
11. Pre-radio astronomy apparatus which illustrated the planet positions.
14. What you may hear when the n.f.b. goes positive.
15. Condition of the overlong pot shaft.
16. 1000 cycles, this Hz!
17.It's a grabber.
18. Boozy sort of permanent magnet.
19. Diminutive devils.
21. Merely a component.
23. This gives the micrometer its final resolution.
25. Parish lands hidden in the dingle beside the church.
26. Minuet, polka, or bugaloo.
29. Sounds like Noah's nameplate, but is really the inverse of the sine.
30.Lags.
31.To put excessive audio into the final.

Antique Wireless Association of Southern Africa

CONTACT US:

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www.awasa.org.za

Get your backdated issues at
http://www.awasa.org.za/index.php/newsletters

Visit our Website:
www.awasa.org.za

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. Join by logging in to our website.

Notices:

Net Times and Frequencies (SAST):

Saturday 07:00 (05:00 UTC) —Western Cape SSB Net —7.140; Every afternoon during the week from 17:00—7.140
Saturday 08:30 (06:30 UTC)— National SSB Net— 7.125;
Sandton repeater 145.700
Echolink—ZS0AWA-L
Kempton Park Repeater—145.6625
Relay on 10.125 and 14.135 (Try all and see what suits you)
Saturday 14:00 (12:00 UTC)— CW Net—7025; 14:20 10.115

AWASA Telegram group:

Should you want to get on the AWA Telegram group where a lot of technical discussion takes place, send a message to Andy ZS3ADY asking to be placed on the group. This is a no-Nonsense group, only for AWA business. You must download the Telegram App first. …..+27824484368

For Disposal:

Yaesu FC102 Matching ant tuner for the FT102. Max power 1200w. Two inputs for radios and two outputs for Antenna.
Yaesu Fl 2100Z WARC band linear amplifier with built in soft start.

Contact Andy ZS3ADY, 0824484368 WA or Email andyzs6ady@vodamail.co.za