Southern African ZS0AWA Antique Wireless Association

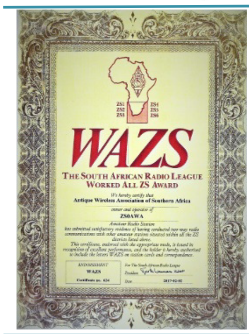
Newsletter

The Antique Wireless Association of Southern Africa

143

June 2018

A Member of the SARL



Inside this issue:

AWA Committee:

* President and Western Cape—John ZS1WJ
* VicePresident—Renato ZS6REN
* Technical Advisor—Rad ZS6RAD
* Secretary/PRO—Andy ZS6ADY
* KZN—Don ZS5DR
* Historian—Oliver ZS6OG
* Member—Jacques ZS6JPS

Reflections:

And so we have reached the middle of the year. Who would ever have believed that time has flown by, well at least it has for me.

So much has happened in the past six months. Flea markets, SARL AGM, Saturday morning nets, and of course the rest of the time being taken up by salt mine activities.

I am sure I am not the only one to whom time does not stand still at all. The older I get, the faster it seems to disappear, and there is just no catching up with it at all.

I have listened to so many of the retirees on frequency, and so many of them seem to say the same thing when you chat with them. “What day of the week is it, I’m confused now…”. They don’t have public holidays anymore, they don’t have weekends anymore. Every day just merges in to the next and time is of no consequence. It makes me wonder if I should look forward to retiring totally and losing all track of time and days.

Maybe there is a good side to all of this, but I am not quite sure where it is at the moment ?

To rush through the days and weeks, so looking forward to weekends when I can get a bit of rest, sleep in a bit and play radio, or to sleep in everyday not looking forward to weekends because they make no difference anyway and be able to play radio when I want.

Sounds like a bit of a no-brainer. Are you as confused as I am right now ?

After the last few weeks of problems on the Echolink server, this has all been sorted out now and there are two options available for connecting to the Sandton repeater. One is via the standard ZS6STN-R connection on Echolink and now there is a second option of ZS0AWA-L. Between Rad and myself we will monitor both of the Echolink connections to see who is there. This at least ensures there will always be an Echolink connection available to the Sandton repeater.

Please do not try and use band conditions as an excuse to not come up on the AWA Saturday morning net, we have done all that is possible to make sure there is a way to join us. 40m 7140, 80m 3620, Sandton 2m repeater and Echolink. The topics these days have been good and those who have participated have had some really good input. So don’t miss out on joining us.

Best 73

DE Andy ZS6ADY

WIKIPEDIA

Amateur radio: An amateur radio operator uses a **call sign** on the air to legally identify the operator or station. In some countries, the call sign assigned to the station must always be used, whereas in other countries, the call sign of either the operator or the station may be used. In certain jurisdictions, an operator may also select a "vanity" call sign although these must also conform to the issuing government's allocation and structure used for Amateur Radio call signs. Some jurisdictions require a fee to obtain such a vanity call sign; in others, such as the UK, a fee is not required and the vanity call sign may be selected when the license is applied for. The FCC in the U.S. discontinued its fee for vanity call sign applications in September 2015.

Many countries do not follow the ITU convention for the numeral. In the United Kingdom the original calls G0xxx, G2xxx, G3xxx, G4xxx, were Full (A) License holders along with the last M0xxx full call signs issued by the City & Guilds examination authority in December 2003. Additional Full Licenses were originally granted to (B) Licensees with G1xxx, G6xxx, G7xxx, G8xxx and 1991 onward with M1xxx callsigns. The newer three-level Intermediate License holders are assigned 2E0xxx and 2E1xx, and the basic Foundation License holders are granted call signs M3xxx or M6xxx.

Instead of using numbers, in the UK the second letter after the initial ‘G’ identifies the station’s location; for example, a callsign G7OOE becomes GM7OOE when that license holder is operating a station in Scotland. Prefix "GM" is Scotland, G or GE is England (the ‘E’ may be omitted), and "GW" is Wales. More information is available from the UK Radio & Media Licensing Authority (*Ofcom*) website.

In the United States, for non-vanity licenses, the numeral indicates the geographical district the holder resided in when the license was first issued. Prior to 1978, US hams were required to obtain a new call sign if they moved out of their geographic district.

HF Happenings:

CQ Amateur Radio Hall of Fame

The CQ Amateur Radio Hall of Fame was established in January 2001 to recognize individuals, radio amateurs or not, who significantly affected the course of Amateur Radio, as well as radio amateurs who have made significant contributions either to amateur radio, to their professional careers or to some other aspect of life on our planet. This year's inductees are:

- Marlon Brando, FO5GJ (SK), iconic movie actor
- David Brown, KC5ZTC (SK), NASA astronaut killed in 2003 Columbia disaster
- Kalpana Chawla, KD5ESI (SK), NASA astronaut killed in 2003 Columbia disaster
- Laurel Clark, KC5ZSU (SK), NASA astronaut killed in 2003 Columbia dis-aster
- Ashhar Farhan, VU2ESE, pioneer in popularizing open-source Bit-X "semi-Kits" using Arduinos for affordable QRP transceivers
- Grady Fox, W4FRM (SK), SSB pioneer; worked on Manhattan Project during World War II and the camera for NASA's lunar landers
- Wendell King, ex-2ADD (SK), African-American pioneer of broadcast-ing and college radio
- Fred Lloyd, AA7BQ, founder of QRZ.com, the most widely-accessed amateur radio website
- Mark Pecen, KC9X/VE3QAM, wireless communication and networking pioneer, inventor, cybersecurity expert
- Carole Perry, WB2MGP, long-time advocate for youth in amateur radio; moderator of Dayton youth forum for more than 30 years - Ed Westcott, W4UVS, photographer who chronicled the Manhattan Project during World War II and later helped the FBI with its investigation of the Jonestown massacre.

This year's inductions bring the total number of members of the CQ Amateur Radio Hall of Fame to 321.

Calendar:

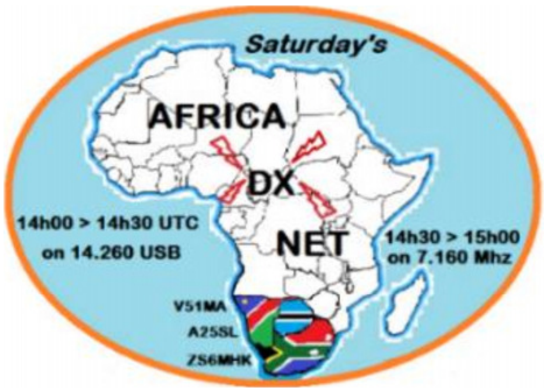
June

1 to 3 - Ham Radio 2018 in Friedrichshafen
2 – West Rand ARC Flea Market and SAAF Museum Open Day at AFB Swartkops
4 – World Environmental Day
8 – World Oceans Day
8 to 10 – Taste the Helderberg, Somerset West
8 to 17 – Hermanus FynArts Festival
10 – Hammies Sprint
13 to 17 – Port St Johns Umngazi Pondo Pedal
15 - Eid-al-Fitr
15 to 17 – Napier Wine and Patatfees
16 – Youth Day; East Rand ARC Flea Mar-ket; Franschhoek Winter Wines Festival
17 – Father's Day; World QRP Day; closing date for Hammies log sheets
21 – Winter Solstice
21 to 25 – SARL Top Band QSO Party
22 – all schools close; closing date for the July Radio ZS
22 to 24 – Morgan's Bay Footprint Festival
23 – Cape Town ARC meeting
24 – Blairgowrie Collectors Toy Fair at the Blairgowrie Recreation Centre, Randburg
30 – World Asteroid Day; end of the SARL Financial year
29 June to 1 July – Kirkwood Wildfees
29 June to 8 July – Knysna Oyster Festival

African DX

Contacts with stations on the African continent count towards the SARL's All Africa Award (www.sarl.org.za/pub-lic/awards/awards.asp)

Botswana, A2. Dave, VE7VR operates holiday-style as A25VR from Botswana be-tween 24 May and 3 June on 40, 30 and 20 m. QSL via VE7FR.



Somalia, 6O. Baldur, DJ6SI is now active as 6O0X (reissued call sign) from Hargeisa, Somalia until 6 June. QSL direct to Baldur Drobnica, Zedernweg 6, 50127 Bergheim, Germany.

Rwanda, 9X. 9X0T is the callsign for the Italian DXpedition Team's operation from Rwanda. Silvano, I2YSB and others will be active from 27 September to 12 October. A band/mode survey is available on www.i2ysb.com/idt/.

Z23MD Zimbabwe DXpedition (2018 The New Adventure for the Mediterraneo DX Club Guys). Press Release #1 [edited], "On the road again and this time on the road to Africa to reach their next QTH on far from Harare; just in the middle of a great safari land. As a matter of fact, the leader Antonio, IZ8CCW, and the co-leader Gabriele, I2VGW, are happy to announce to the DXer Community the new adventure with the international MDXC team. The license is already in the leaders' hands as Z23MD and they planned to be on air from 26 October to 6 November. According to the evaluations that they have done, they are confident to give to a lot of DXers the possibility to work this country on the Low- Bands, WARC and especially on the digital modes. Now the team is already filled with experienced operators - 20 people coming from 8 countries. There will be five stations, any mode and around the clock on the air! For any further news and updates please stay tuned, the official Web site of this new great adventure is coming. Of course, any donation and sponsorship will be very appreciated by the entire team! See www.mdxc.org/z23md/ for more information and updates.

African Islands

IOTA frequencies
CW: 28 040 24 920 21 040 18 098 14 040 10 114 7 030 3 530 kHz
SSB: 28 560 28 460 24 950 21 260 18 128 14 260 7 055 3 760 kHz

Thomas, F4HPX, will once again be active as FR/F4HPX from various locations on Reunion Island (AF-016) between 25 May and 15 June. He will be operating from his family home, and from beaches and especially from the mountains be-cause there is a lot of them including an active volcano. His SOTA aim this year is the tallest FR/RE-001 at 3 070 m ASL. Activity will be on 40 - 15 metres using CW (possibly), SSB, RTTY, PSK31, JT65, JT9 and possibly FT8. He will use various wire and portable antennas with 2 rigs: FT-891 from home with 100 w and KX2 outside (alone or with small 30 W HF amp). QSL via his home call sign, by the Bureau, direct, LoTW, eQSL or ClubLog's OQRS. Canary Islands, EA8. Juan, EA8RM plans to be active in the CQ WW WPX CW contest as EF8R from Gran Canaria (AF-004) on all bands. QSL via EB7DX and/or LoTW.

Mauritius, 3B8. Hans, PA3HGT, will be active as 3B8/PA3HGT from Mauritius (AF-049) between 4 and 24 September. Activity will be holiday style on 40, 20 and 10 metres using mostly SSB and possibly some digital modes. Equipment will be an Icom IC-7100 into an End-fed antenna. QSL via his home call sign, direct or by the Bureau. No LOTW or eQSL; he prefers a real card!

CQ Contest Hall of Fame

CQ magazine today announced the induction of two new members to the CQ Contest Hall of Fame, which honours those contesters who not only excel in personal performance but who also "give back" to the hobby in outstanding ways. The CQ Contest Hall of Fame was established in 1986 to recognize those amateurs who have made major contributions to the art of radio contesting. This year's inductions bring the total number of members of the CQ Contest Hall of Fame to 71. The 2018 inductees to the CQ Contest Hall of Fame are:

Andy Blank, N2NT - Nominated by the Frankford Radio Club, Andy has been the director of the CQ World Wide 160-Meter DX Contest for the past decade. A world-class contester with wins stretching back to 1979, Andy has also competed in five Word Radiosport Team Championship (WRTC) competitions and was Director of Competition for WRTC-2014, held in Massachusetts. He is also a member of the advisory board of the World-Wide Radio Operators' Foundation (WWROF).

Tom Wagner, N1MM - Nominated by both the Yankee Clipper Contest Club and the Northern California Contest Club, Tom is best known for his development of and ongoing upgrades to the N1MM Logger, which has become the world's most popular contest logging software. The program supports more than 240 different contests, multiple operating modes and integration with any number of transceivers and station accessories. Tom now leads a team of developers who are developing further enhancements and were recognized with the YASME Excellence Award in 2015.

SAAF Museum Open Day—Saturday 02 June 2018 at Swartkops Air Base—ZS6MUS

A Simple Electrolytic Capacitor Tester

John ZS5JF

Renovating our old boat anchors often means we have to investigate the health of the high voltage smoothing capacitors used. Many of these are well past their "sell by date" and probably need to be replaced. Plugging in a newly acquired item without doing some initial investigation can bring about some rude surprises!

So after an initial visual inspection it all looks good and it is time to switch it on. But a couple of gotchas may be lurking. Although the electrolytic capacitors may look OK they can develop internal faults, normally due to a prolonged period of not being used. Older electrolytics can suffer from internal corrosion which is not externally visible. A good quick method of testing is to connect an ohm-meter across each HV electrolytic and see what resistance it reads. A good capacitor will show a low resistance when the ohm-meter is first connected which gradually rises after several seconds. This is due to the capacitor charging up to the battery voltage of the ohm-meter. This generally is a good omen! If you have a fancy DVM then many have a capacitance measuring feature which can determine the actual value. Don't be surprised if the measured value and the value marked on the case differ by quite a bit. This is normal for the older style capacitors. A tolerance of –20% to +50% is quite common. Modern electrolytics have tighter tolerances, some as little a ±10%, but this isn't essential in this type of equipment.

I might add that it is necessary to cast off at least one terminal of the capacitor so you are actually measuring the capacitor and not the rest of the circuitry around it! Ideally remove all the connections from both terminals so you know what you measure is the capacitor and not some not too obvious component hanging across the device. If it has a bleeder resistor then that also must be removed or it will nullify the test.

Now the big moment when you throw that switch. Before turning on for the first time take the precaution of connecting a lamp bulb in series with the mains. If the capacitor, or some other bit has a big problem the lamp will light up at full brilliance. If the equipment is OK then what should happen is the lamp will light momentarily at close to full brightness and quickly dim to a lower level. This is the initial inrush current charging the big electrolytics, once that has occurred the lamp should be fairly dim. If this happens then you can remove the safety lamp and plug in normally.

If you wish to delve deeper into the mysteries of HV electrolytics then a bit of test equipment is required. This is commonly known as a "*Capacitor Leakage Test Set*" and various manufacturers over the years made them for all sorts of different capacitor types. Today, now that valve audio equipment is becoming popular, the prices of these old testers have reached ridiculous prices on Ebay and other places. And there is no guarantee a second-hand item is going to work and give reliable results. So we need to find a lower cost solution.

I thought about this problem and came up with a simple, but accurate method of determining the leakage current of electrolytic capacitors of the type we are liable to encounter. This bit of circuitry only caters for the high voltage types, lower voltage electrolytics don't normally give much trouble and they are cheap to replace with modern versions.

One thing to be aware of is that electrolytics need to be tested with a voltage up to the rated working voltage to identify potential faults. Very often a 450V electrolytic will test OK with a lower voltage but fail at the full rated voltage. The leakage current is very much determined by two factors. The first is the case temperature, the higher the temperature the higher the leakage current. The second is the applied voltage. Whereas the increase in leakage for temperature is a linear response it isn't for an applied voltage. Up to about 75% of the voltage it is reasonable linear and above this it starts to become nearly exponential and increases rapidly as you approach the full rated voltage.

So what sort of leakage current is deemed acceptable?

To determine this you have to peruse the manufacturers data sheet. Today many of the older types are obsolete and data sheets are hard to find. But modern types give us a good feel for what is good and bad. If we consider an electrolytic of 100µF rated at 450V dc working then we can see what is acceptable. Most manufacturers use a standard formula which gives the maximum permissible leakage current for the full rated voltage when the capacitor is run at the maximum case temperature. This is the absolute worst case condition and as we like to run our capacitors well below the maximum case temperature we can expect a much lower leakage current. However, the worst case condition is still an acceptable working state and isn't likely to make the capacitor fail. As an insider at a respected capacitor manufacturer told me some years ago

"*We run our 450V capacitors at +105°C for 5,000 hours to get reliability data. The full test voltage for survival is today either 125% or 150% of the marked can voltage for 30s, depending on the type. So they are very conservatively rated for normal use. Metallised paper capacitors (MP) often had a 600V proof voltage for a 450V type and 160V MP had a 450V proof voltage.*"

Nice to know! Most manufacturers state that a 450V rated voltage will safely withstand 525V for at least 10s and often longer. Metallised paper capacitors also are non-polarised for most types, a 160V example I have is also rated at 110V ac 50Hz and proofed to 450V dc. They are also have a tighter tolerance, this 16µF – 160V measures 16.04µF and is a ±10% type.

The formula to determine the worst case leakage is:

$$I \approx 3\sqrt{V \times C}$$

Where I is the measured leakage current in µA, C is the value in µF and V is the applied rated voltage.

Picture 1 Metallised paper foil non-polarised capacitor. Date code is May 1962

From this we can determine that a 100µF / 450V electrolytic at maximum case temperature will have a leakage current of not more than 636µA (0.64mA) and at lower case temperature it will be lower.

Very large value electrolytic capacitors can have leakage current of several µA and still be within specification. For example, the Nichicon NQ range, a +85°C series, goes all the way up to 6800µF at 450V. The formula Nichicon gives for leakage is the standard one with a rider added of "*or 5mA which ever is the smaller at +20°C*". The 6800µF value works out to 5.25mA using the standard formula. This capacitor measures 90mm diameter and is 145mm in height. It has a maximum ripple current rating of 21.5A at 120Hz.

The other thing to be aware of is that electrolytic capacitors need regular reforming to maintain the capacitor in perfect health. Reforming is a process where the full rated voltage is applied through a series current limiting resistance and left to stew for several hours. But in reality reforming occurs each and every time the equipment is powered up. BC Components (originally Philips Capacitors) supply a handy technical write up of how aluminium electrolytics function and how the leakage current decreases when the voltage is applied. The diagram below shows the typical behaviour of a 1000µF - 35V electrolytic, but ALL aluminium electrolytics behave in the same way after powering up.

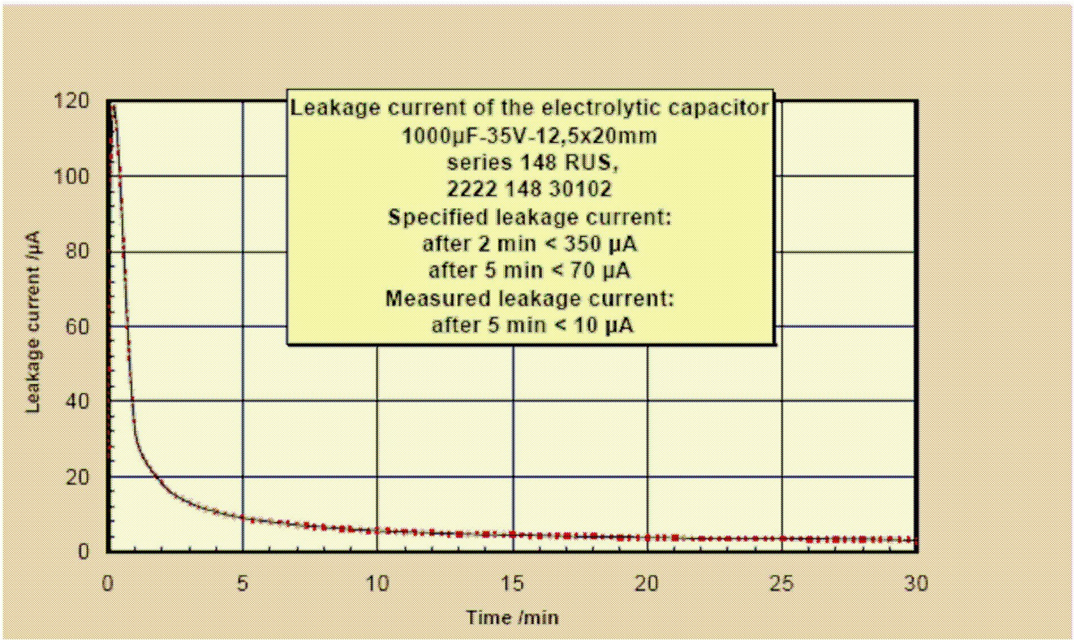


Figure 1 Typical leakage current of a 1000mF – 35V electrolytic

The maximum leakage current can be several tens of mA in low voltage caps, after the initial charging surge current, but quickly falls towards zero after several minutes. This leakage current is used to repair any voids which have occurred in the dielectric foil when the capacitor was left with no applied voltage, during periods when the equipment is switched off. It is a continual ongoing repair all the time a voltage is applied to the capacitor.

The time delay before measuring the leakage current is important. Most manufacturers specify not less than 5 minutes must elapse after applying the full rated voltage. Before this time has elapsed the capacitor is busy reforming itself and will draw more leakage current. It is a sort of "*trickle charging*" mode similar to lead-acid batteries.

The applied voltage needs to be at least 75% of the rated voltage for reforming to correctly format the dielectric foil, so testing on much lower voltages will often give a reading of an abnormally high leakage. The capacitor is probably serviceable if it has the full voltage applied. The applied voltage needs to be made via high resistance to limit the inrush current and the initial reforming current. For HV electrolytics of about 250V to 450V a 100kΩ resistor is a good choice. At 450V applied the highest current it can allow to flow is only 4.5mA, which is a safe value even for a dead short capacitor, or one which fails under test.

The time to charge up is a function of the series resistance and the capacitor value and the standard time constant formula of $t = RC$ gives us the time to charge to 62% of the final voltage. The time to reach 99.9% of the applied voltage is generally as long again, so with large values we can be waiting for a fair time before we can test. A 100µF capacitor and the 100kΩ is a time of 10s to 62% and about 20s to within a few % of the applied voltage. A 470µF would need 47s and 94s before it was fully charged. The basic tester is shown below with some suggested values for HV electrolytics.

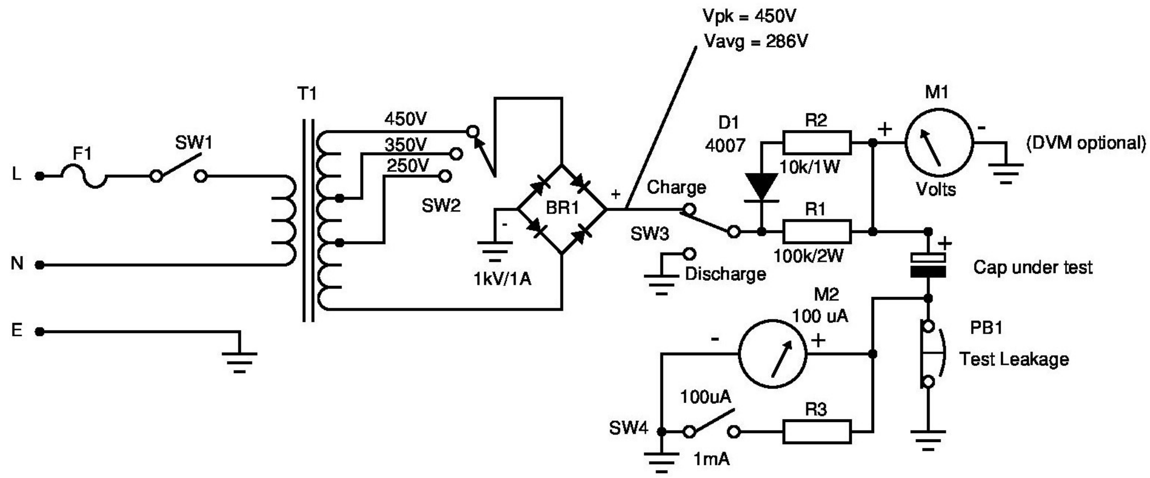


Figure 2 Simple leakage tester diagram

The capacitor under test is connected to the two terminals with the unit switched off. The Voltage selector switch should initially start on a lower voltage if you are unsure of the capacitor under test, otherwise select the correct voltage. The Charge/Discharge switch should be in the Discharge position. The mains is now switched on and the Charge/Discharge switch is moved to Charge. A voltmeter connected in parallel with the capacitor (your DVM) indicates the steady rise in voltage. When the voltmeter indicates the full voltage, and after the required time has elapsed, generally at least 2 minutes, then the Test button is pressed and the leakage current is measured.

To cater for possible higher leakage the meter has a higher current range of 1mA, it is prudent to start on this range and to switch down as the reforming takes place. The meter is normally shorted out so that the initial high inrush current does not damage the delicate meter. Releasing the push-button returns the short across the meter to protect it. (The 1mA shunt resistor will need to be determined by the meter you are using).

With the switch in the Discharge position the capacitor is rapidly discharged down to 0.6V by the discharge resistor R2 so it can be safely removed without giving the user a belt!

The applied dc voltage is not smoothed before applying it to the series resistor. The peak voltage is the required capacitor rating but the average dc voltage is only 0.636 of the peak. In the event of a dead short capacitor normally the current would be 4.5mA when 450V is applied, but under a short without any smoothing the maximum current is only 2.8mA due to the dc voltage being the average. This feature allows the tester to be used for unattended reforming on a poor capacitor. If the capacitor goes short it cannot pass more than 2.8mA, so no damage occurs to the tester. Reforming of a poor capacitor can take several days!

The transformer for the high voltage needs minimal current, a maximum of 20mA secondary would suffice. A possibility of using low voltage transformers can be pressed into service. The basic idea is shown below, where some 9V / 10VA transformers are used to generate the high voltages.

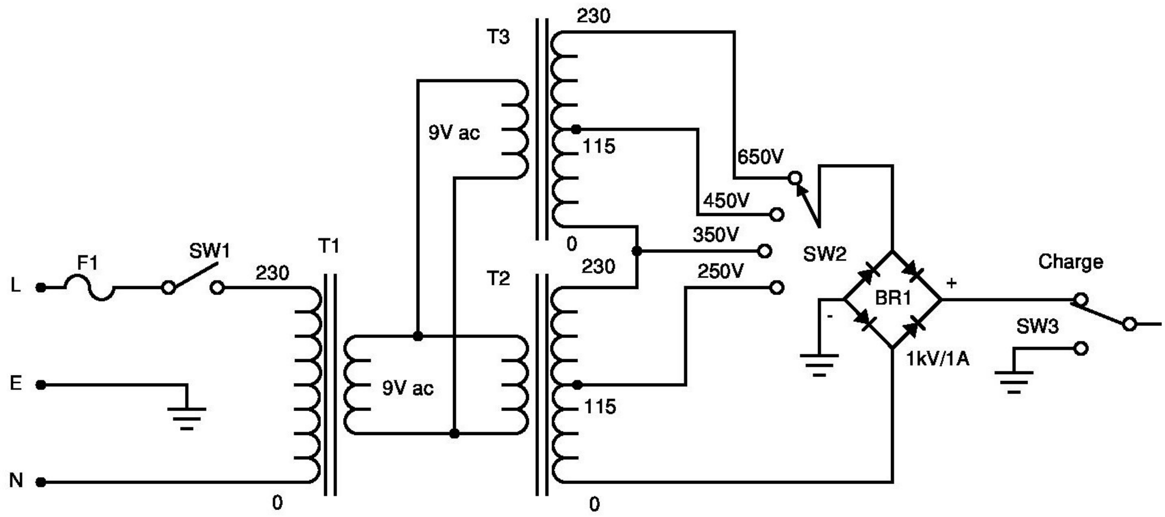


Figure 3 Method of using small 9V transformers back-back to derive the HV

Component values can be altered to suit your exact requirements. Bridge 1 can be either a packaged bridge or made from 1N4007 diodes, the choice is yours.

ESR

Finally, a mention of the ESR relating to HV electrolytics. ESR is the *Equivalent Series Resistance* of a real world capacitor. The ESR is the only thing that can dissipate power in a capacitor when ripple current flows. In high current, low voltage switch mode supplies it is an issue as the ripple current can be very high. However, in the type of low ripple current HV supplies commonly used it isn't a great concern.

The total resistance to ac flow in a capacitor is the *impedance*, this value is often quoted by the capacitor manufacturer of HV capacitors, whereas ESR generally isn't as it is of no concern for this type of application. The impedance (Z) of a capacitor is made up of the capacitive reactance and the ESR connected in series. The standard formula is:

$$\mathbf{Z = \sqrt{(R^2 + X^2)}}$$

For a 100µF electrolytic operated on a full-wave rectifier system with a 50Hz mains supply the ripple frequency is 100Hz. The reactance of the capacitor is hence 16Ω. If the ESR happened to be also 16Ω then the impedance is only 22.6Ω. If 500mA of ripple flows in the capacitor the rms ripple voltage will be 11.3V, which compared to the dc of 450V is very small. It is only 32V p-p, as a percentage of the total voltage it is 7% p-p. The power dissipated in the capacitor at 500mA ripple current is only 8W, again not a great deal of power to worry about. In fact the reason the manufacturers don't bother to quote ESR for HV capacitors is because the effect it has on low ripple current is so low it is never a problem. So measuring ESR is in fact a waste of effort.

In reality no simple ESR tester actually measures the true ESR, because it doesn't know what the capacitor value is. To calculate the true ESR you need to first measure the Z value and then to substitute the X value into the formula and then the ESR can be determined. What so-called ESR meters measure is the Z portion. To do this you need to know the exact value of the capacitor, the marked value is often not the true value!

To determine R we use the formula:

$$\mathbf{R = \sqrt{(Z^2 - X^2)}}$$

Tolerance

Another oddity about aluminium electrolytics is the capacitance tolerance. The lower cost types today have fairly loose tolerances, typically –20% to +50%. Higher grade types can be better, some as low as 10% tolerance. But if you purchase some new ones and measure the actual value they turn out to be out of specification. Why is that?

The answer is that that is not how the manufacturers test them. They power them up for extended periods, typically 24 hours at the full applied voltage and then discharge them down to zero volts. Only then will the capacitor give the correct value. Aluminium electrolytics when held at zero applied voltage for extended periods suffer from depletion of the dielectric foil. It shrinks in thickness because it doesn't have the polarising voltage to cause the reforming. When the dielectric thickness diminishes the capacitance value increases.

The capacitors you purchase may have been in storage for a long time, the date code tells us when they were made, but a year in storage before or after sale is not uncommon. You can prove this by a simple experiment. Take a known value electrolytic, say, a 1000µF – 25V and power it up at 12V for 24 hours. After the time discharge the capacitor and measure the value. It will be close to 2000µF as the dielectric thickness has diminished to half its normal thickness. Switch-mode supply designers exploit this feature to get higher values in the same case size.

For a 5V output supply it is very common to find they use 25V or even 35V electrolytics when a 6.3V should be adequate. As the value goes up the ESR also goes down, so a win-win situation for high ripple current applications. But if you take this same capacitor and now apply the marked voltage it will have a high leakage current until reformed to the new voltage!

Results of the Valve QSO Party May 2018

The May 2018 Valve QSO Party certainly drew a lot of participants, even with the so called "poor" band conditions.

On Saturday 05 May there were 20 stations on the AM session, which was a really great turn out.

On Sunday 06 May there were a total of 58 stations on SSB and all the divisions were represented.

The following are the top scores:

AM

1st Thanie ZS4AZ—40 points

2nd Helge ZS6HB—38 points

3rd Johan ZS4DZ—6 points

3rd Barrie ZS2NF—6 points

SSB

1st Thanie ZS4AZ—120 points

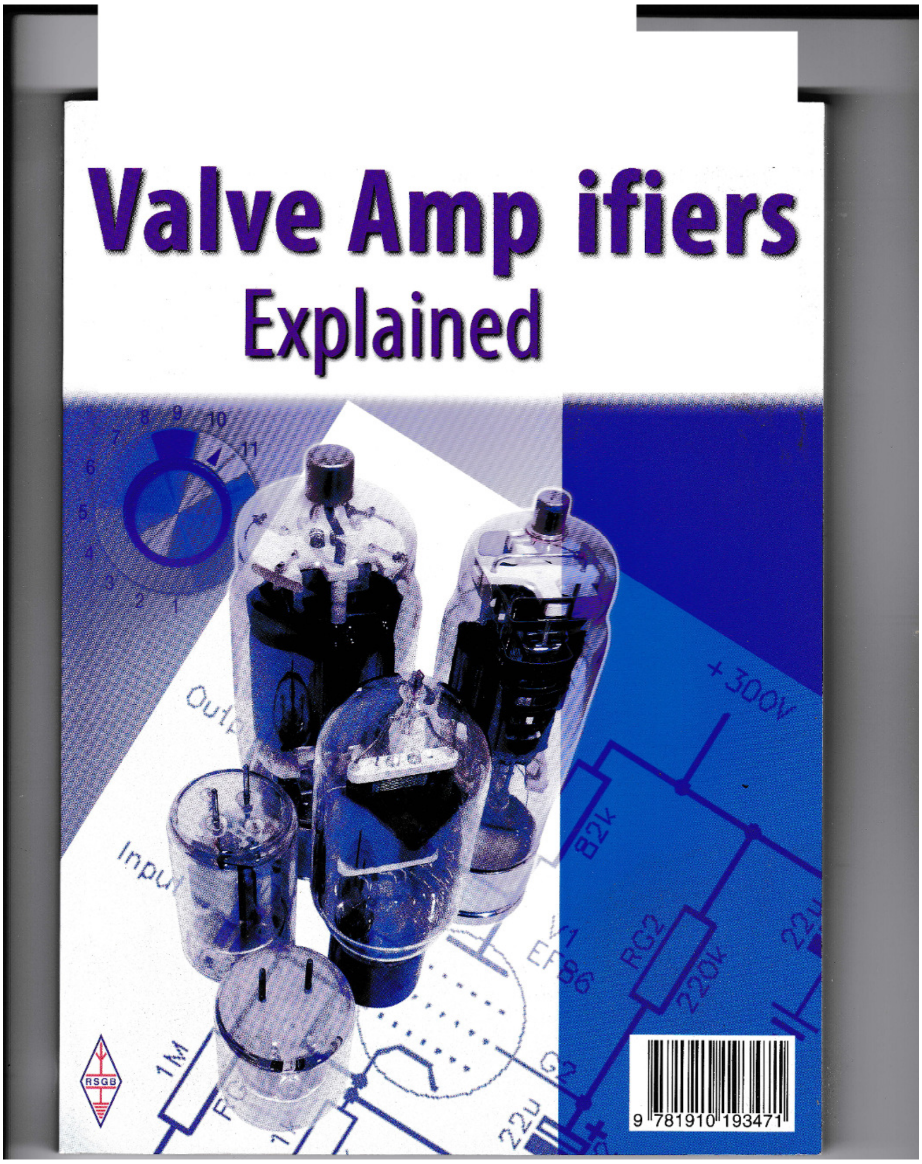
2nd Frank ZS1MF—46 points

3rd Barrie ZS2NF—28 points

A total of 5 logs for the AM and 7 logs for the SSB were received.

ZS0AWA scored 22 points in the AM section and 102 in the SSB section.

Congratulations to all for an outstanding effort.



We have a copy of Valve Amplifiers Explained, by John Fielding ZS5JF up for grabs.

This book will be raffled at R20 per entry and is to be drawn at the 2018 AGM.

To enter, you can deposit R20 into the following account and send us proof of payment and your name will be put into the draw. Please use your call sign as reference when making the deposit.

Account Name: A G Cairns
Standard Bank
Benoni
Acc No: 225334119

The following is the preface from the book:

This new book by John Fielding ZS5JF, is for everyone who uses - or is considering using - an HF or VHF linear amplifier. While some amateurs may be of the opinion that valves are an obsolete technology and semiconductors are a better way, John Fielding very definitely thinks otherwise! After reading this book you will be under no illusions that, in his opinion, valves are far superior to semiconductor devices for most linear amplifier applications. As he says, "When you need real power and very good linearity, a valve is very hard to beat."

Essential reading for anyone building a valve linear amplifier, the author guides the reader through the choice of valves for various purposes. Valve Amplifiers Explained starts with a chapter on basic valve theory and explains how to interpret valve characteristic curves. The various classes of operation of amplifiers - Class A, Class B, Class ABl, Class AB2 and Class C - are all covered in detail. The relative merits of grounded cathode and grounded grid amplifiers are discussed and a chapter is devoted to the causes of distortion in valve amplifiers - and how to avoid such distortion. The author explains that linearity is primarily a function of the power dissipation of the device and the supply voltage and he devotes a whole chapter to good power supply design. The various protection circuits that an amplifier should have are also covered. While the

book is equally relevant to HF and VHF enthusiasts, a chapter is devoted specifically to the design of VHF RF power amplifiers. Another chapter even discusses liquid cooling of valve amplifiers.

There is advice too for those who, instead of building an amplifier, are considering purchasing a commercially-made linear. Those who use commercial linear amplifiers and want to understand more about how they work will not be disappointed.

As John says, "There is a certain aura about valve equipment. The glowing filaments and the gentle buzz of a high voltage power supply are a sort of magic few have had the pleasure of knowing." After reading Valve Amplifiers Explained you will want to join that elite few!

(You can also give your donation to any of the Committee at any gatherings where you may meet up with them and they can pass on the money to the account. Be sure to give your name and call sign.)

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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 yester-days radio's and associated equip-ment. To encourage all like minded amateurs to do the same thus ensur-ing 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 06:00 (04:00 UTC) —AM Net—3620
Saturday 07:00 (05:00 UTC) —Western Cape SSB Net— 3630
Saturday 08:30 (06:30 UTC)— National SSB Net— 7140; Sandton repeater 145.700
Echolink—ZS6STN-R; ZS0AWA-L
Relay on 3620 for those having difficulty with local skip conditions.
Saturday 14:00 (12:00 UTC)— CW Net—7020; (3550 after 15 min if band conditions not good on 40)
Wednesday 19:00 (17:00 UTC) — AM Net—3620, band conditions permitting.