
THE PROPAGATOR

MONTHLY NEWSLETTER OF THE ILLAWARRA AMATEUR RADIO SOCIETY

PO BOX 1838 WOLLONGONG NSW 2500

VOLUME 81, NUMBER 6.

JULY 1981

MEETINGS ARE HELD ON THE SECOND MONDAY OF EACH MONTH (EXCEPT JANUARY) AT 7.30 P.M. IN THE CONGREGATIONAL HALL, CORNER OF COOMBE AND MARKET STREETS, WOLLONGONG. VISITORS ARE WELCOME TO ATTEND MEETINGS.

NOTICE OF MEETING:

The July general meeting of the Illawarra Amateur Radio Society will be held on Monday 13th July at 7.30 p.m., in the Congregational Hall, Coombe Street, Wollongong.

LAST MONTH'S MEETING:

The June meeting was the first which the club has ventured to hold on a public holiday (whether by choice or by accident has been a matter of debate) - but although attendance was down a little (between 40 and 50) a most interesting evening ensued.

Dave Henderson VK2VAV/YKQ gave a most illuminating talk and demonstration on lasers. He showed diffraction patterns produced by narrow slits, how to measure the wavelength of the radiation using a steel tape measure, and how to excite the residents of a building half a mile away by aiming the laser's red spot of light at it. All in all, the audience was just as stimulated as was the emitted radiation!

CLUB ACTIVITIES:

Don't forget:

1. The 15 metre get-together on Sunday afternoons on 21.170 MHz at 3 p.m. local time to promote our club's "Lawrence Hargrave Award".
2. The 80 metre net on 3.565 MHz at 8 p.m. on Sundays.
3. The July meeting on Monday 13th July.
4. The August meeting on Monday 10th August.

Join in the activities, and by your participation make our club better for everyone.

BLACK SWAN AWARD:

Morry VK2VVN reports the following information about the "Black Swan Award", obtained from a contact with VK6NFL:

Contacts needed for the award are 19 VK6 novice contacts (on all bands for novices) and 4 of those contacts must belong to the Perth Radio League. Some of these members are as follows: VK6 NFL, NHW, NSL, NEQ, NJF, NBH, NRW. So for the ones looking for awards, good luck on Sundays.

PAGES FROM THE PAST:

"The meeting to reform the Wollongong (N.S.W.) Amateur Radio Club, which has been in recess for a number of years, was held at the Wollongong Technical College on August 6. If any amateurs or listeners in the area have not heard of the move, full details can be obtained by contacting Don Reynolds, VK2ZRK, or other amateurs in the district."

- from "Radio, Television and Hobbies", September, 1962.

ILLAWARRA AMATEUR RADIO SOCIETY - INFORMATION

MONTHLY MEETINGS: Second Monday of each month (except January) at 7.30 p.m. in the Congregational Hall, corner of Coombe and Market Streets, Wollongong.

CLUB NETS: Phone nets are held on six metres (52.525 MHz FM, 8.30 a.m. Sundays), and on eighty metres (3.565 MHz, 8.00 p.m. Sundays). An informal morse net is held on 28.46 MHz, at 8.00 p.m. on Tuesdays - nervous newcomers to CW are especially welcome on this net.

MONTHLY NEWSLETTER: The Propagator is usually posted to reach members during the week before the monthly meetings. Technical, news, and humorous items are always wanted. "For Sale" and "Wanted" advertisements are free for members. Give your material to the Editor, or any Committee Member, at meetings or during the month. Copy deadline is the last Tuesday of each month.

MONTHLY BROADCAST: 7.15 p.m. on the Sunday night before the monthly meeting, on VHF repeater 6850 (Ch 5), UHF repeater 8225 (Ch 9), 28.46 MHz, and 3.565 MHz. The broadcast officer is always looking for news items, and would appreciate any contributions.

SLOW MORSE BROADCAST: From VK2AMW on Monday nights (except meeting nights), 7 to 8 p.m., on 1.805 MHz in the 160 metre band.

W.I.A. BROADCAST RELAYS: Sundays at 11 a.m. and 7.30 p.m. through VHF repeater 6850 (Ch 5). The 11 a.m. broadcast can also be heard on 7.146 MHz A.M.

AMATEUR RADIO CLASSES: Provide all the theory, regulations, and morse tuition needed to obtain the amateur Novice, Limited, and Full licences. Classes are held on Fridays, 6-9 p.m. during term time. Contact any committee member for further information.

VHF REPEATER: VK2RAW, Channel 6850 (old Ch 5) - 146.25 MHz in, 146.85 MHz out.

UHF REPEATER: VK2RUW, Channel 8225 (old Ch 9) - 433.225 MHz in, 438.225 MHz out .

QSL SERVICE: Club members who are also W.I.A. members can deliver and collect their QSL cards at club meetings.

LAWRENCE HARGRAVE AWARD: - the award of the I.A.R.S. - Stations in VK must work 10 members of I.A.R.S. Stations outside VK must work 5 members of I.A.R.S. Club station VK2AMW is worth the award by itself for any amateur. Cost is \$2 or 4 I.R.C.s (within Illawarra only, cost is \$1 and award must be collected personally from a club meeting). QSL cards are not needed for verification - send callsigns, frequencies, GMT, and payment to Box 1838, Wollongong, 2500.

MEMBERSHIP ENQUIRIES: For information about W.I.A. or I.A.R.S. membership, see Geoff Cuthbert VK2ZHU at club meetings. To join the I.A.R.S. by post, send your \$5 annual subscription to the Treasurer, I.A.R.S., P.O. Box 1838, Wollongong, N.S.W., 2500. For general enquiries, write to the Secretary at the same address.

SOCIETY PRESIDENT: Keith Curle, VK2OB, 24 Beach Drive, Woonona, 2517.

VICE PRESIDENT: Ron Dorin, VK2VOE. SECRETARY: Dave Meyers, VK2PBP

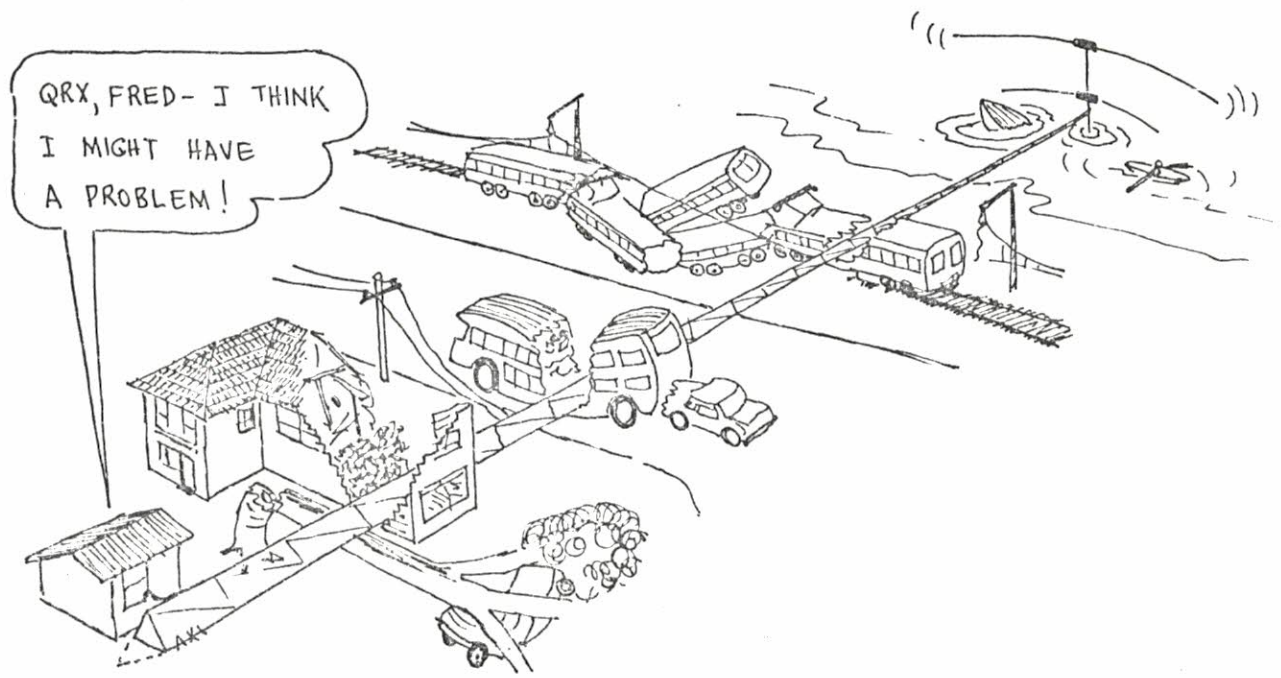
TREASURER: Geoff Cuthbert VK2ZHU. COMMITTEE: Mike Keech VK2VXS, Jock Taylor VK2JT, Eric Fien VK2YVF, Paul Engbo VK2DTZ, Denis McKay VK2LMR, Brian Wade VK2AXI.

QSL ENQUIRIES TO: Mike Keech VK2VXS and Paul Engbo VK2DTZ.

LAWRENCE HARGRAVE AWARD MANAGER: Mike Keech VK2VXS.

BROADCAST OFFICER: Denis McKay VK2LMR (phone (042)847786).

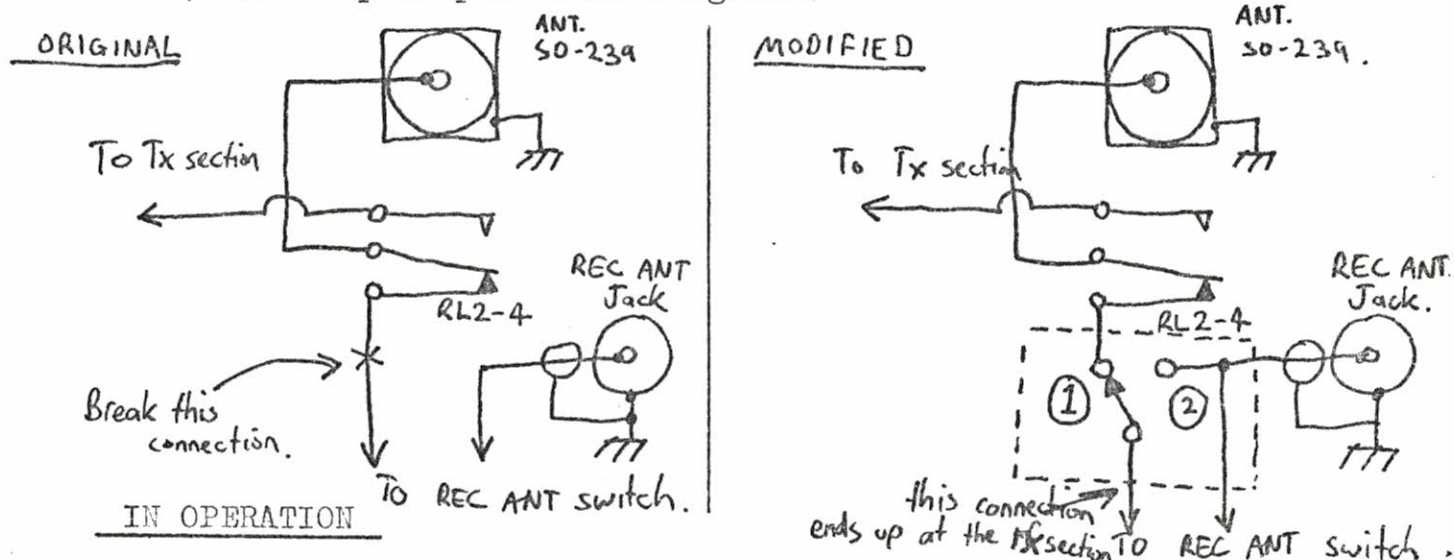
PROPAGATOR EDITOR: Brian Wade VK2AXI, 72 Murray Road Corrimal 2518, phone (042)841381.



On most rigs there is no provision for separate transmitting and receiving antennae.

This simple modification can utilise the tremendous voltage gain of a long-wire or allows connection of a 10/15M beam for reception on the 80M band to help reduce noise levels.

- 1) Obtain a miniature SPDT toggle switch.
- 2) Remove the covers on the rig and find a suitable spot between the SO-239 and REC ANT jack. Drill an appropriate mounting hole for the switch making sure it is WELL CLEAR OR INSULATED FROM THE H.T. SECTION.
- 3) Wire up as per these diagrams.



To save drilling more than one hole in the chassis, the REC ANT jack is used for the second antenna.

In position one the rig receives and transmits on the same antenna.

In position two the rig transmits on the antenna connected to the coax socket and receives on any antenna connected to the REC ANT jack.

PLEASE NOTE - An external receiver can only be used while the SPDT switch is in position one or if it is already connected to a separate antenna.

At this point I lay down my pen as I can hear an exotic JA station calling CQ.

Many thanks to Paul, VK2DTZ for the great idea.

MORE ON QSL CARDS

For information of members, we present extracts from the annual report of the VK2 QSL Bureau, By Bill Hall VK2XT, the former Bureau Manager. The report is for the year ending 28.2.81.

Mr. President and Members,

In submitting my report of the QSL bureau operation during the past 12 months, I wish to thank the many helpers who have assisted with the Inwards and Outwards QSL cards and my special thanks go to Fred VK2AAX and Lew VK2BTO for their unfailing regularity each Friday. The callsigns who have assisted at the bureau during the year are -

VK2PT, VW, XQ, AAX, ASC, BAM, BBA, BID, EMX, BTO, BVY, DCW, DMF, DPN, DPP, NBW, NIM, NOG, NZM, VDR, VEC, VGI, VLR, VLS, VMW, VOU, VPN, VRJ, VRU and daughter, VUQ, VUU, VCC, VWX, VXX, VXZ, YUV, ZSG, with regrets to anyone I have missed.

I am pleased to say the support is improving, but unfortunately it would take an estimated 20 man hours extra time each week at the bureau during this year to keep QSL's flowing smoothly. Perhaps it may be possible to organise a group of say 5 or 6 helpers to be available for an extra 3 hour period in addition to the usual Friday morning, or if extra help is available on the Friday, then additional sorting space could be set up.

The average weekly QSL card handling is approx. 10,000 with VK2N-- and VK2V-- series representing approx. 50% of the QSL's handled, but there is a gradual increase in the VK2D-- and VK2P-- series, and now the VK2K-- series are about to commence, also a number of original callsigns have been reallocated.

Most Amateurs have been most co-operative and many have expressed appreciation of the work done by the bureau, but unfortunately there has to be the unfortunate few who are unco-operative and are not prepared to assist, but rather hinder the voluntary work that so many helpers have been prepared to do.

The number of QSL cards unclaimed are reaching alarming proportions and the ones living the closest to the bureau seem to be amongst the offenders. Although QSL cards are taken to the Hunter Branch meetings each month very few collect them, or arrange for someone to collect on their behalf. At present QSL cards are held for one Non Member of the WIA in excess of 1500, while others vary from 200 to 300 cards.

Many amateurs fail to put their CALLSIGN on the envelope for return of QSL cards, while some send a stamped envelope with no address. This does make the job a little more difficult and time consuming.

If Clubs or non-members are sending QSL cards to the bureau for distribution, a check list of the number of cards sent would help also, thus making an agreed amount for deduction from any monies held. Also when sending a list of callsigns to the bureau, please put them in Australian Call Book order.

Perhaps someone has a suggestion to improve the QSL bureau, perhaps a group would like to visit the bureau on a day to be arranged to assist or inspect the bureau, perhaps VK2 councillors could visit the burea and have first hand knowledge of its operation, or perhaps someone could take over the bureau and improve its operation. Many letters are received asking of the bureau operation, especially from new Amateurs and I feel that publicity should be given each week in the WIA broadcast and also in AR.

Normal QSL cards allow approx. 100 cards to be sent overseas for \$1-10, but picture cards and odd types allow approx. 70 cards for \$1-10. Postage costs are high and those using exclusive QSL cards should be charged penalty rates.

Any Amateur expecting QSL's from the bureau, irrespective of where he lives would assist the bureau by sending a SASE (22 cents) stamp with callsign, or arranging a club, group or Atchison Street as their collecting point.

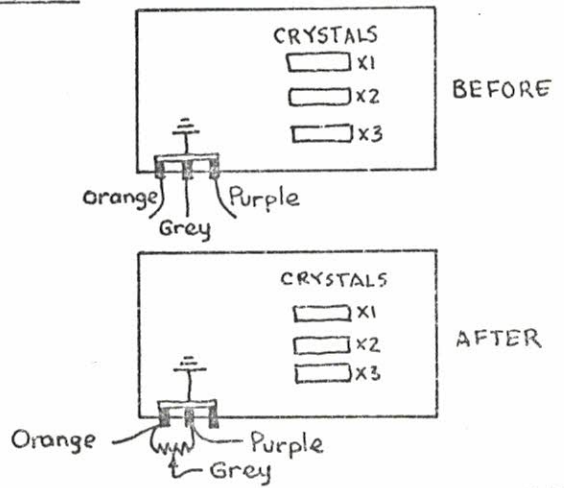
With sincere appreciation of the many helpers during the year, and appreciation of the many who, have expressed their appreciation of the service, I submit my report for the year ending 28th February 1981.

Yours Fraternaly, Bill Hall VK2XT

KENWOOD SERVICE TIP - IMPROVING THE ALC ACTION IN THE TS520S.

1. Remove the bottom cover.
2. Locate the 3-way tag strip on Board X50-0009-00 (see diagram).
3. Unsolder the centre grey wire.
4. Solder a miniature skeletal preset potentiometer (100K) between earth (centre tag) and the tag with the orange wire (see diagram).
5. Solder the grey wire on the centre tab of the pot.
6. Optimise setting of potentiometer using initially a two-tone generator and CRO and then check to ensure that no overmodulation (clipping) occurs on voice peaks.

- VK2LMR.



Pixilated Patents

By Mike Rivise

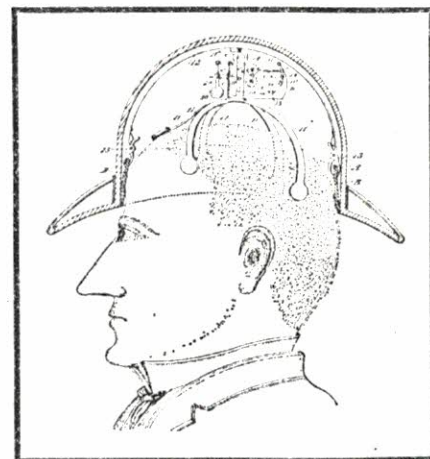
"Hat Trick!"

This is No. 131 in a series of odd and interesting inventions in the electrical/electronic field from the files of the US Patent Office.

If you happen to know some unfortunate fellow who would like to be noticed a little more by the female sex, then the automatic saluting invention of James Boyle (that's not James Bond) might be just the thing for him. In fact, one of the uses claimed for this hat rotating invention (No. 556,248 in 1896) is as "... a unique and attractive advertising medium." (Would the medium be the message in this case?) Boyle's invention doesn't really salute, but rather it performs the fanciful feat of raising the hat off the wearer's head, rotating the hat completely around, then setting it down again on the wearer's head. And it provides this stunning performance automatically whenever the wearer bows or nods his head.

Boyle's mad hatter device performs after each nod as long as its motor mechanism is kept wound and as long as its curved spring-fingers continue to gently grasp the wearer's head. The invention could be brought up to date a little by the use of a battery-powered electric motor in place of the winding mechanism. But even more helpful would be a pair of track shoes to increase the chances of escaping from the men in white jackets who would undoubtedly come after anyone foolhardy enough to wear such a contraption.

One cannot help but wonder where the inventor found the idea of saluting by twirling one's hat. Maybe he is way ahead of his time and this custom will yet set our hats—and our minds—awhirl. But, somehow it is difficult to imagine a parade in which

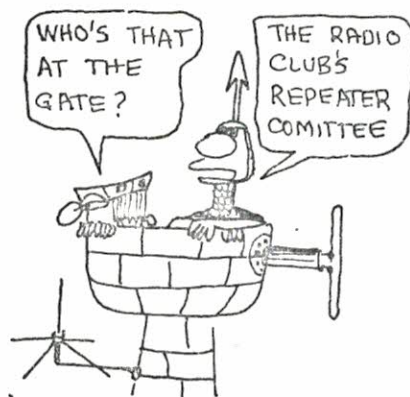


the time-honored "eyes right" is replaced by "eyes right, nod" and the viewers are greeted by 400 crazily spinning hats.

It should not be implied, however, that Boyle's whirling dervish has no uses. It could, for example, be used by policemen directing traffic to add even more flair to their already swash-buckling hand and arm signals. It also might be used in church in place of the old bucket of pebbles method for keeping everyone awake during the sermon, since a spinning hat would be unmistakable and shameful evidence of a nodding head. In addition, a man would have to be careful about accepting such a device as a gift, otherwise his hat rotations might be watched to determine how many female nodding acquaintances he has. As for its ability to attract the attention of the opposite sex, it certainly should do that—though it might attract more female giggles than females. In fact, feminine response to the invention might be indicated by one girl's comment who, after looking at the drawing, said that the fellow looks like Sherlock Holmes with a mechanical turtle under his hat.



Watch what he does - then we shan't have to send for him another time.



WHO'S THAT AT THE GATE?

THE RADIO CLUB'S REPEATER COMMITTEE



WHAT, AGAIN?

THEY SAY THAT SINCE THE REPEATER WAS MOVED TO THIS SITE, THE FINAL VALVE KEEPS GOING!



ALRIGHT - LET THEM IN - AND PUT THIS QQ6/40 WITH THE OTHERS.

GIN POLE FOR RAISING AND LOWERING TOWER

Mike Keech, WK2VXS.

If you don't like to climb towers to put antennas up and down, this could be for you. My tower is 30 feet plus 15 feet of pipe out of the top, to the quad. The whole 45 feet can be lowered and raised with the flick of a switch.

For my set up I used a 25 feet long 6 inch diameter galvanised iron pipe set 4 feet into the ground, with two small twin pulley blocks at the top of the pole and two more on the tower at the same height, and one single pulley 6 inches above the concrete pad.

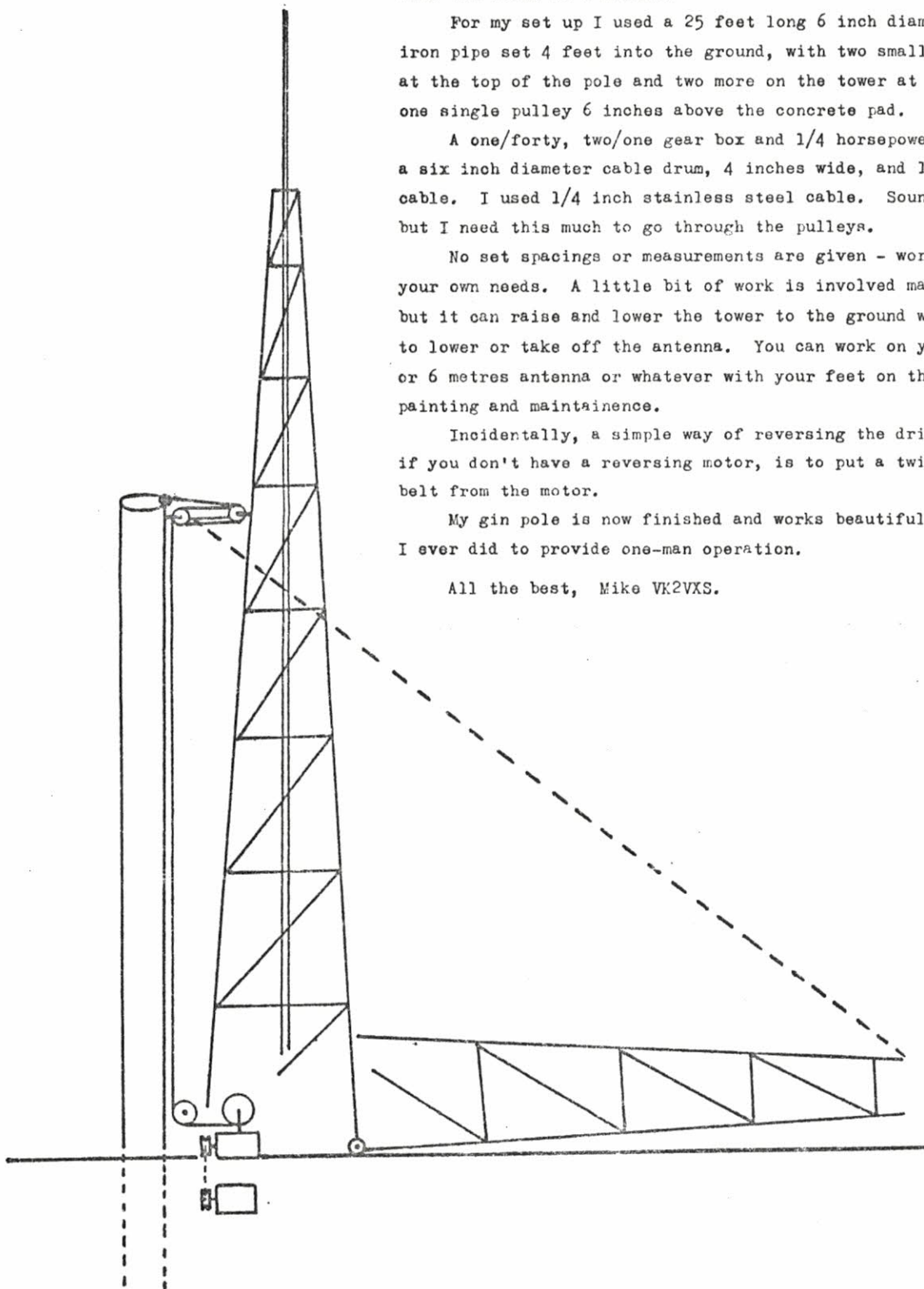
A one/forty, two/one gear box and 1/4 horsepower A.C. motor drives a six inch diameter cable drum, 4 inches wide, and 170 feet of steel cable. I used 1/4 inch stainless steel cable. Sounds a lot of cable, but I need this much to go through the pulleys.

No set spacings or measurements are given - work them out for your own needs. A little bit of work is involved making the system, but it can raise and lower the tower to the ground without even having to lower or take off the antenna. You can work on your 10/15/20 metres or 6 metres antenna or whatever with your feet on the ground for painting and maintenance.

Incidentally, a simple way of reversing the drive to the cable drum, if you don't have a reversing motor, is to put a twist in the driving belt from the motor.

My gin pole is now finished and works beautifully - the best thing I ever did to provide one-man operation.

All the best, Mike WK2VXS.





MOTOROLA
Semiconductor Products Inc.

AN-784A
Application Note

TRANSIENT POWER CAPABILITY OF ZENER DIODES

Prepared by
Applications Engineering and
Jerry Wilhardt, Product Engineer—Industrial and Hi-Rel Zener Diodes

Because of the sensitivity of semiconductor components to voltage transients in excess of their ratings, circuits are often designed to inhibit voltage surges in order to protect equipment from catastrophic failure. External voltage transients are imposed on power lines as a result of lightning strikes, motors, solenoids, relays or SCR switching circuits, which share the same ac source with other equipment. Internal transients can be generated within a piece of equipment by rectifier reverse recovery transients, switching of loads or transformer primaries, fuse blowing, solenoids, etc. The basic relation, $v = L di/dt$, describes most equipment developed transients.

ZENER DIODE CHARACTERISTICS

Zener diodes, being nearly ideal clippers (that is, they exhibit close to an infinite impedance below the clipping level and close to a short circuit above the clipping level), are often used to suppress transients. In this type of application, it is important to know the power capability of the zener for short pulse durations, since they are intolerant of excessive stress.

Some Motorola data sheets such as the ones for devices shown in TABLE I contain short pulse surge capability. However, there are many data sheets that do not contain

TABLE I — Transient Suppressor Diodes

Series Numbers	Steady State Power	Package	Description
1N4728	1 W	DO-41	Double Slug Glass
*1N6267	5 W	Case 41-11	Axial Lead Plastic
MPZ 5	350 W	Case 119	6 Cell Array
1N5333	5 W	Case 17	Surmetic 40
1N746/957/4371	400 mW	DO-35	Double Slug Glass
1N5221	500 mW	DO-35	Double Slug Glass
1N3821	1 W	DO-13	Axial Lead Metal

*The 1N6267 series is the latest addition to Motorola's zener transient suppressor line. These parts feature high peak power capability in a small, axial lead, plastic encapsulated package.

this data and Figure 1 is presented here to supplement this information.

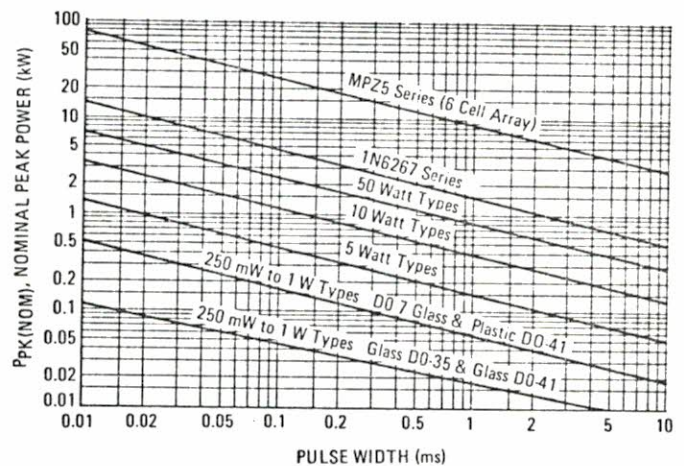


FIGURE 1 — Peak Power Ratings of Zener Diodes

Applies for non-repetitive rectangular pulses for zener voltages over 12 volts. For lower zener voltages, use 1/2 the peak power shown. Power is defined as $V_Z(NOM) \times I_Z(PK)$ where $V_Z(NOM)$ is the nominal zener voltage measured at the low test current used for voltage classification.

Some data sheets have surge information which differs slightly from the data shown in Figure 1. A variety of reasons exist for this:

1. The surge data may be presented in terms of actual surge power instead of nominal power.

2. Product improvements have occurred since the data sheet was published.

3. Larger dice are used, or special tests are imposed on the product to guarantee higher ratings than those shown on Figure 1. For example, the one watt 1N3821 series uses a die comparable to the 5 watt types.

4. The specifications may be based on a JEDEC registration or part number of another manufacturer.

At the limits of the various curves in Figure 1, the failure rate is less than 1 percent.

The data of Figure 1 applies for non-repetitive conditions and at a lead temperature of 25°C. If the duty cycle increases, the peak power must be reduced as indicated by the curves of Figure 2. Average power must be derated as the lead or ambient temperature rises above 25°C. The average power derating curve normally given on data sheets may be normalized and used for this purpose.

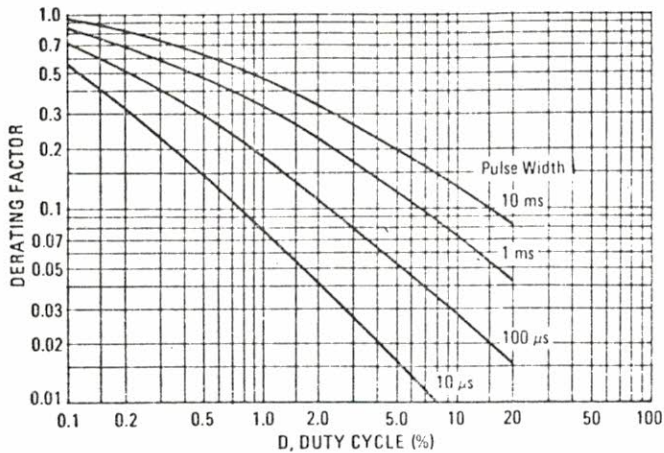


FIGURE 2 — Typical Derating Factor for Duty Cycle

When it is necessary to use a zener close to surge ratings, and a standard part having guaranteed surge limits is not suitable, a special part number may be created having a surge limit as part of the specification. Contact your nearest Motorola OEM sales office for capability, price, delivery, and minimum order quantities.

MATHEMATICAL MODEL

Since the power shown on the curves is not the actual transient power measured, but is the product of the peak current measured and the nominal zener voltage measured at the current used for voltage classification, the peak current can be calculated from:

$$I_Z(\text{PK}) = \frac{P(\text{PK})}{V_Z(\text{NOM})} \quad (1)$$

The peak voltage at peak current can be calculated from:

$$V_Z(\text{PK}) = FC \times V_Z(\text{NOM}) \quad (2)$$

where FC is the clamping factor. The clamping factor is approximately 1.25 for all zener diodes having a nominal zener voltage greater than 12 volts, when operated at their pulse power limits. For example, a 10 watt, 20 volt zener can be expected to show a peak voltage of 25 volts regardless of whether it is handling 1250 watts for 0.1 ms or 160 watts for 10 ms. This occurs because the voltage is a function of junction temperature and IR drop. Heating of the junction is more severe at the longer pulse width, causing a higher voltage component due to temperature which is roughly offset by the smaller IR voltage component. Zener diodes with nominal voltages below 12 volts do not exhibit as consistent a behavior because of alloy junction nonuniformities; the clamping factor, however, rarely exceeds 1.5.

For modeling purposes, an approximation of the zener resistance is needed. It is obtained from:

$$R_Z(\text{NOM}) = \frac{V_Z(\text{NOM})(FC-1)}{P_{\text{PK}}(\text{NOM})/V_Z(\text{NOM})} \quad (3)$$

The value is approximate because both the clamping factor and the actual resistance are a function of temperature.

CIRCUIT CONSIDERATIONS

It is important that as much impedance as circuit constraints allow be placed in series with the zener diode and the components to be protected. The result will be a lower clipping voltage and less zener stress. A capacitor in parallel with the zener is also effective in reducing the stress imposed by very short duration transients.

To illustrate use of the data, a common application will be analyzed. The transistor in Figure 3 drives a 50 mH solenoid which requires 5 amperes of current. Without some means of clamping the voltage from the inductor when the transistor turns off, it could be destroyed.

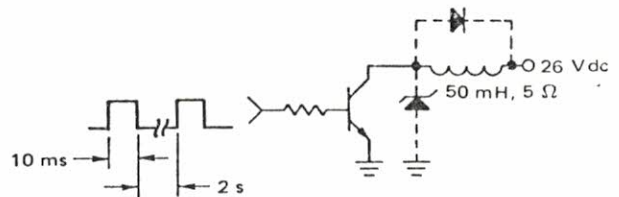


FIGURE 3 — CIRCUIT EXAMPLE

Used to select a zener diode having the proper voltage and power capability to protect the transistor.

The means most often used to solve the problem is to connect an ordinary rectifier diode across the coil; however, this technique may keep the current circulating through the coil for too long a time. Faster switching is achieved by allowing the voltage to rise to a level above the supply before being clamped. The voltage rating of the transistor is 60 V, indicating that approximately a 50 volt zener will be required.

The peak current will equal the on-state transistor current (5 amperes) and will decay exponentially as determined by the coil L/R time constant (neglecting the zener impedance). A rectangular pulse of width L/R (0.01 sec) and amplitude of I_{PK} (5 A) contains the same energy and may be used to select a zener diode. The nominal zener power rating therefore must exceed $(5 \text{ A} \times 50) = 250$ watts at 10 ms and a duty cycle of $0.01/2 = 0.5\%$. From Figure 2, the duty cycle factor is 0.62 making the single pulse power rating required equal to $250/0.62 = 403$ watts. From Figure 1, one of the 1N6267 series zeners has the required capability. The 1N6287 is specified nominally at 47 volts and should prove satisfactory.

Although this series has specified maximum voltage limits, equation 3 will be used to determine the maximum zener voltage in order to demonstrate its use.

$$R_Z = \frac{47(1.25 - 1)}{500/47} = \frac{11.75}{10.64} = 1.1 \Omega$$

at 5 amperes, the peak voltage will be 5.5 volts above nominal or 52.5 volts total which is safely below the 60 volt transistor rating.



MOTOROLA Semiconductor Products Inc.

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115811 PRINTED IN USA (3/80) MPS 198

PROJECTS AND PROBLEMS

A couple of years ago, Jim (VK2BOU), lent me a slow speed Morse tape, and from that start with assistance from Keith (VK2OB), the VK2 and VK5 W.I.A. Slow Morse Sessions on 80 metres, and more application than I thought I possessed. I got my full ticket last year.

Jim also lent me an August 1977 Practical Wireless, as I wanted to try to build the Morse Tutor described in it. With this design, each letter, figure or punctuation character is coded onto separate inch squares of p.c. board (Veroboard can also be used). In use, a square is plugged into the edge connector on the Tutor, and the Morse character sounds each time the Reset button is pressed. Speed, volume and tone can all be varied. The circuit contained seven T.T.L. i.c.s, shown on a Veroboard layout, which I promptly altered to include the 5 volt voltage regulator circuitry.

I was able to get the code squares made up for me, but when I came to wire the unit up I found many interconnections were not catered for by the Veroboard, so I had to wire it point-to-point. My method is to first draw an enlarged circuit diagram in pencil, and as each wire goes in I ink in the line on the diagram. When the whole circuit is in ballpoint, the job is done, and this one worked first time! Much later I found that a correction had been published nearly a year after the original article, giving a plc.b. layout, but I am quite happy with my unit as I wired it.

Once I was past the single morse character stage, I wanted to be able to plug in a keyboard via a diode matrix, but although I bought a quantity of diodes and a Tricky Dicky Video Brain keyboard, I didn't go much further with the idea. The Morse Tutor is ideal for anyone commencing to learn Morse, and I'm open to offers for it.

Early this year I found a combined Keyer/Instructor design using CMOS i.c.s in December 1980 "73" Magazine. This was what I'd been waiting for, although I had to rebuild the keyboard and modify the circuit to cater for the dual letter/figure keys on it. There is also an error in the published circuit diagram which threw me for a while, and faulty i.c.s were also a source of trouble. I found one make of 4001 Nor Gates (in my modification) were unreliable, but at last all problems were overcome and the keyer operates beautifully.

The next thing was to build the Instructor and again I picked up an error in the published diagram. Unfortunately I still couldn't get the thing to work properly (it should send out random Morse, continuous or in groups), and I spent hours checking wiring and substituting i.c.s to no avail. Finally in despair I wrote to the designer in the U.S., receiving in return a most helpful letter informing me that I was probably one of the first to build the Instructor and I had found a circuit error he had been unaware of. He suggested how it could be overcome but as it would have meant a major rewire, I found a simpler solution that I have since advised him of.

If anyone is interested in details I'll be glad to give them, so see me at the next meeting.

Ken Frost, VK2DOI (24 Oak St., Albion Park Rail, Ph 042-562323)

FOR SALE: Key HiMound HK-702 \$20. Yaesu guttermount mobile whip base, 2m stub, resonators for 80, 40, 20 - the lot for \$40.
Textbooks "Introduction to Microprocessors" by Leventhal \$10.
"Integrated Circuits and Semiconductor Devices: Theory and Application" by Deboo and Burrous \$5. Oddments including digital clock kit MJ4502 transistor, heavy duty heatsink - the lot \$10.
John Thurston VK2DET, 11 Cottage Grove, Corrimal.

THE PROPAGATOR

COMING EVENTS

This Month's meeting (Monday 13th July) will feature a talk by Dave VK2VAV on computers... should be a good one.

The September meeting (Monday 14th September) will have a guest speaker from the Ionospheric Prediction Service.

Start thinking now about Jamboree of the air - to be held in October.

The CLUB AUCTION this year will be held on SATURDAY 14th NOVEMBER - the afternoon event, on a weekend is hoped to provide more time (and space!) for this increasingly prestigious event.

FIFTH CONFERENCE OF CLUBS

The fifth conference of clubs is being hosted by the Illawarra Amateur Radio Society, and will be held in Wollongong on Sunday 1st November 1981. Keep this date clear in your diary... any W.I.A. member may attend as a spectator, so it provides a good opportunity for Illawarra members to see some of the organisation behind the hobby.

BITS AND PIECES

QSL BUREAU NOTE: The Illawarra Amateur Radio Society will handle inwards and outwards QSL cards completely free of charge for you, PROVIDED THAT: You must be a member of the W.I.A. AND a member of the I.A.R.S.

If you are not an I.A.R.S. member, you can deal with the bureau direct; if you are not a W.I.A. member, you must pay for cards, in advance, direct to the bureau.

It pays to belong!

TUESDAY NIGHT C.W. NET is looking for more takers! It meets on Tuesday nights at 8 p.m. on 28.440 MHz, and especially welcomes nervous newcomers to morse. (Most of the present speed demons made their first shaky contacts on the net.) The net also has a large group of listeners, practicing their morse receiving for the novice examinations. If you come up on the net, don't hesitate to ask the lads to QRS - they will be happy to do so. If any listeners would like some slower (or faster) CW on the net, just let some of the lads know at the club meetings.

TELEPRINTER SOCIETY: At the recommendation of members the subscriptions for A.N.A.R.T.S. (which are now due) for this coming year have been increased to three (3) dollars per year. Receipts will not be posted, unless a S.A.S.E. is enclosed with the subscription. Members should now have received their February "Arewise" in the post. Address all correspondence to The Secretary, P.O. Box 860, Crows Nest, N.S.W. 2065.

FOR SALE: Classic Radio Oscilloscope. S. Simpkin, P.O. Box 48, Robertson 2528.

FOR SALE: BC348 Receiver in working condition \$50. Les VK2ALK.

WANTED: Channel 5 repeater crystals for an MR3. Andrew VK2DVB.

ILLAWARRA ASTRONOMICAL SOCIETY: For those with astronomical interests, this group meets on the second Saturday of each month at the WEA Hall, 97 Corrimal Street, Wollongong, commencing at 7.30 p.m. Visitors are welcome. Address correspondence to: Illawarra Astronomical Society, P.O. Box 1814, Wollongong, N.S.W. 2500.
