

Ozark QRP Banner



The Official Newsletter of the Four State QRP Group WQ5RP

November 2022 Edition

Happy Holidays to all!

In This Edition: Big Brutus Bash 2022, The International CW Council, Look Inside of Your Antenna Tuner, Brutus 2022, Boats on the Air, FT-817 Reset, Building 4State QRP Kits, Altoid Tins for 4State Kits, PL259 - Soldering 101, Balanced Feedlines, End Fed Wires, Kitting 101, St. Louis QRP Society Enters its 35th Year,

Kitter Recognition

Most of us have purchased kits from the club. But how do the kits get from ordering to your mailbox? In **Kitting 101** you will see how one of the Kitters makes it all happen. We owe a lot to the Kitters that take their personal time to provide this service to the QRP community.

Why not put those new kits to work by participating in the 4State QRP Award Programs?

Four State Cricket Society - Become a Cricketeer!



Worked 25 Four State QRP Award!

Heard all States, HASA, Award!



Big Brutus Bash 2022

September 9 & 10, weekend after Labor Day brought the gathering of QRPers from 4 states to West Mineral, KS and the Big Brutus Bash site. This year we had a change from the pavilion to a really big set up tent and the ability to camp overnight next to your radio gear setup. Friday night is the beginning of setup and then Saturday mid-morning things begin to happen as the arrival of people, radio gear and food gets into action.

The attendees were, from 4 different states.

- | | |
|----------------------|-----------------------------------|
| 1. Johnny ACØBQ, KS | 9. Ed W65F, OK |
| 2. Pam KEØZWZ, KS | 10. Karen W5KKM, OK |
| 3. Bert NØYJ, KS | 11/12. Tim W5TAH, OK & XYL Angela |
| 4. Sharon KEØVMX, KS | 13. Chewy ACØBN, MO |
| 5. Joe WØMQY, KS | 14. Melba KDØEHW, MO |
| 6. Charles NK8O, KS | 15. Joy NQ5R, MO |
| 7. Tom N2UHC, KS | 16. Walter K5EST, MO |
| 8. Ray N5SEZ, NE | |



W65F & W5KKM in the bucket!



Big Brutus, the host of the Bash



L to R KEØVMX, NQ5R, W5KKM, KEØZWZ



KiteUP, K5EST



NØYJ on the cootie

All photos thanks to W65F



NØYJ presented NK80 his Certificate & Cootie key



NK80 station...note the Begali Spark key



W5KKM & W65F kicking back



ACØBQ's BBQ ribs were a HIT....says NØYJ



L to R, K5EST, ACØBQ, N5SEZ, W5TAH



Tom N2UHC station



ACØBQ giving tangle free lessons



NØYJ & KEØVMX arrived

All photos thanks to W65F

Brutus Bash 2022 was an enjoyable day in the field! Most of all visiting and making a contact with some of the best BBQ around to give you strength for a QSO makes for a great HamOut!

72/73 until next year..... de Walter - K5EST

Additional Brutus 2022 Photo's





Kitting 101 de ACØBQ

The Crystal Spotter Kit by Jim N5IB



So, you want to be a Kitter? Kitting is a very rewarding experience but it does take some patience and time to get the kit parts and supplies organized before the kitting begins.

Several things have taken place before the kitting process starts.

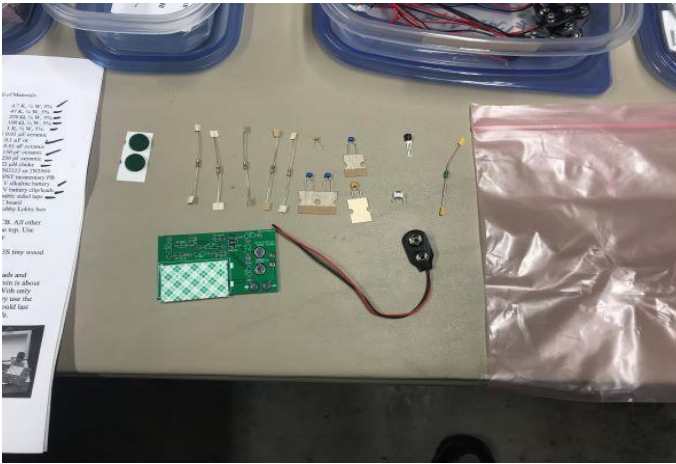
- The designer or designers have performed their magic of laying out the circuits, and designing the boards.
- A beta group has built and tested some of the new designs.
- Changes and corrections are made if necessary and the kitting process begins.
- A kitter is chosen from a list of volunteers that have expressed their desire to be a volunteer kitter for the 4SQRP group.
- Parts are ordered by our purchasing agent Joy Dufrain, and shipped to the Kitter.

Now the fun begins! Boxes of parts and supplies start to pile up on the counter, kitchen table or some other suitable staging area. You are looking at the big pile of boxes and thinking, will this actually be a kit? With some time and patience, it will be soon.

Please be careful as you handle the small parts, they can be dangerous to pets and small children.

I start out by labeling some food storage containers from the dollar store with the part label and number and quantity of the parts needed, working from the Bill of Materials. This is a easy way to store the parts so that they will not get spilled or mixed together. Depending on the complexity of the kit you may want to kit in several sessions. This is the most time-consuming part of kitting. When all the parts have been sorted, it is time to begin.





I put the parts in static sensitive bags, even though they may not need to be. It is a safe way to make sure something does not get zapped. If it is a small kit such as the Crystal Spotter, I put all the parts into one bag. If it is a large kit, I will pack the parts into sub groups. Resistors, capacitors, knobs, hardware that will be bagged up as a complete kit. I start with the parts that are one each and work my way up to the ones that require multiples. I line them up on my work space and go from left to right, top to bottom. I add the circuit board last because of the bulk.



I roll the extra length up and tape it shut.
This goes into the completed box ready for shipping.

Some kitters choose to put the bagged kits into the envelope that will be used for shipping. I usually place them in an envelope as the orders come in, just before I purchase the online postage and ship them. Either way is fine.



I have kitted for the 4SQR group for several years, and I have shipped hundreds of kits. I have lost track of the actual number, but I know that Pam (my XYL) and I kitted at least 500 of the ZZ-RX40's that Craig AAØZZ designed.

All in all, it is very satisfying to be a part of the 4SQR group that uses the funds from the kits sold to present the Ozarkcon QRP Conference in Branson, Mo.

If you have a desire to be a Kitter, please feel free to contact me.

72

Johnny ACØBQ

ACOBQ@4sqr.com

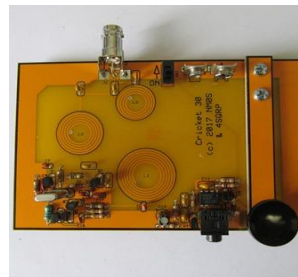


Get those kit orders in before the rush!

Ho Ho Ho!



Cricket 20



Cricket 30

Get one while they last!



Nouveau 75



Introducing: The International CW Council



Have you heard of The International CW Council? Their mission (from their web page):

"The International CW Council (ICWC) comprised of representatives from CW clubs world-wide, promotes and aids in the retention and growth of International Morse Code as a mode of communication between amateur radio operators."

A quick review of the Members section shows some friends of ours: 4SQRP is a member organization. Perhaps we should add SLQS to the roster!

A visit to the ICWC web site will give you details of a few activities that they sponsor that you might want to check out:

Medium Speed Contest (MST)

The Council is sponsoring a weekly contest in the CW speed of 20-25 wpm to have a transition between the slower speed and higher speed contests. The MST takes place on Mondays and Tuesdays which will make more CW activity on the bands during the early part of each week. The Council hopes this contest will become very popular worldwide. Details are available on the [MST Contest sub-page](#). And yes—there is a QRP power category!

The Top9 Activity

Is CW contesting not your thing? Do you prefer a nice ragchew when operating? Well, you're in luck, because there's another activity that you should check out and it's called "Top9." The idea behind Top9 is to encourage CW activity, and to do so by asking ops to have QSOs of a minimum of five minutes in length. And although it's not a contest per se, you are asked to report how many Top9 QSOs you complete on a monthly basis. Each QSO is one point... so it's easy. No Cabrillo needed!

[Details on Top9 are available](#) on the ICWC web site, where you'll also find the monthly submission form and results of previous months. I note that there's plenty of room for participation from North America (!) so jump in and be seen - and heard on the bands!

CW Events Calendar

Another resource that may be of interest is the [ICWC CW Events Calendar](#). Contests, nets... if you're looking for CW activity, this calendar may be helpful. Give it a look!

Building 4SQRP Kits by WA9GMW Paul

I discovered the 4SQRP kits from the QST article about the Bayou Jumper and quickly found more kits to build.

Purchasing the BJ got me truly started into the world of QRP. The idea of trying to build a solid-state version of the radios used by resistance units during WWII fit right in with my reading about the activities of the "The Secret Wireless War" a book covering the MI6 Communications 1939 thru 1945.

I started as a Novice in high school with a heath kit rock bound on 40 meters and as a Tech converting an ARC 3 into an AM 2-meter transmitter. I did get a Benton Harbor Lunch box on 2 meters with the regen receiver.

When I received the kit, I had already had the instructions and images from the 4SQRP internet site and was ready to build. The instructions were very clear and allowed me to build the transceiver over a few days. I must admit winding the coils was new for me and with the help of photos and instructions they were successful when I powered up the radio.

At one point (6/18/2020) I had a question about adjustment of the coils and so I posted my question on the 4SQRP group site. Answers and suggestions came sooner than overnight. With a little adjustment of the space between the wires in the 19 turns coil I had the receiver operating right in the frequency range with signals coming in strong. (Thanks Steve) With the transmitter tests checked out on a dummy load I was ready to try out my BJ.



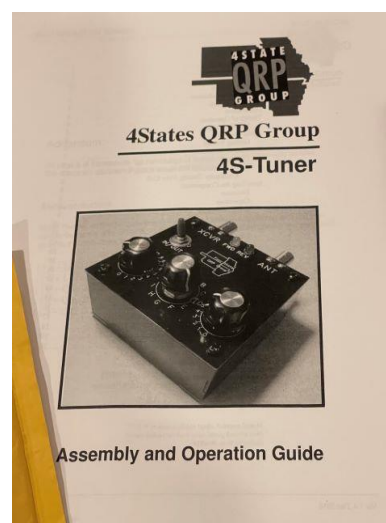
My QTH is just 21 miles due west of Chicago's downtown, and I did not have an antenna that I could load up on 40 meters however, at our vacation house in Three Lakes WI., I have a fine 40-meter dipole that was ready and waiting. It turned out I had not installed R21 but Jim, N5IB caught that from my comments on the group site and by 6/19 I was up and operating with about 4 watts out on a 12vDC supply.

ACØBQ kept me updated about the Wednesday night CW nets and on Wednesday 7/27/2020 Johnny (ACØBQ) lowered his receive frequency to about 7.120 after the initial wave of check-ins and 3 of us BJ operators made contact and were reported in the evening report that Wednesday. This contact made it possible for me to apply for my certificate and ID # which came in the mail soon after.

By the time I was able to make contact I had been using the BJ to practice my code as even as an extra I had not used CW for 20 years. Trips between the WI location and home QTH were easy with the BJ in the wooden box the club suggested. The receiver worked fine for W1AW code practice with just an attic wire down in IL.



By this time, I had been so pleased with the BJ kit and the 4SQRP Group that I had ordered a number of additional kits. The Soup'er Up'er for the BJ, which is built but I was following directions to be sure my BJ was working fine before making changes to it. I also purchased the EZKEYER III, a N5IB crystal spotter and the NMØS 4S-Tuner.



The quality of each of these kits has been great along with the clear instructions, support online and the care that goes into being sure all the parts are clearly marked to go along with the .pdf instructions. I have made new friends via the net and also found that I can operate a EFHW antenna in IL.

Altoid Tins for 4State Kits

I like to use Altoid tins for any QRP project that will fit in them. Two that come to mind are from the Four State QRP Group. The Crystal Spotter and QRP Dummy Load/Power Indicator. The Crystal Spotter just sits loose in the case and I remove it for use. The Crystal Spotter PCB had to have about 3/32" (away from any traces) of PCB material removed from the end opposite of the antenna connector to fit.). An insulating piece of cardstock was cut to fit the bottom of the tin, then I soldered the completed PCB to the Altoid tin using the four mounting pads on the board. I finished by identifying the project with a label both outside and inside of the lid.



73, Karl, KO8S

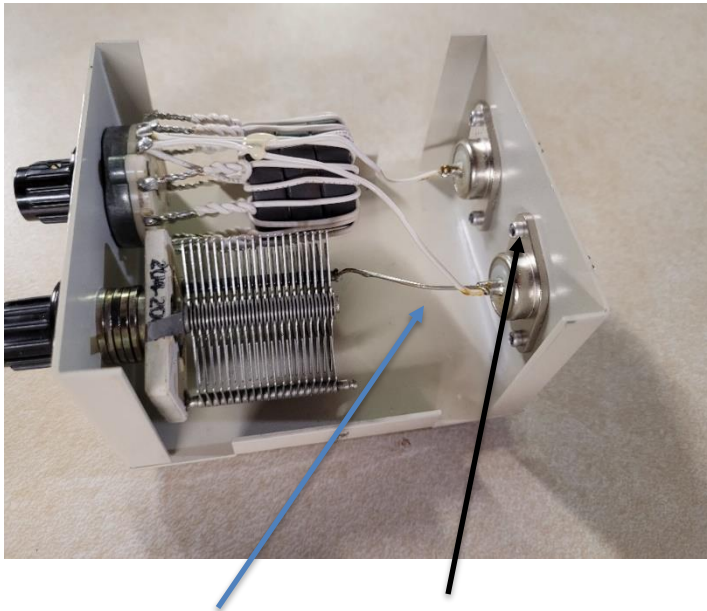
Take a Look Inside of Your Antenna Tuner

de KCØPP

At a recent hamfest I purchased an MFJ-16010 tuner. This is a small L-Match tuner that will work with both high impedance as well as low impedance simply by swapping the input and output. My intent is to use it for portable antennas and experimentation. As with any used tuner the first thing is to rotate the inductor switch before purchasing and listen or feel for rough spots. No matter how large or small the tuner is, the first thing that fails in a tuner is the inductor switch due to improper operation caused by arcing.



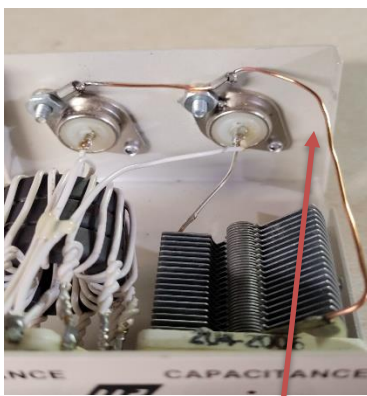
After I got it home, I opened to verify it was in good condition, and it was. But something stood out. The SO-239 connectors were held in place by rivets. Not necessarily a problem but I found that the inside of the case was painted. So how does it make a good ground path with the components? With a good digital ohmmeter, I ran some tests. As I suspected to continuity between the capacitor and both SO-239's was a several ohms, not zero as one would expect.



Painted interior

Rivets

I have several tuners of various type so I opened them up to see how they were built. Some had screws making a positive connection on the SO-239 connectors to the chassis. One of them had rivets just like the one that I just purchased. But none of them had the chassis painted inside. The one with rivets also had a higher ohm reading but the units that used screws were just fine.



Solid Ground Connections
Provided by solid wire



Tooth Washer under Screw

I'm not sure if there was a real issue with the operation of the tuner but it sure makes sense to have a good solid connection especially at QRP power levels. One other comment; MFJ rates the tuner for 200 watts. I would be concerned running 200 watts with the spacing on this capacitor.

All of the tuners checked were made by MFJ. I'm not indicating MFJ is the problem but those are just the type I have. I would recommend checking any brand of tuner to see if they also have this issue.

⚡ Shorts ⚡

FT-817 Reset

My **Yaesu FT-817 bridge** decided that it would no longer work on 40M. On all other HF bands, it functioned perfectly. Being this is a twenty-year-old radio I felt it could be a failing solder joint or a sticking relay. Then being technically challenged I fell back on rapping the back of the case a few times with my knuckles! HI



Tah-dah! All was well again for a couple of days. Then suddenly it wasn't! I asked Matt Kastigar, WØMJ for help. He re-set the microprocessor and later explained how I could do that too. There are actually three re-set options to choose from on pg. 76 in the Yaesu manual.

We chose to press the V/M + Power-On buttons at the same time to restore the bridge function. This unexpectedly changed operating modes around on several bands (i.e. CW to LSB) but to the best of my recollections nothing else was disrupted. All fixes should be this easy! TNX OM MATT!

de NFØR

PL259 - Soldering 101

For my HF antennas, I needed some RG213 or equivalent coax. Having none, I ordered the coax which included crimped (braid only) PL259 connectors. I rarely order coax with connectors since I can install them myself but the price was right and I knew the J&K Antenna installer of my new HF Yagi would prefer professionally installed connectors. If there was a problem with the antenna and "I" installed the connectors then "I" could become suspect.

After receiving the assemblies (one for 40m Yagi and one for 20m Yagi), I was disappointed in the soldering of the stranded center conductor to their PL259. The center conductor lead was not visible in the solder. Without being visible, I could not tell if there had been good wetting action between the lead and the connector. Rather, it looked more like a ball/bead was formed on the end of the center conductor contact to make it look pretty. "An acceptable solder connection must indicate wetting and adherence when the solder blends to the soldered surface..." This could not be seen. This is a soldering "non-conforming defect" and fails to meet a basic standard for acceptability of a solder joint.



Figure A

If you are not aware, international industry standards exist for soldering. The IPC (<https://www.ipc.org/ipc-standards>) is the organization providing these standards. In my former years, I was specifically trained in this area and received three certifications (IPC-610, J-Std-001, IPC-7711/21).



Figure B

Figure A was typical of the soldering on the purchased cable assemblies. Figure B is one I soldered exhibiting good wetting action. Which one would you trust to provide a reliable connection over time? The take-away here is, visually inspect the solder joint on any purchased coax cable assemblies. You should see the wire (stranded or solid) with good wetting action forming an intermetallic bond between it and the connector's center contact. There are more criteria for defining a "good solder joint" but this one described here is often missing on PL259s.

Mel, KØPFX

The St. Louis QRP Society enters its 35th Year

It is hard to believe that it has been 35 years since we first met in November 1987. NFØR and KCØPP organized a meeting of local amateurs that had an interest in QRP and construction. It was hoped there would be maybe 20 folks attending. But, in fact the room was standing room only. As requested, many brought a kit or two that they had built for a show and tell.

Due to the enthusiasm and interest shown on the first night, it was at this meeting the decision was made to start a local club. It was also decided that we wanted a group that was interested in discussing amateur radio at the meetings and not business. So, there are no officers. We have an emcee, newsletter editor and treasurer that are volunteers. There is no constitution and if someone makes a motion or asks for a vote they are discouraged. We also made the decision to keep the club local, not to trying and compete with what were the only major clubs in the U.S. at the time, the QRP ARCI and the Michigan QRP Club. We believe that the St. Louis QRP Society (SLQS) was the only independent local QRP club in the U.S. at the time.

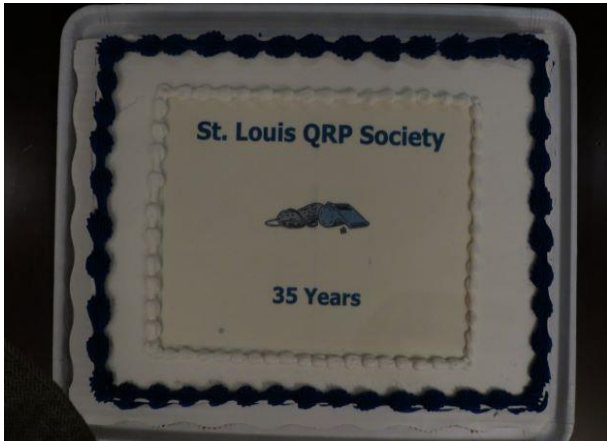
There are monthly meetings which began in January of 1988. We were fortunate to have a professor who worked at the Meramec Community College on the South end of St. Louis County. This is where we started with meetings. Later we had another member who had connections with Florissant Valley Community College in Northern St. Louis County. After we found out that they had a Ham Radio Station and antennas on the Engineering building, meetings were moved there. Before the meetings, members would come early and be able to show off their projects by connecting them to antennas and allowing others to check them out. We have had a monthly edition of our newsletter named The Peanut Whistle for the entire time. There have also been several Bonus Issues usually produced around our annual anniversary.

We have been extremely fortunate to have several members who were engineers, fabricators and designers that contributed their time and energy to help produce kits for the members. There have been many additional contributions to the club from QRP Community Elites around the country providing articles, advice on kits, parts and even some kits.

There are many activities during the year. The main event is Field Day. But we also have an annual picnic, tailgate swap night and anniversary dinner each November. Throughout the years we have had key show and tell nights, fall outings and several builders contests. Today aside from Field Day there are several one day outings and POTA activations by retirees and maybe a few that play hooky from work.

The SLQS has been successful thanks mainly to the members and contributors and we have great memories as we will continue in the future.

SLQS 35 Year Celebration



Award Winners!
KØFHG, NØWL, AEØTT, WØMFQ



A Case for Balanced Feedlines (September 17, 2009)

In September of 2009 a fellow on the Ham Radio Help Group mailing list posed the following during a discussion of multi-band antennas. My response appears below, slightly edited to provide links to another site. In my response I took the opportunity to promote the use of balanced feedlines over coax for multiband antennas. Tim, N9PUZ

- With all else being equal, transmitting on say 10 meters with an
- antenna cut for 10 meters as opposed to transmitting on 10 meters with
- an antenna cut for say 20, 40 or 80 and a tuner, what's the expected
- differences between the radiated signals?

Let's assume we're talking about a doublet type wire antenna.

First, if the dipole is not a half wave long on the frequency where you are operating the radiation pattern will not be the same as an antenna that is a half wave. That may or may not be a bad thing depending on whether or not there is a lobe going in the direction of interest. Of course, a true half wave dipole might not have had a lobe in the direction you needed either.

Second, the tuner keeps your radio from seeing a high SWR but the SWR losses still exist between the tuner and the antenna. The amount of loss your feedline presents is typically specified under a low 1:1 SWR condition by the manufacturer. Even really good coax can get very lossy under high SWR conditions.

This is why I'm a big advocate of balanced feedlines!

You can do some comparisons here for a real eye opener... Visit the SAARS web site and use their [feed line loss calculator](#).

100 ft of good LMR-400 coax has a 0.644 dB loss at a 1:1 SWR. You lose about 14 Watts of power in the feedline when the antenna itself presents a 1:1 match. Now, if the SWR between the antenna and the tuner is 10:1 then you have a total loss of 2.463 dB and you lose around 43 Watts of power.

This points to why so many of us recommend and use balanced line to feed all band doublets. It would be great to have a properly cut antenna for each band but it is just not practical in a lot of cases.

Notice that if you make this comparison using 'generic', i.e.--cheap, 450 Ohm window line the 10:1 loss is only 0.702 dB and you're giving up only about 15 Watts worst case instead of 43 Watts. The window line only loses about 3.5 Watts (0.15dB) under the 1:1 condition.

One last point. The discussion above all relates to transmit loss and power. Loss is loss. If your system is giving up 43% of its transmit power due to feedline loss then you're also giving up that amount of received signal too.

One last comment. Balanced line can be very difficult to run indoors. It needs to be kept away from

metal objects such as house wiring, water pipes, furnace duct work, etc. The rule of thumb is it needs to be at least 3 times the width of the line away from metal objects but farther is always better. Interaction with nearby metal tends to unbalance the signal negating some of the advantages to balanced line and providing an opportunity to interfere with household electronics.

An alternative is to run good quality coax indoors and use a 1:1 current balun to transition to the balanced line where it goes outdoors. If you keep this coax line short you won't have much SWR loss and your life may be much simpler.

73,

Tim N9PUZ

BOATS ON THE AIR

How It Works

Boats on the Air was created to combine two passions: boating and ham radio! Following in the footsteps of successful activation platforms such as [SOTA](#), [POTA](#), or [IOTA](#), this program is in its early stages and will continue to develop over time. Join us to activate any floating object on any body of water. In addition to being a fun activity, it is hoped that BOTA will further emergency preparedness and experimentation with amateur radio. Participate by activating or chasing!

Rules

1. As long as it safely floats, any type of watercraft is allowed to be used.
2. The boat may be underway, anchored, moored or in port/alongside.
3. You must make a minimum of 4 QSOs for your activity to count toward a BOTA activation.
4. Chasers still gain credit, even if the activator hasn't reached 4 QSOs.
5. The activator must submit the log on www.boatsontheair.com.
6. Activator must obey Local, State and Federal Safety guidelines and laws or will be disqualified.
7. Use of repeaters is not allowed for activations, except when on board satellites and space stations.

Activating a Boat

We will soon have a form to create your own activation. But for now, send an email to boatsontheair@gmail.com with the following information:

- Name of vessel
- Activation window (date/time range)
- Activation location (name of body of water and Maidenhead grid square)
- Boat length: Small (under 20'), Large (over 20')
- Boat power type: Motor, Sail, Human, Other
- Ham frequency and mode (FM, AM, SSB, CW, Digital Voice, Digital Data)
- Photo of watercraft (optional)
- Callsigns of all hams on the activation team.

Once we receive your activation information, we will post it as an upcoming activation.

Coming soon: The ability to add activations using the boatsontheair.com site.

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Uploading Logs

Members of the activation team and chasers should each upload logs to boatsontheair.com/submitlogs.

Logs should consist of the following:

- Name of vessel and date of activation (selected from a drop-down list to associate logs with the correct activation).
- Date/time (UTC)
- Activator's call sign
- Chaser's call sign
- Frequency

- Mode
- Signal Report

Activation Report

An activation report containing a summary of uploaded logs will automatically be generated after your activation is complete. You may also add to the activation report with information about your own experience and learnings. Sharing your experiences is a key part of the BOTA program, and we encourage activators to submit a writeup containing details about the activation. A GPS track file of your activation may also be included in the report. You may submit a writeup by email to boatsontheair@gmail.com.

Coming soon: Submit your own activation report via boatsontheair.com.



A Bug for All Seasons - The Parkwood GoBug

by

Richard A. Meiss, WB9LPU

While bugs are popular with many QRP operators, they have not been used very much in the portable and outdoor operating activities that many QRPers enjoy. The reasons are obvious: traditional bugs are big and heavy, and they are not tolerant of non-level or unsteady resting places. But with the development of the Balanced Bug concept, these problems have gone away.

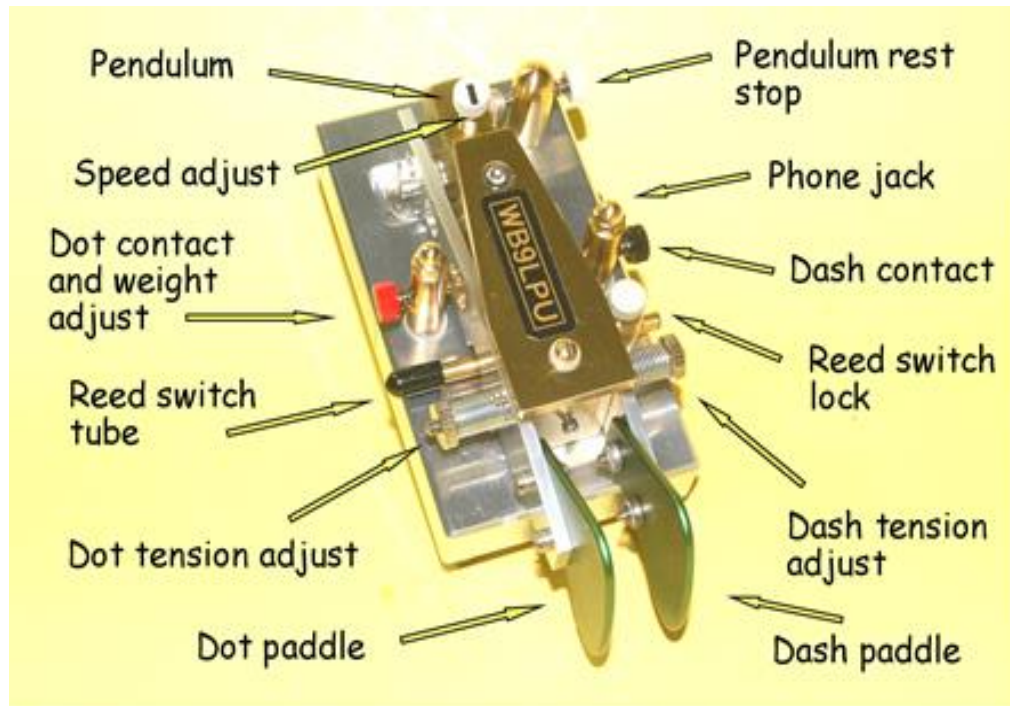


The Balanced Bug family uses a statically-balanced pendulum only 3 inches (or less) long. This design allows both a small size and a complete independence of the effects of gravity and other accelerations. The GoBug is a member of this family that emphasizes small size, light weight, and some "ruggedizing" for outdoor work. The first part of this article will show the basic "indoor" setup of the GoBug and highlight some of the features of the Balanced Bug family.

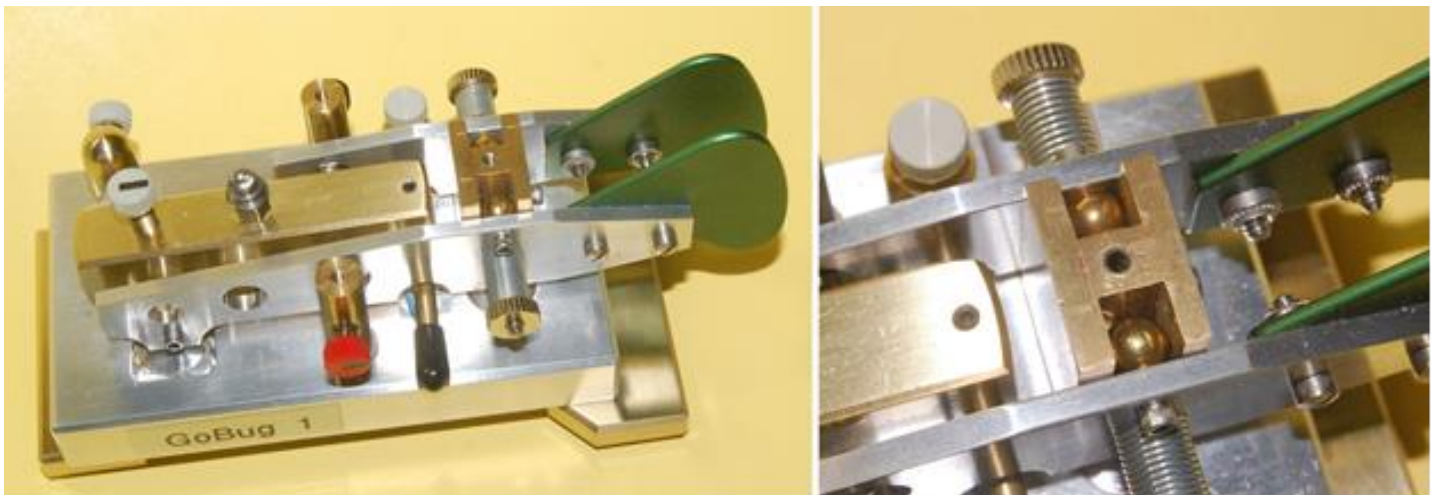
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Editor's note: Due to the size of this article, it has been modified to fit in the newsletter. There are [links at the end of the article](#) to direct you to the original material.



With the top plate removed, the pendulum (left) and the ball-pivot mechanism are shown. The pendulum is pivoted centrally, with the driving magnet at the front end and the signal magnet at the rear end. The driving magnet is mounted on a brass screw for adjustment. The reed switch is contained in the brass tube below the pendulum. (Heavier brass feet have been added in these views.)



How it works - The Ball Pivot. The right side of the previous picture shows a close-up of the ball pivot mechanism. Each lever has two 1/4-inch brass balls attached to its inner surface. These balls fit into a precisely-machined vertical slot and are held against the stationary assembly by a coil spring on each side. When the paddle is pressed, the lever pivots against the rear corner of the upright assembly (which has been polished smooth), while the brass balls maintain the alignment of the lever and guide its movement. At rest, the levers are pressed flat against the assembly, and no position adjustments are needed. Paddle tension is adjusted by the compression of the coil springs.

The Dot-Generating Mechanism. Near its tip, the dot lever bears a small permanent magnet facing upward. The pendulum (see left side of previous illustration) has a similar magnet which is mounted in the end of a vertical screw that extends from the bottom of the pendulum and attracts the lever magnet. When the lever is pressed, its magnet causes the pendulum magnet to follow, and when the lever stops at its maximum extent, the pendulum overshoots and oscillates back and forth above the lever magnet. The vertical separation between the magnets determines the strength of the interaction, and hence controls the oscillation rate, which is adjusted by changing the separation with the vertical screw. As the pendulum moves back and forth, a small magnet at its rear end passes over a magnetic reed switch, which opens and closes at the rate of the pendulum oscillation and generates the string of dots. If the paddle movement is large, the switch spends more time closed, and the "weight" of the dots is increased. Reducing the lever movement (by adjusting the dot contact screw) shortens the duration of each dot in the stream. The resting (i.e., starting) position of the pendulum is set by an adjustment screw that prevents overshoot and bouncing of the pendulum during transitions. Because the pendulum is balanced, the only forces that affect its movement are the magnetic ones. Thus, the oscillation rate and amount are independent of the position of the bug - it will work happily on its side or even upside down or on end with no change in characteristics.

Going Outdoors

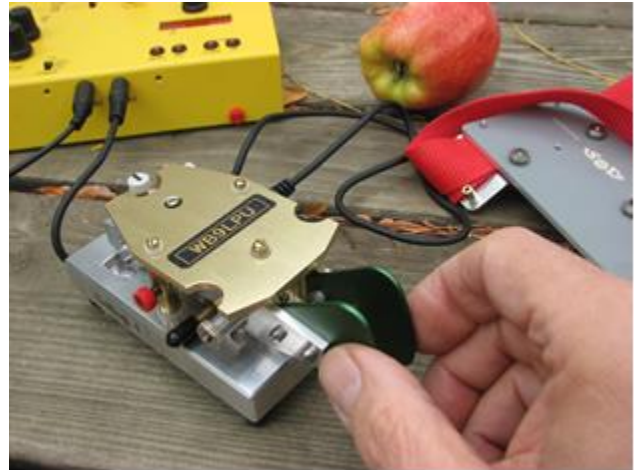
To get ready for operation in the field, the bug is configured with a larger top plate that supports the tops of the contact pillars to increase their resistance to being bumped out of position. It also covers the pendulum and lever pivots, and a small plate protects the upper pendulum bearing. Next, the feet are removed and replaced with a bottom plate that is fitted with a pair of adjustable straps for attaching it to an arm, a leg, or a handy log. These changes are shown in the next pictures.



At the left, the indoor-configured GoBug is waiting for the top plate to be switched, and at the right is the outdoor configuration, with the larger top plate in place. The heavy brass feet have been substituted by small rubber ones.

The GoBug Outdoors. In the field, there are many types of operating situations, and the GoBug can cope with many of them. The pictures that follow show the GoBug in several types of operation. Because still photos tell only part of the story, I have made a video demonstration that can be viewed on YouTube at http://www.youtube.com/watch?v=-TG_J57LOWE It presents the file

[GoBugVT-3c.wmv](#). The stills below are taken from that video.



Summing it Up

The Balanced Bug concept has been used to make a small bug that is comfortable in the shack as well as in the great outdoors. Improvements that are being considered include a removable protective housing and a quick-detach mechanism to uncouple the bug from the strap assembly. The fun continues!

73 de Rich, WB9LPU

Rich built the key in 2011 as well as many others. See the links below for more keys.

WB9LPU's Key Corner

<http://wb9lpu.com/>

<https://sites.google.com/site/wb9lpu/>



FleaBug 1

<https://www.youtube.com/watch?v=a2w1YVZiwkM>

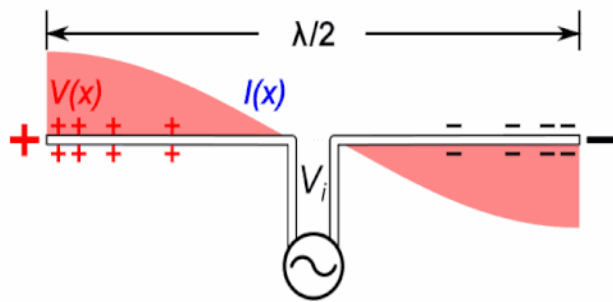
One more look at End Fed Antenna Wires

de N1EA

Most of the writing on the Internet isn't about EFHW "End Fed Half Wave" antennas, but about EFW "End Fed Wires".

A half wave wire fed at the center is low impedance and has high current at the center, at the ends where the current goes to zero (very low current), it becomes "voltage fed" or high impedance.

The radiation of any antenna is maximum at the current peak which occurs at $1/4$ wave points - which is the center of a $1/2$ wave dipole.



See the gif showing the standing waves on a half wave dipole, the RED is voltage - maximum occurs at the ends where current goes to ZERO because there is NO more conductor to travel, so current flow goes to ZERO. When current is zero, voltage by necessity is maximum.

Blue is the current, where there is maximum current that is where maximum radiation occurs. The center of the center fed dipole is at a high current point and a low voltage point. A high current point / low voltage point is low impedance. A high voltage, low current point (the opposite) is a high impedance. So the ends of the $1/2$ wave wire are high impedance which is an End Fed Half Wave. The practical measurement of a half-wave end fed wire at a half wave is around 3,000 ohms at the center it will be about 70 ohms.

Half wave antennas will have larger bandwidth because the impedance doesn't change as rapidly as the low impedance at the center does.

Although resonance is important, for practical radio working, it's much more important for power to be accepted by the antenna, which means that the characteristic impedance of the feedline (or feeder) matches the impedance of the antenna feed point.

A half-wave antenna end fed (impedance = 3,000 ohms) by 50 ohm coax will have a VSWR of approximately 60:1.

A half-wave antenna center fed (impedance = 70 ohms) by 50 ohm coax will have a VSWR of approximately 1.4:1.

A half-wave antenna end fed (impedance = 3,000 ohms) by 50 ohm coax using a 49:1 transformer to

elevate its impedance 2,450 ohms will have a VSWR of approximately 1.2:1.

Antenna books will have more information on transmission lines - high tension lines are high voltage and are best for long runs - high voltage = high impedance - which is why open wire feeders are lowest loss.

Shane Nelson, KD8UJM who sells excellent quality transformers like this one <https://www.ebay.com/itm/191782023426> for antennas (also available in all stainless models) has an extremely well researched and tried document about EFW antennas.

<http://www.hamuniverse.com/randomwireantennalengths.html>

His recommended lengths are:

29 35.5 41 58 71 84 107 119 148 203 347 407 423

EFHW is probably the WORST name for this antenna, because you need to AVOID half wavelength lengths for the bands you wish to use!

The antenna is really a End Fed Wire - EFW.

<https://www.kb6nu.com/playing-end-fed-wire-antennas-91-ununs/>

<https://udel.edu/~mm/ham/randomWire/>

<https://www.hamuniverse.com/randomwireantennalengths.html>

AVOID half-wave and harmonics of half-wave!

The chart at <https://www.gsl.net/n1ea/efw.html>, the WHITE areas are the desired lengths! You cannot find one that is an "f" because it doesn't exist, but you can find an "e".

I bought one of Shane Nelson's excellent transformers (the stainless version, but the plated version should be fine for people that aren't obsessed with stainless like former salt water radio officers like myself.

Highly recommended.

73,

David Ring Jr.

N1EA

Four State QRP Comfortable Nets

Meet each Wednesday night beginning at 20:00 Central Time. Add anything to the exchange that you wish, temp, rig, ant, etc.

Checking into all sessions is encouraged. We call it the "Clean Sweep".

8:00 pm Central time - 40 Meter Net on 7.122 +/- QRM ACØBQ/NCS

8:30 PM Central time - 80 Meter Net on 3.564 +- QRM ACØBQ/NCS

9:00 pm Central time - DMR Net on Talk Group 31654 NØYJ/NCS

NO dIGITAL Net at this time.

All are welcome!

DMR Voice Net

Wednesday evening DMR Voice Net will be at (Thursday) 0300 UTC (9:00PM Central Time Wednesday/) Four States QRP has a Brandmeister DMR Talk Group (TG31654). Join us to discuss QRP, ask questions, or just ragchew.

The Wednesday net is a directed net but any other time you may use the Talk Group to chat with other QRPers. Net Control operator is Bert NØYJ.

For information and help, check out the DMR subgroup on 4sqrp.groups.io

<https://4sqrp.groups.io/g/DigitalFM>

Second Sunday Sprint

Occurs on the second Sunday of each month, 7 to 9 PM Central

Any mode, any band (except WARC & 60 mtrs) -

- Suggested frequencies: standard calling freq. plus 7122 and 3564 (CW), and 3985, 7285, and 14285 (SSB).
- as well as the usual QRP watering holes.

QSO's with the same station on different bands are allowed. CW and SSB portions of a band count as two bands.

- Calling CQ is suggested to be "CQ 4S"
- Exchange is "RST, SPC, member number (power if non-member)"
- 5 Watts max CW, 10 Watts PEP max SSB.

The station with the most contacts each month will be emailed a certificate. Furthermore, the top three stations with the most SSS contacts during the year will also receive certificates via email.

Scores are submitted via the grpcontest.com/4sgrp website (compliments of W8DIZ).

For full details, please download the [complete rules \(PDF\) here](#).

For questions, please contact John (AAØVE): SecondSundaySprint@4sgrp.com

Thursday Morning

The Four State morning net has been convened for members who like to start the day on the air.

We meet each Thursday morning at 8:00 AM Central on 7122 kc. 7122 has become the Four State 40M hangout frequency, and often members can be found there on any morning.

Editor's Note:

Articles are needed to make every Banner issue successful. If you have something of interest, please send it to the editor at the email address below. You do not need to send a finished article. You can send some comments, notes, etc. and I can put it all together for you. Pictures are always of interest. Some of the items of interest would be outings and /or operating events by yourself or a group, construction whether equipment, antennas, accessories, QRP Field Day, SOTA, etc. Anything QRP is welcome.

de KCØPP

editorgrpbanner@gmail.com

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