

# Building the “Highly-Versatile-Orange-Box” (HVOB) go-kit

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Perhaps you’ve seen the article in QST and thought, “Yeah, I need to build one of those!”

OK, here are the quick and dirty instructions on how to build your own HVOB.

1. Buy a box
2. stuff it with all the radios you need
3. close the box

Well, I don’t think that would be very helpful in the end. I took this approach instead...

## **Decide on the function of your HVOB**

Having tinkered with this project, I cannot stress enough to make a list of requirements that you will want to have the HVOB perform.

Perhaps your needs will be different than mine; but, here were my requirements that I needed to fulfill for the HVOB discussed here.

### **Basic System Requirements:**

1. The system shall be capable of containing an entire radio system such that when on location, it requires minimal assembly to setup and operate.
2. The system shall be portable enough to be carried for short distances.
3. The system will protect the gear from being physically damaged while in transit.
4. The system shall be easily dismantled from the container for maintenance.
5. The system shall be operable for quick-setup for ARES/RACES events
6. The systems shall be usable for contesting where remote locations are involved
7. All equipment shall be ergonomically placed for ease of use.

### **Emergency Preparedness Requirements:**

1. The system needs to operate as a “stationary go kit” – such that everything in the containers is ready to operate in a stationary position (i.e. not pedestrian style).
2. The system shall be capable of operating from 2M through 160M.

3. The system shall be capable of monitoring 2M while operating the HF bands.
4. The system shall be capable of running on 12V DC power.
5. The system shall have its own contained lighting for the operator's use.

### **Portable Contest Station Requirements:**

1. The system shall be capable of operating on 120VAC.
2. The system shall be capable of interfacing with a laptop for contact logs and sound card mode usage such as PSK31, RTTY and SSTV.
3. The computer shall be considered part of the system, pre-loaded with contest software and sound card interfacing programs.
4. The computer shall be network capable.

Once you can visualize what you want the system to perform, it is easy to see what components will be needed to fill the box to make this a successful project for you.

Before continuing onto the construction portion of this project, I would take a good look at some of the other portable go kit designs on this website and see if there is anything you missed.

Once you have a good idea what will be in your box, measure/place everything to see if the same orange box can be used. The dimensions can be found here:

[http://www.mtmcase-gard.com/products/camping/dry\\_boxes.html](http://www.mtmcase-gard.com/products/camping/dry_boxes.html).

### **Construction:**

- 1) Once you have your box, cut out/shape a cardboard piece as a template to make a single shelf
- 2) Once satisfied with the shape, cut a 1/2" piece of plywood (birch works well)
- 3) Sand the wood on both sides
- 4) Varnish the wood on both sides to avoid splintering, etc...
- 5) I used hot glue on some of the items - which worked very well.



- 6) Before installing guide rails for the slide-out shelf, measure the radio components and install them onto the board to ensure that everything will fit properly
- 7) Also, ensure that the lid on the HVOB is opening correctly
  - a. Note: when I was building this kit, I removed the hinged top and put it aside. Although handy to get it out of the way, the top opens towards the bottom instead of the top
- 8) After all the components are mounted on the shelf, see what room is left to punch out holes for antenna cables, 120VAC and/or 12V power, ensuring that they will not get in the way of the shelf sliding in and out of the box

### Get all the equipment

Consider anything that you will be adjusting a lot, to go on the bottom half of the shelf and the lesser used components on the top.

From my picture you can see the P/S, tuner, and micro-keyer (sound card interface, rig control, etc) units are on top, while the VHF and HF/VHF/UHF rigs are on the bottom.

While installing each unit, there is clearance for:

- 1) the lid to close
- 2) cables to be routed
- 3) reach ability of each of the components
- 4) sufficient air flow



## Mounting the Components

Use as much bolt-nut materials you can to secure your components to the board. You will notice a liberal use of wire ties for those components that do not have mounting brackets or are on top of other components, like the antenna tuner shown here. If you have a removable faceplate like the IC-706 shown here, make sure you are still able to remove it once everything is mounted in place

I decided that I wanted the least amount of cables coming out the front of the box as possible – so I mounted the 120VAC inlet, several through-the-case SO-239 connectors for antenna connections and a common grounding system.

It is a good idea that when you start mounting equipment on the shelf, test that it slides into and out of the HVOB easily and you are still able to close the top lid.

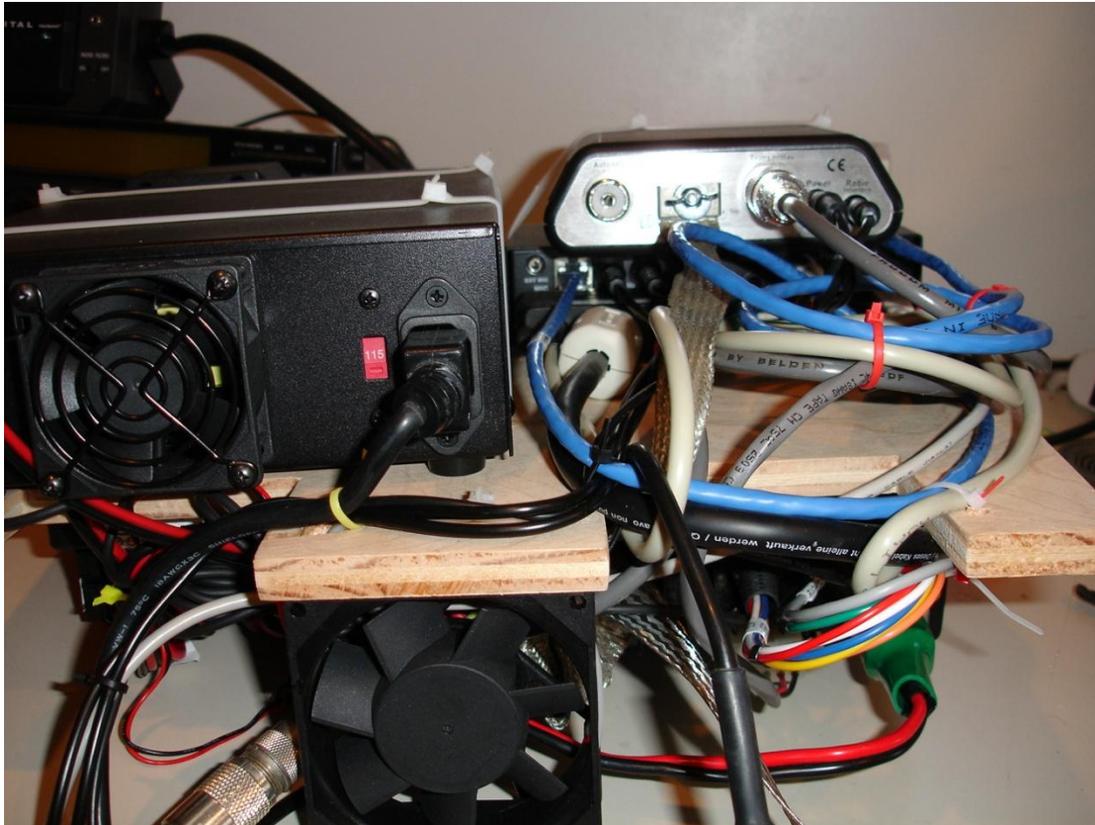
## Connecting the Components

Using Anderson PowerPoles on every 12V connection, I routed them to a 5-in-1 hub mounted in the box, this allows for quick disconnect of any component. It also helps when you want to disconnect the 12V power supply (input) to the hub for field day efforts.

Using short coax runs from the radios, fit them to the female-female barrel connectors through the case. This eliminates a bunch of coax coming out of the case's front while operating. Be careful when drilling these hole to not make the too close together, allowing our fat fingers to tighten each antenna connection.



It is a good idea to keep wires as short as possible to fit in to the case and use wire-ties to keep them in place



### **Optional things to consider:**

My next revision of the HVOB will have front-accessible mic and speaker cables along with a single USB connector from the micro-keyer and a keyer input. An accessible power-pole input for a deep cycle battery would be handy as well.

I chose to include a small notebook laptop – which fit inside the case as well – you may decide to keep a computer outside the case though.

Last but not least; if you plan on transporting the HVOB over longer distances, I recommend purchasing a portable/foldable luggage carrier

If you are good with electronics, perhaps you can build a shall circuit to automatically cut out the battery or the power supply when the other is detected – this way you can open up the box, plug in either the 12V power supply or a deep cycle battery and the circuit would prohibit the battery being charged unnecessarily, nor the power supply getting back-fed from your field day batteries.

## Conclusion:

When you have finished, the shelf should slide out easily for maintenance and all components should fit into the box with ease. Oh yeah, and don't forget to adorn your HVOB with your favorite radio stickers.



Lastly, here is Paul, putting the "Party" in the PA QSO party with a little help from a "home-brew" Margarita



73

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