

# The Down-spout Vertical Antenna

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Tried making the beer can vertical antenna and run out of patience before getting all the cans soldered together? Or did it collapse during the raising process?

Dick Worthey, K5HHL, experienced difficulties such as these while trying to erect a 40 meter vertical. So Dick replaced the beer cans with 3-inch down-spout and made himself a neat little antenna.

Probably the most unique thing about Dick's antenna is his insulator between the down-spout and ground. Dick used a family size Coca-Cola bottle for the insulator. Three-inch down-spout seats itself nicely on the shoulder of the bottle.

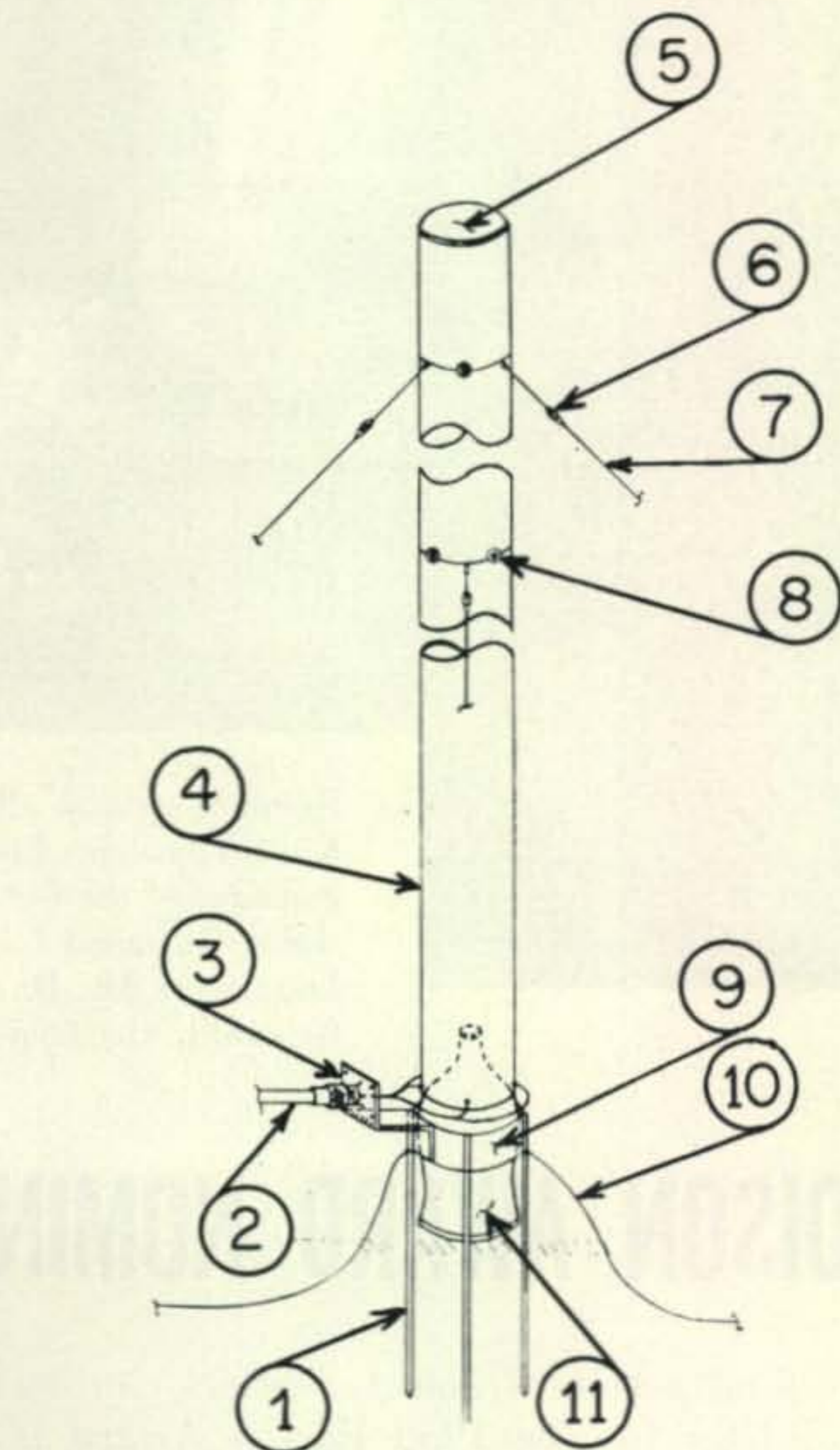
To keep the bottle from slipping, Dick had a welding shop make him an anchoring assembly. He had the shop braze a 1-inch wide .080 copper strap into a circular band. The diameter of this band is slightly larger than the outside diameter of the bottle. Four 1/8-inch brazing rods 15 inches long were used as legs and ground rods. The legs are spaced 90 degrees apart and are on the outside diameter of the band. The tops of the legs were brazed flush with the top of the circular band.

Some of the same 1-inch wide .080 copper strap was used to make a mount for mounting the female section of a coaxial plug. The overall length of this copper strap is 3 1/2 inches. It was bent into a 'Z' shape with 1-inch flanges on each leg. The coax plug was mounted on one of the flanges and the other flange was brazed to the 1-inch wide circular band of the anchoring assembly.

Number 12 copper wire feeds from the center of the coax plug to four points 90 degrees apart on the bottom of the down-spout. The ground system consists of four #10 copper radials, each 33-feet in length, spaced equally around the base. These radials were attached to the brazing rods to complete the ground system.

The radiator is 33 1/2-feet of down-spout. The down-spout comes in ten-foot sections. Dick soldered each of the sections together to insure positive conductivity. To plug the top of the down-spout, Dick cut a circular disk three inches in diameter from a thin sheet of flat tin and soldered this disk to the top.

At the 20- and 30-foot levels, Dick made provisions for guying. He made two circular rings of #6 aluminum wire. These rings were



Parts List

1. Legs made from 1/8-inch brazing rods (Four required).
2. RG 58-U coaxial feed line.
3. 'Z' shaped mount with female coaxial plug attached.
4. Radiator made from 33 1/2 feet of down-spout.
5. Tin cap soldered to top of radiator.
6. Small egg-shaped insulators.
7. Guy ropes made from plastic covered nylon clothesline.
8. Small metal screws and flat head washers.
9. Circular band made from 1-inch wide .080 copper strap.
10. 33-foot copper radials (Four minimum).
11. Family size Coca-Cola bottle.

about eight inches in diameter. He slipped the rings over the down-spout and slid one ring to the 20-foot level and the other to the 30-foot level. Then he began to twist the wire to form "eyes" for attaching the guy ropes. These "eyes" are 120 degrees apart. He twisted the "eyes" until the rings closed down on the down-spout. To anchor the rings, he used small metal screws and flat head washers.

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Since these rings were placed at the 20- and 30-foot levels, and anchored by the metal screws, the previously soldered joints at these levels were further strengthened.

In guying, Dick used plastic covered nylon clothesline. Small egg-shaped insulators were used at the top and at the bottom of each of the guy ropes. ■

## PATCHMASTER [from page 35]

tion, the LINE switch off, the TALK RADIO switch to Talk and tune in a signal on your receiver, preferably WWV or a broadcast station. Temporarily connect a speaker to the output terminals of the receiver and adjust the receiver for normal listening volume. Connect the receiver to the Patchmaster and adjust R5 for normal listening volume with the speaker connected to the Patchmaster. This adjustment should be made with R10 set at mid-position. Turn R9 clockwise about ten percent, speak into the microphone at a normal speaking volume and adjust R2 for proper modulation of the transmitter.

Call your friend across town again, and with the Talk Line and the Talk Radio switches to Talk and the Line switch to On, adjust R7 until the audio from the receiver causes the audio level meter to swing to half scale. This should provide your friend with comfortable listening volume from your receiver. Turn the receiver's audio gain control down for the next adjustment. With your friend talking at normal level, adjust R3 for proper modulation of the transmitter. This completes the rough adjustment of the patchmaster and final touch-ups can be made as you familiarize yourself with it's operation.

### Operation of the Patchmaster

For normal operation of the station transmitter and receiver without connection to the telephone line, the Talk Radio switch should be thrown to Talk, the Talk Line switch off, and the Line switch off. R10, the front panel Speaker Volume control should be set to mid-position. Normal operation is obtained thru the amplifiers in the Patchmaster. Adjustment of loudspeaker or earphone level from the established normal may be accomplished by varying R-10.

To complete a phone patch for a party on the radio, throw the Talk Radio switch to off after requesting the radio party to stand by, and throw the Talk Line switch to Talk and the Line switch to On. After receiving dial tone, dial the number of the desired party. When you have ascertained that the right party is on the line, throw the Talk Radio switch to Talk and allow the radio party to talk to the telephone party.

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