# The 8JK Array Revisited

## - - inexpensive and effective

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Being an antenna nut and cheap also makes one look for inexpensive and effective antennas capable of getting the most out of the rig. A good example of such an antenna is the "8JK". Various articles in the past have treated this type of antenna as a rotary beam on the higher bands (20, 15, and 10), but very little material has been available for the lower frequencies. Since the estimated gain of such an antenna is 3-4 dB, it becomes an attractive alternate to running higher power. I shall attempt to examine various configurations of such an antenna and provide some insight into possible uses. The *ARRL Antenna Handbook* devotes some space to the 8JK (p. 207). The spacing outlined in the handbook is .1 wavelength, which in the case of the handbook antenna is used to reduce the antenna feedpoint resistance. It should also be noted that the radiating elements are cut as a driven element/reflector combination. This may be fine when such an array can be rotated, but the idea of building such an antenna for the lower bands soon leads to problems. The thing that isn't too readily realized is that the directivity of such an antenna, if both radiating elements are of equal length, is governed primarily by the antenna feed phasing. When this premise is understood, one can then see that a 3-4 dB 80 or 40 meter bidirectional beam can be readily constructed. See Fig. 1.

The thought of sinking four poles and cluttering up the landscape probably won't enchant too many people, so let's look at a less painful way of achieving the same result. How about just two poles (trees, etc.)? Okay, how about a bidirectional inverted V beam? Would you believe just two 30 foot poles? The normal inverted V with a 90° apex angle has predominantly a vertical angle of radiation, so let's use a 120° apex angle to enhance the horizontal radiation characteristic. On 80 meters, this means the support for the antenna apex will be approximately 30 feet tall. This would be easily handled by TV masting, since the antenna elements can be used as guys. See Fig. 2.

The inverted V arrangement also provides a plus in that trimming of the antenna to resonance is facilitated due to the accessibility of the element ends.

The key to this antenna is the transposition box. This little jewel provides the necessary phasing line transposition to change the directivity

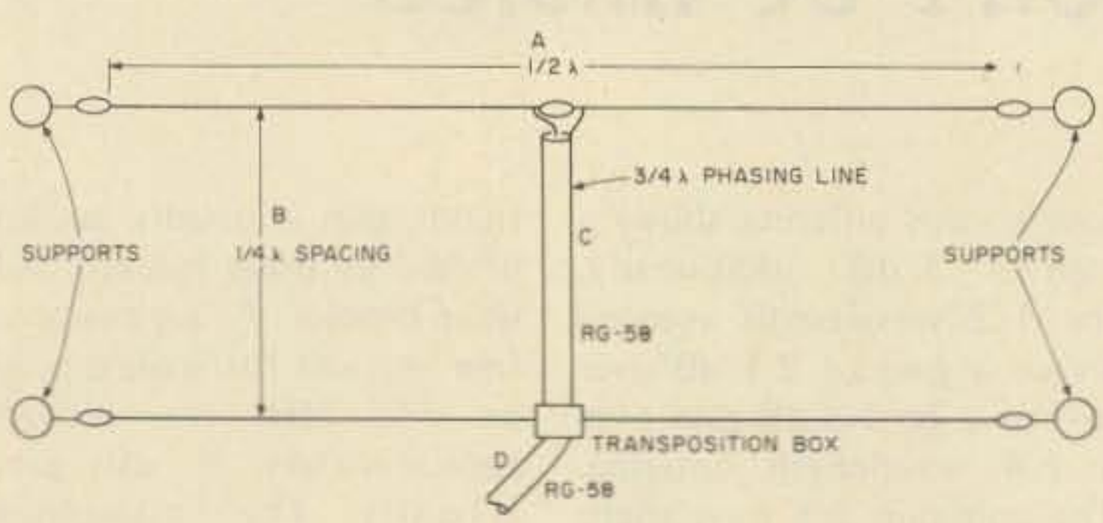


*Fig. 1. A = 468/fMHz; B = 234/fMHz; C = (702/fMHz)(V); D = (468/fMHz)(V). V = line velocity factor. Values for a 3.9 MHz: A = 120'; B = 60'; *C = 118.8'; *D = 79.2'. *Based on a .66 velocity factor.*

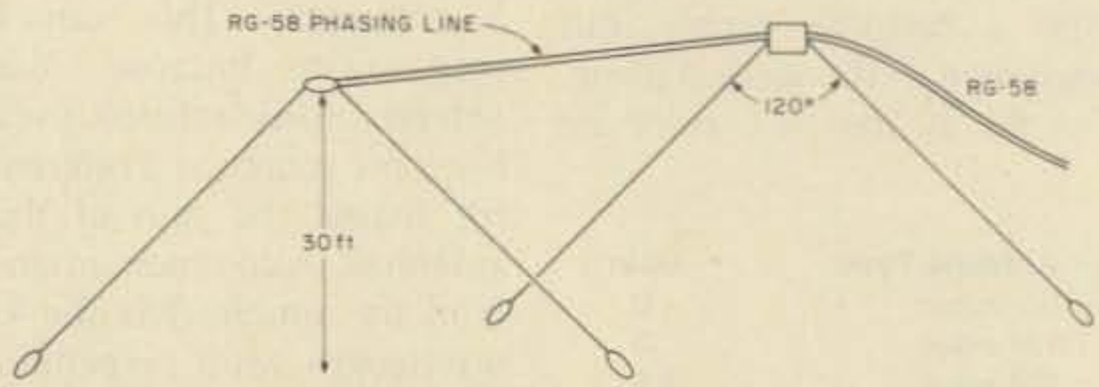


*Fig. 2.*

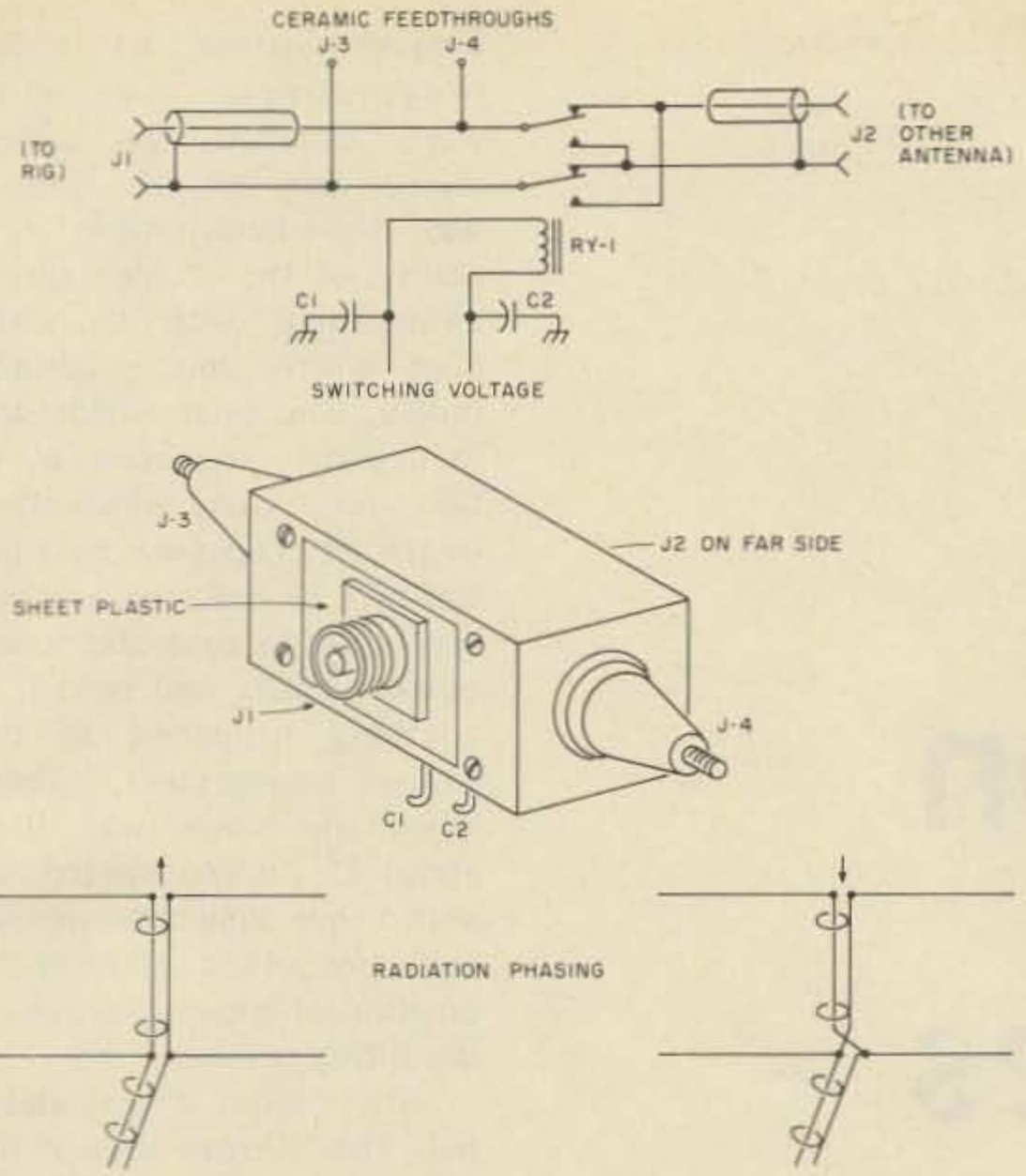


*Fig. 3. RY-1 — latching relay; C1, C2 — .001 uF feedthrough. Note: J1 and J2 must be mounted on insulated bracket or plastic wall in minibox.*

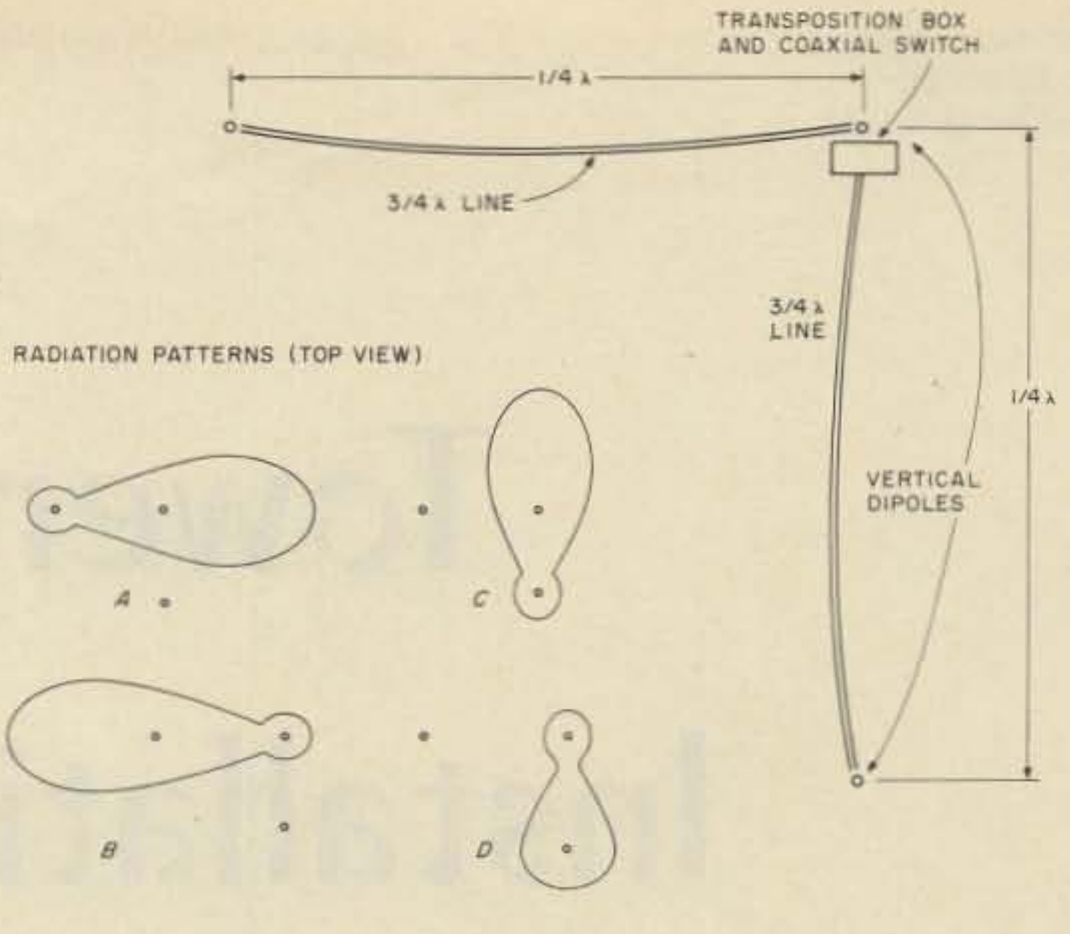


*Fig. 4.*

of the beam. Fig. 3 details the construction and wiring of the box.

The dimensions outlined are for 75 meters, but may be adjusted for other bands. The antenna feedline should be in multiples of an electrical half wave (don't forget the velocity factor). The 3/4 wave phasing line length must be computed using the same techniques.

The same approach may be used vertically with line transposition providing the directional capability. Of course, if you really want to get wild, the addition of a coaxial relay and an additional antenna along with its attendant 3/4 wave phasing line will enable you to punch up 3-4 dB gain in the north/south or east/west directions. See Fig. 4. ■