

INSTRUCTION MANUAL FOR THE ISOTRON 40

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PART 3

Re-arranged by Giancarlo Moda, I7SWX – Aug. 2010

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POWER RATING

The power rating defined in the catalogue is INPUT POWER. This is how many exciters are rated. However, some exciters or amplifiers are rated in OUTPUT POWER.

The Isotrons are intended to handle outdoors 1,000 watts PEP or 500 watts CW into the antenna. Indoors the rating is 500 watts PEP or 250 watts CW into the antenna.

YOU SHOULD MONITOR YOUR SWR AT ALL TIMES WHEN USING HIGH POWER.

IF THE SWR IS UNSTABLE OR SLOWLY INCREASES WHILE TRANSMITTING, CUT BACK YOUR POWER IMMEDIATELY UNTIL IT STABILIZES!

SINGLE FEEDLINE OPERATION

The Isotrons have been designed so they can be mounted back to back. As many as three can be mounted this way around a mast at the same height.

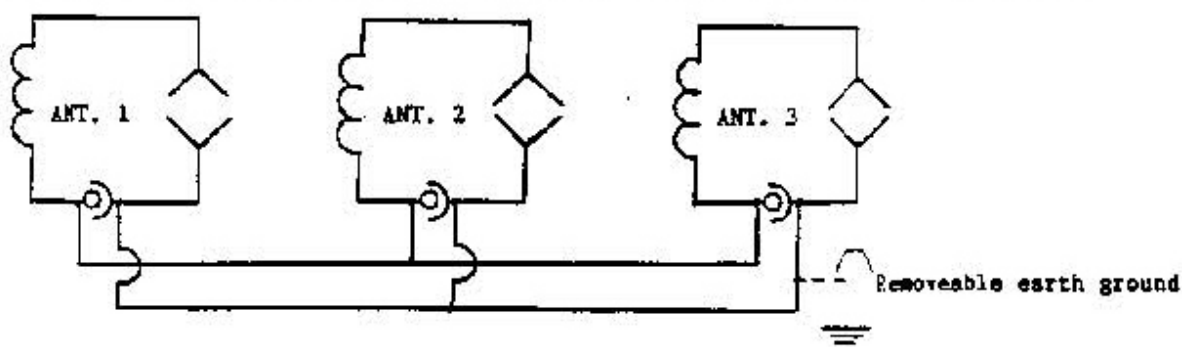
Electrically the antennas can be fed with one feedline by simply connecting them in parallel. Three antennas of any band you desire work well on one feedline. There is no limit to how many you can put on a single coax. However, the more you connect over three the more complicated the match becomes. An electrical diagram is shown below.

With antennas mounted back to back, a coaxial "T" is connected to the antenna of the highest band. This is done by either the male side of the 'T' or by a short jumper from the female side. The remaining connection will jumper over to the next highest frequency antenna. If there is a third antenna, then the procedure is repeated again.

Tune up is the same for the resonant point as in the individual antennas. Impedance value becomes the average of all of them. Therefore if you isolate one antenna from ground, you must isolate all of them. What you do with one antenna for impedance you do with all of them. You can see if you have over three it can get quite complex and the aid of a Noise Bridge will be a big help.

CONFIGURATION OF THREE ANTENNAS ON ONE FEEDLINE CONNECTED IN PARALLEL.

CONFIGURATION OF THREE ANTENNAS ON ONE FEEDLINE CONNECTED IN PARALLEL.



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PERFORMANCE

What makes the Isotron Antennas perform?

Starting from the exciter, RF must be delivered to the antenna. This is done through your feedline. Next, the RF energy needs to be radiated into space. This is accomplished by terminating the feedline with a radiating resonant circuit - the antenna. Contrary to popular opinion, the impedance match has very little affect on performance of the antenna. A mismatch of up to 6:1 SWR will still provide performance that compares to a 1:1 SWR.

This is not to be confused with the exciter protection circuit that reduces power output. Many solid state exciters have their power reduce at a 1.5:1 SWR. This situation can be overcome by using an outboard tuner.

In most cases a 1:1 SWR can be achieved with the Isotrons. None-theless, it may be difficult to achieve the ideal antenna match when operating in very tight locations. The antennas radiation will still be optimum as long as you adjust the resonant point. The resonant point can be adjusted in any location regardless of how tight the installation is. The radiation performance can easily be checked by a simple Field Strength test, either using a Field Strength meter or another local station close by.

Once your Isotron is at the resonant point, radiation is at the mercy of the environment. Height enhances your performance best so do not sacrifice height if you have a choice. Isotrons are designed to mount high on a light mast so take advantage of this feature.



The 80m Isotron antenna.