INTRODUCTION

The Franklin Array exhibits good gain (~4.5 dB), and delivers better than average signals, even when hung at only a quarter wavelength (low). This is possible since the array has no vertical component or vertical directivity, while capture area, and horizontal directivity and gain increase substantially with the 4-element collinear configuration. The MFJ-64xx arrays must use fully balanced tuners (*MFJ-974H, 974, and 971 series*) to tune, apply power to the array, and match the system to coax input. Use with tuner on other bands is possible, but the Franklin Array configuration is only on the selected band: 6415, 6417, or 6420.

A further consideration is that this antenna is also quiet, when compared to inverted "V's" (and verticals, especially). A reduction of 2 – 3 "S" units of noise may make the difference in that DX contact you can now hear above the noise!
The added gain means your array presents an effective power gain of "3." This means 100 watts applied results in the effective radiated power of ~300 watts! What if you apply 1500 watts out? Pretty good results for "hanging wire!"

Capture area is another factor in the good performance of the array; The MFJ-64xx has four times the capture area of a doublet, or inverted vee-type "droopy doublet."

Once connected and tuned, you'll find the MFJ 64xx Collinear Array presents a low SWR across the entire band. However, it only functions as a Franklin Array on "*one-band*" depending which band you have purchased. Figure 1 is a generic illustration of the antenna with its shorted stubs and balanced feed line.

Warnings

- ***Always mount or install antennas beyond the reach of adults and children. Make certain your antenna installation meets RF exposure guidelines***
- ***Contact with exposed parts of this antenna system can cause RF burns and other injuries.***
- ***Constructing or erecting antennas where they may contact electrical power lines can result in injury or even death***

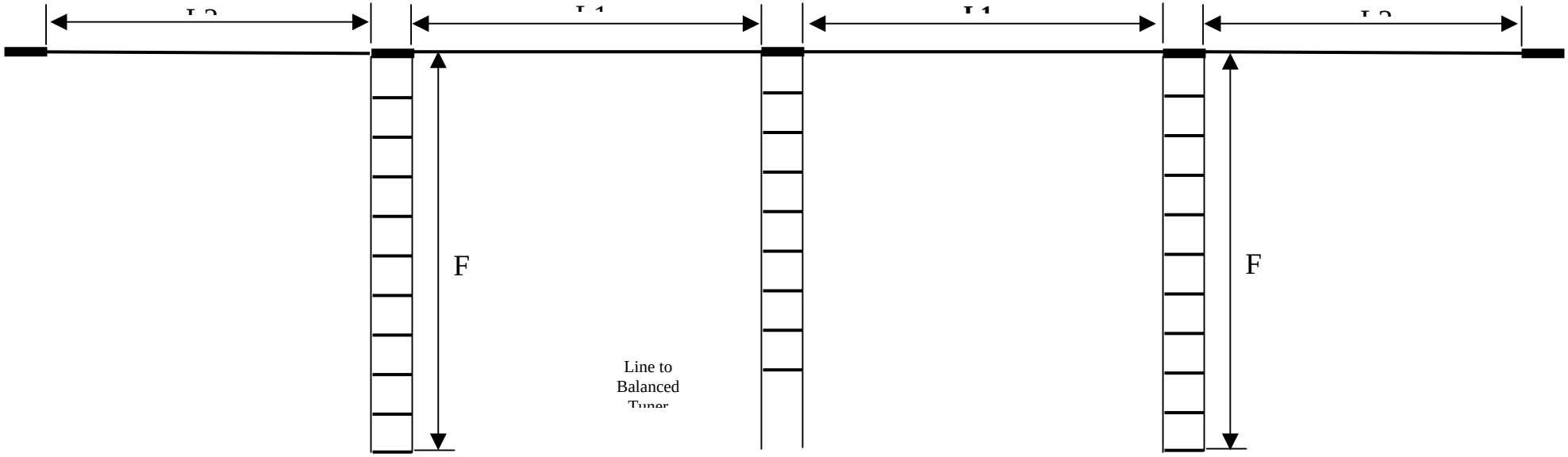

Figure 1 Franklin Collinear Array

System Description

Dimension "L1" represents a ½ wave, "L2" represents slightly less than ½ wave, and "F" a ¼ wave, which, in this case is a ¼ wave stub, used for phase-shifting. The antenna is a "*broadside array*," and is bi-directional perpendicular to the run of the wire. A pair of these antennas at right angles (NE/SW; NW/SE for example) can provide world-wide coverage.

If height is a constraint, this antenna functions better than average at even a bit less than a ¼ wavelength above ground/structure. However, it really performs best if "hung" at a ½ wave; up to ¾ wave. Higher than that provides diminishing return.

Especially important is keeping the symmetry of the antenna in reference to its ½ wave radiators. They must not sag more than a foot, with pulled-tight being the best configuration. The feedline can be pulled away at an angle, and some twisting is OK. Stubs should be tied-off to keep symmetry and damage-free from wind action.

SYSTEM DESCRIPTION

Dimension "L" represents a ½ wave, and "F" represents a ¼ wave, which, in this case is a ¼ wave stub, used for matching and phase-shifting. The MFJ 64xx Collinear Array is a "*broadside array*," and is bi-directional perpendicular to the run of the wire. A pair of these antennas at right angles (NE/SW; NW/SE for example) can provide world-wide coverage. And, when used with a suitable antenna switching system (Ameritron RCS-10), switching is convenient and fast, with only a single-line feed into the shack. Or, you can run both coaxial lines into the shack, and effect switching with a wall-mounted switching unit (MFJ 1700).

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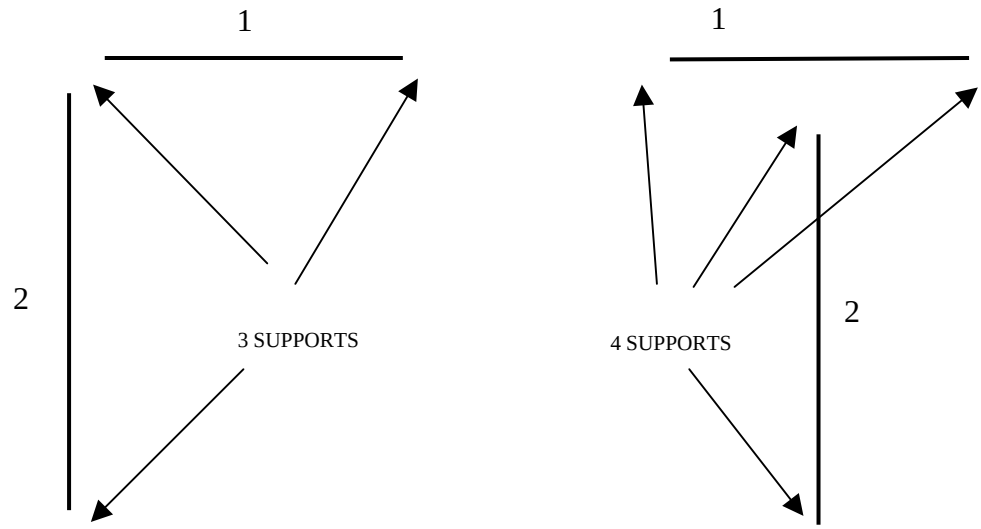
Especially important is keeping the symmetry of the antenna in reference to its ½ wave radiators. They must not sag more than a foot, with pulled-tight being the best configuration. The feedline/stub can be "bent" at the bottom, or pulled away at an angle, and some twisting is OK. Practically, it is best to let it hang straight down and tie it off with rope to avoid lashing about in windy conditions.

ASSEMBLY AND INSTALLATION

Warning: Never Install an antenna where contact with electrical power lines is possible. Serious injury or Death may occur.

The MFJ 64xx 4-Element Collinear Array ships assembled and ready to install. ***Carefully "unroll" the elements; do NOT "slinky" them, and start with the "outer" elements.*** The lengths of the antenna wires and stubs are quite critical and should not be changed. Use Nylon ropes to support the ends of the antenna from suitable structures or trees. If you are using trees for end supports, be sure to allow enough slack, or use some type of pulley and counterweight system to prevent the antenna or rope from breaking when trees sway. Suspend the antenna with at least a 50-pound working load nylon rope or equivalent strength weather-resistant non-metallic rope. Never use wire or wire core rope to support the ends of any antenna. Attach the rope to the end insulators through the empty holes. Try to keep the array ends at least five feet from metallic supports (towers, poles, etc.).

The MFJ 64xx 4-Element Collinear Array requires two tie-off points spaced far enough to accomodate their width/length, and a height at least close to ¼ wavelength. When using two antennas, try to locate the antennas in an "L" or "T" configuration (at right angles) as illustrated in Figure 2.



(Looking Down From Above)

Figure 2 Two Antennas @ Right Angles (Suggested Optimum)

This right angle configuration provides world-wide coverage in most instances. However, your individual site may include orientation(s) that only require you to follow the instructions for single antenna installation, such as locating each antenna array at disassociated points on the site. We hope you will benefit from their ease of installation, efficiency, and quality construction.

MAINTENANCE

The MFJ 64xx Two Element Colinear Array is made of heavy-duty materials and should withstand normal climates for many years.

TECHNICAL ASSISTANCE

If you have any problem with this unit first check the appropriate section of this manual. If the manual does not reference your problem or your problem is not solved by reading the manual, you may call *MFJ Technical Service* at **662-323-0549** or the *MFJ Factory* at **662-323-5869**. You will be best helped if you have your unit, manual and all information on your station handy so you can answer any questions the technicians may ask.

You can also send questions by mail to MFJ Enterprises, Inc., 300 Industrial Park Road, Starkville, MS 39759; by Facsimile (FAX) to 662-323-6551; or by email to techinfo@mfjenterprises.com. Send a complete description of your problem, an explanation of exactly how you are using your unit, and a complete description of your station.

DISCLAIMER

Information in this manual is designed for **user purposes only** and is ***not*** intended to supersede information contained in customer regulations, technical manuals/documents, positional handbooks, or other official publications. The copy of this manual provided to the customer will ***not*** be updated to reflect current data.

Customers using this manual should report errors or omissions, recommendations for improvements, or other comments to MFJ Enterprises, 300 Industrial Park Road, Starkville, MS 39759. Phone: (662) 323-5869; FAX: (662) 323-6551. Business hours: M-F 8-4:30 CST.