

# Wildlife Materials International, Inc.

## Instructions: 3 ELEMENT FOLDING ANTENNA

The **3 element Folding yagi directional antenna** consists of a boom of fixed length and 3 folding elements. The 2 halves of each element are attached to the boom with a single stainless steel, 8/32" screw. The screw is threaded into the boom with a lock washer and locking nut on the back side of the boom. This screw can be tightened or loosened as desired to adjust the folding tension of the 2 halves of the element. **CAUTION:** This screw should not be tightened for too much folding tension. Too much folding tension may cause the elements to be bent and possibly broken when the antenna is being folded or unfolded. Once the screw is adjusted and the lock nut tightened, further adjustment should not be necessary. However, the tightness of the locking nut should be checked once in a while.

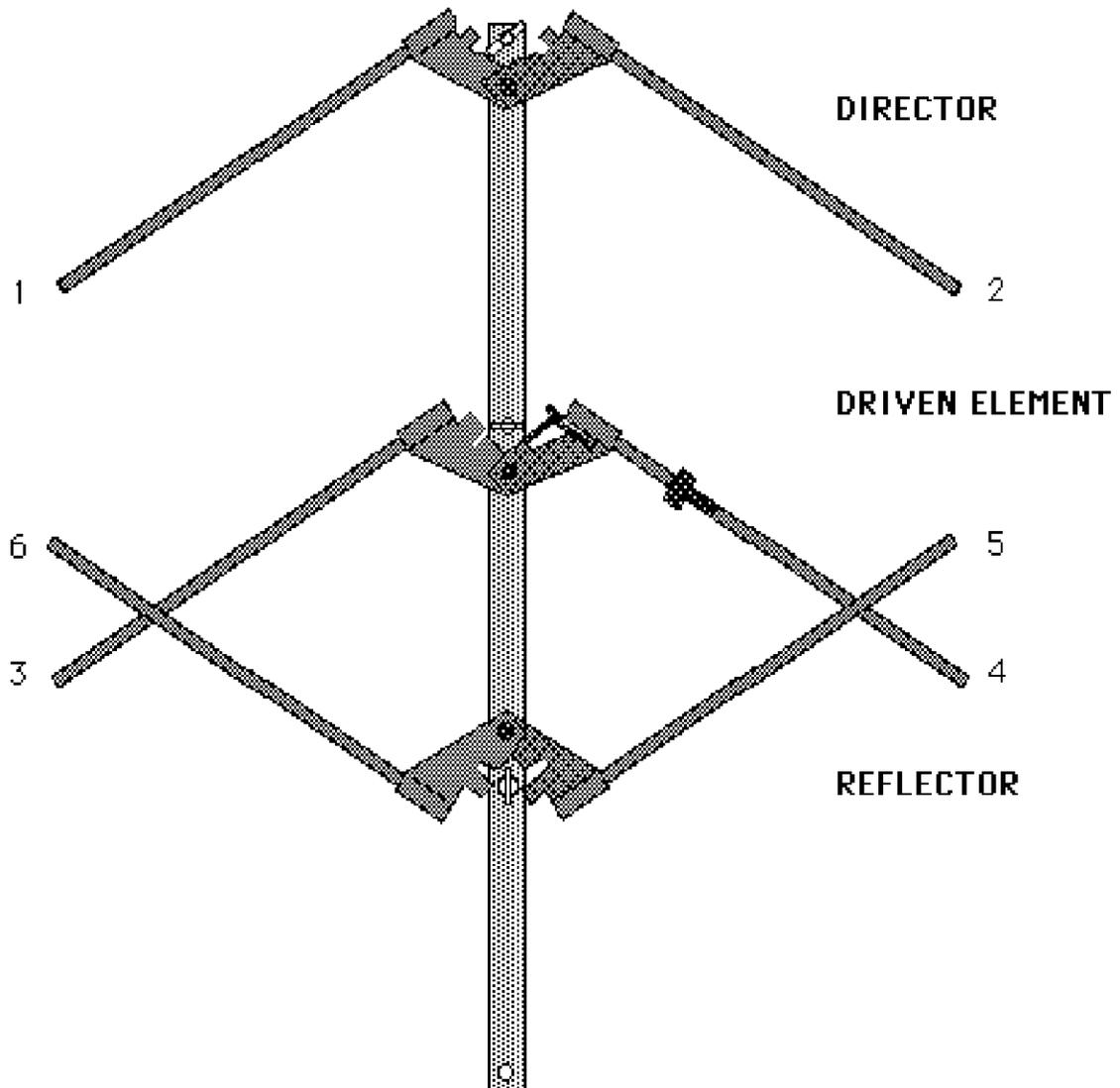
### 1. UNFOLDING INSTRUCTIONS:

- a. Place or hold antenna in a position so that its pistol grip handle is toward you. Rotate the boom so that wing nuts are on top.
- b. Loosen wing nuts to the top of their travel.
- c. The director element halves (element on outward part of boom and numbered 1 and 2 in Fig. 3) are swung outward so that each element half is perpendicular with the boom in the order #1, then #2. The wing nut should then be tightened to hold the element halves in the unfolded position.
- d. Driven element halves (center element, numbered 3 and 4 in Fig. 3) are swung outward so that each element half is perpendicular with the boom in the order #3 and then #4. The wing nut should then be tightened to hold the element halves in the unfolded position.
- e. The reflector element halves (element nearest the handle end of the boom, numbered 5 and 6 in Fig. 3) are swung outward so that each element half is perpendicular with the boom in the order #5 and then #6. The wing nut should then be tightened to hold the element halves in the unfolded position.
- f. **One end of the 3 ft. length of RG58/U coaxial cable is attached to the antenna by mating male BNC connector on one end of cable to female BNC connector on the antenna's driven (middle) element. The antenna is now ready to be attached to a receiver by plugging the BNC connector at the other end of the 3 ft. length of RG58/U coaxial cable to the receiver.**

### 2. FOLDING INSTRUCTIONS:

**In general, just reverse the unfold procedure, folding the element halves in reverse order -- #6,5,4,3,2 and 1 -- as follows:**

- a. Remove coaxial cable from antenna.
- b. Loosen wing nut on reflector (rear) element. Then fold #6 half-element forward, making sure it goes under extended #5 half element.
- c. Loosen the wing nut on the driven (middle) element, fold #4 element rearward alongside boom. Then fold #3 in like manner, alongside boom.



### FOLDING DIRECTIONAL ANTENNA

- d. Loosen the wing nut on director (forward) element and fold the #2 element rearward, raising end of element slightly to pass over coaxial connector and gamma match. Then fold #1 element rearward alongside boom.
- e. Run wing nuts to bottom of their travel.

#### TUNING:

Many factors affect the distance over which a transmitter signal will be received. Initially, the transmitter's construction will influence range. For instance, a 3-stage (1 oscillator and 2 amplifiers) transmitter sends a signal twice as far as a 2-stage (1 oscillator and 1 amplifier) transmitter. But the 3-stage transmitter also pulls current faster and batteries must be changed more often.

Tracking distance may also be cut if considerable timber, concrete buildings or rugged hill-and-valley terrain are positioned between the operator and the transmitter-wearer. Generally, a clear, open "line-of-sight" tracking area enhances signal reception. Elevation of antennas, whether the operator's or the transmitter-wearer's, along with antennas' positioning at high

altitudes (monitoring from an airplane or hilltop), will increase signal reception. Adverse weather, such as rain, fog or snow coming between your receiver and the transmitter collar will reduce signal reception.

### **Yagi 3-element directional antenna:**

The gamma match has been set at the factory for approximately 52 ohm center band operation; the gamma match has also been riveted in place. Therefore, it should not require further attention except for reasonable care in holding the antenna.

If the operator knows the transmitter-wearer is moving in a specific area, the yagi 3-element antenna will help to identify the exact direction of the transmitter signal. The operator should rotate the directional antenna (360 degree arc) ABOVE his or her head. The receiver will tune in a beeping signal, and the antenna will magnify it. At its loudest or "peak," the transmitter signal indicates the direction in which the transmitter-wearer has gone. To receive a good signal, the operator should **hold the antenna's main boom parallel to the ground**. Attached to the main boom are three elements; these should be turned with the pistol-grip handle so that they are positioned in the same direction as the transmitter-wearer's antenna is likely to be. For instance, an animal with a transmitter attached to its collar will likely hold that antenna vertically as it moves; thus, the operator's antenna elements should be held vertically. If a transmitter-wearer is resting, the tiny antenna will lie horizontally; therefore, the operator's antenna elements should be placed in a horizontal position. When an operator's three antenna elements match the transmitter-wearer's antenna angle, a better signal reception occurs.

When operating a directional antenna in the field, the operator can pinpoint the transmitter-wearer's signal most accurately by using the NULL-to-NULL method. Since a signal beeps loudest over 15 to 20 degrees of an antenna's arc, the operator should find the null or no-sound points on both sides of that peak signal. Divide the distance between the nulls or no sound points in half --- this will give the most exact direction of the transmitter signal.

If a transmitter signal surrounds the operator rather than coming from one direction, the transmitter-wearer is close, within 200 yards. To get a directional signal under these conditions, remove the antenna's BNC connector from the receiver plug. To help signal reception, turn the receiver's gain control as **low** as possible to avoid distortion. **Or** use the attenuator, now built into all Wildlife Materials receivers. The attenuator will shorten/weaken a signal when turned on, and should be used when swamping occurs.

To combat signal bounce, go to a high altitude such as a ridge. Take several readings from different positions. The transmitter-wearer is located at the place where **two or more signals cross**. This method is called **triangulation**.

A combination of these locating techniques may be necessary, especially if the transmitter-wearer is in an area where there are dense trees, underbrush and/or other types of obstructions. Under these conditions, there is no substitute for common sense and experience. It is strongly recommended that the operator practice before attempting to use an antenna for locating a transmitter-wearer in the field. To simulate actual field conditions, place a transmitter in a bush or tree at a distance of 100-200 yards. After you have located the transmitter you placed, have someone else hide a transmitter within a given area. This activity will build confidence and take the mystery out of the electronic monitoring process.

**NOTE:** If your signal **range/distance drops suddenly**, the cable may be **damaged**, even if it looks good. To double check, try a buddy's working cable. You may need a new cable to ensure good distance.

### **DIRECTIONS FOR USE:**

1. As your transmitted animal moves away (beyond 200 yards) from the receiver, an antenna will be needed to magnify its signal. Use the cable to connect the antenna with the receiver. To attach, **press in** the cable's metal BNC connectors, then **turn right**.
2. To pinpoint a transmitter-wearer's signal, the **main boom** must always **parallel** the ground. Use the NULL-to-NULL method. Turn your body and the antenna in a complete circle--360 degrees. A signal will beep loudest over 15 to 20 degrees of this circle. Find the **nulls or no-sound points** on both sides of the area where the signal is coming in. To get exact location of the animal's signal, **divide the distance between the no-sound points in half**. Keep taking readings as you move toward the transmitted animal, who might have veered in another direction.
3. The **higher** you can hold the antenna, the **better** reception you will get. At times, you may want to climb a rock or stand on your truck bed. Users have told us about tracking from an airplane, with antenna strapped to a wing strut, in the event that a transmitted animal has been taken out of the county.
4. Best signal reception occurs when **your antenna's 3 elements MATCH the position of the animal's transmitter antenna**. Since you cannot see the dog, please **experiment** by rotating your wrist & the antenna handle so that the 3 elements are vertical, then horizontal. Your dog may be laying down, entrapped, or the collar may have shifted. You can learn a lot about your dog's situation! After experimenting, hold the antenna in the position that gives the best signal.

In rugged terrain where signal bounce might occur, go to a **high altitude** such as a ridge, for best reception. Turn the receiver's gain/volume control knob as **low** as possible to avoid distortion. Take **several readings** from **different positions--change the background!** The transmitted animal is located at the place where **two or more** signals **cross**. This tracking method is called **triangulation**.

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**34 Years Manufacturing Experience**