



SITCO ANTENNAS

**ASSEMBLY INSTRUCTION
FOR
VHF STAGGER STACK ARRAY
END MOUNTED**

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1.1. GENERAL INFORMATION:

Stagger stacking array of two or more yagi arrays is a method used when extremely high front to back ration is required. The lower bay is physically spaced (staggered) forward by one quarter wavelength, thus receiving the incoming signal phase shifted ahead of the upper boom by 90 degrees. This bay is fed into the combining network by a line cut one quarter wave longer then the feeder line to the upper boom, thereby delaying the signal by 90 degrees. The result is that the signals from the upper and lower booms arrive in phase at the combiner, and add.

Signal coming from the rear of the antenna will arrive at the lower boom delayed by 90 degrees, and will be delayed an additional 90 degrees in the harness, thus arriving at the combining point 180degrees out of phase with the signal from the upper boom. This signals will subtract, effectively canceling signals from the rear.

1.2. BILL OF MATERIALS:

- a. One carton, containing:

DESCRIPTION	QTY
Antennas	2
Stacking rod	2
Braces	4
Crossarm tube	1
Cable harness:	1
Assembly instruction	1

- b. One carton, containing:

DESCRIPTION	QTY
Hardware pack No. 4-1-2 containing	1
a. Wedge screw 10-24 x 1-3/4"	3
b. Fiber nut 10-24	3
c. Flat plate	1
d. Angle plate	2
e. Flat washer 1/4"	16
f. Lock washer 1/4"	8
g. Bolt 1/4-20 x 2-1/4"	8
h. U-bolt	6
i. Hex nut 1/4"	8
j. Bolt 5/16-20 x 2-1/2"	2
k. Hex nut 3/8	12
l. Flat washer 3/8	12
m. Lock washer 3/8	12

- Total quantity of cartons is two or three.



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1.3. END MOUNT TUBE INSTALLATION:

Slide the end mount extension tube over the antenna boom.

NOTE: One extension tube is longer than the other. This is to create the “stagger”.

Align its element hole, which is painted black, with the corresponding element hole (also marked black) at the tail end of the antenna boom. See Figure 1.

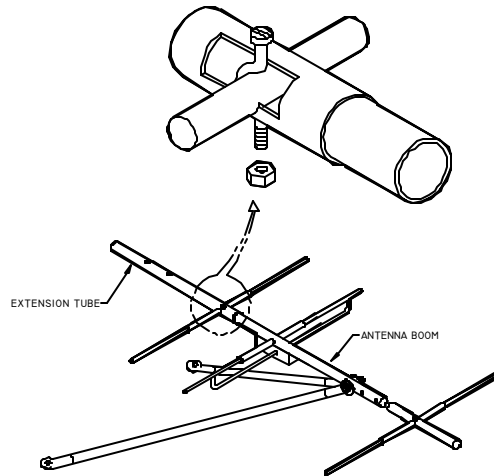


Figure 1

1.4. REFLECTOR AND DIRECTOR INSTALLATION:

Insert a color coded element into its corresponding color coded position on the antenna boom (if the color code is not visible start from the end of the antenna boom, which is the end closer to the balun box, with the longest element and insert them in a decreasing length order as you approach the front of the boom). For the antenna to work properly the element must be centered. The SITCO Wedge Screw Fasteners must be in place but loose when inserting elements. After making sure the element is in position and centered, secure it by tightening the hex nut on the SITCO Wedge Screw Fastener.

1.5. SIGNAL DIPOLE INSTALLATION:

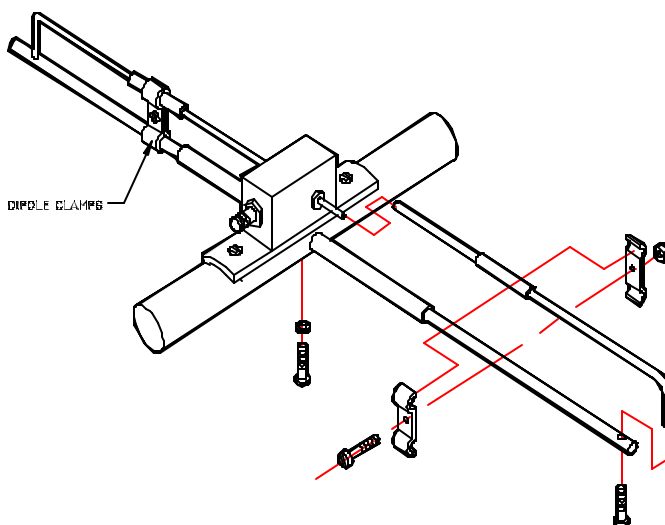
The three piece signal dipole assembly is the last section to be installed in the boom. Prepare the dipole for insertion by removing the curved return element which is opposite from the rivet, which is located just off-center of the element. See Figure 2.



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NOTE: On the high band antennas there is no rivet. Either curved return element may be removed.

Also remove the dipole screw from the center of the element. Slide the end of the 3/8" rod into the hole below the balun box, until the curved return element, which is still attached has slipped securely onto the banana jack on the opposite side of the balun box, and re-attach it to the 3/8" rod. Insert the dipole screw into the boom directly below the balun and thread it carefully into the driven element to secure it firmly. See Figure 2.



NOTE: High band VHF models do not have dipole clamps or 1/2" sleeve

Figure 2

1.6. INSTALLATION OF BRACES TO ANTENNA BOOMS:

- a. Attach end of each brace to mounting hole on antenna boom, per Figure 3.
The lower (longer) antenna should have its longer braces extended above it, and the upper (shorter) antenna should have its shorter braces extended below it. Be sure to only finger tighten the bolts holding the frame together until the antenna booms have been tightened to avoid hole alignment problems.



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b. List of parts used to install braces to antenna booms:

ITEM	DESCRIPTION	QTY	FOUND IN
2-1	Antenna boom (1-short, 1-long)	2	Antenna Box
2-2	Braces (2-short, 2-long)	4	
2-3	Bolt 1/4-20 x 2-1/4"	4	Hardware box
2-4	Hex nut 1/4"	4	
2-5	Flat washer 1/4"	4	
2-6	Lock washer 1/4"	4	

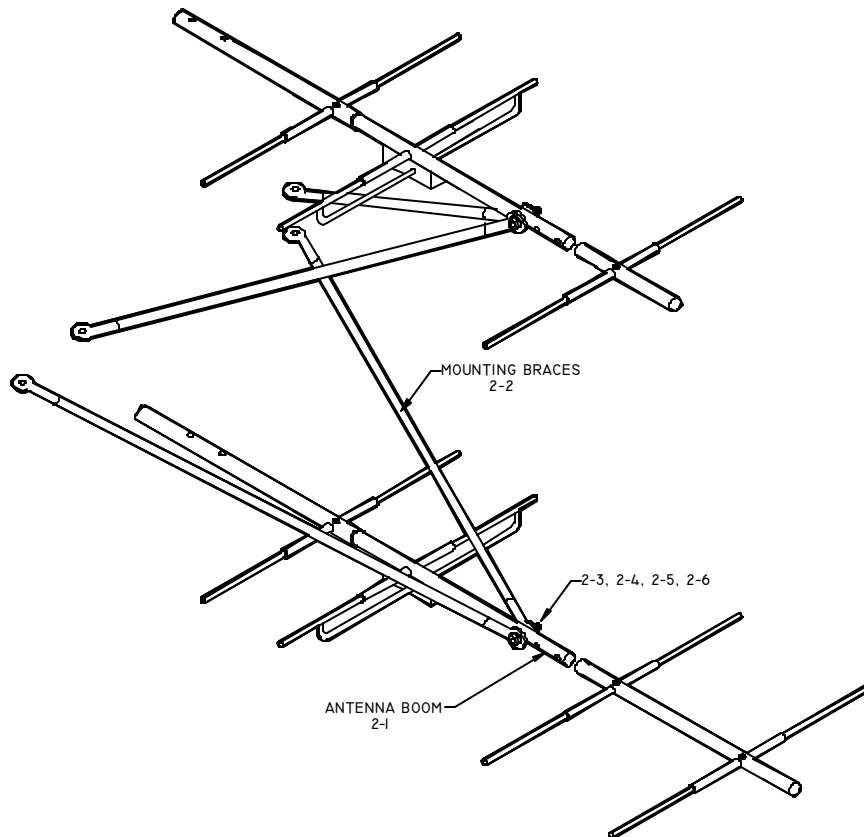


Figure 3



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1.7. ROD INSTALLATION

- a. Install the vertical spacing rods through the booms using provided hardware. See Figure 4.

ITEM	DESCRIPTION	QTY	FOUND IN
4-1	Stacking rod	2	Antenna box
4-2	Wedge screw 1-3/4"	4	Hardware box
4-3	Fiber nut 10-24	4	Hardware box

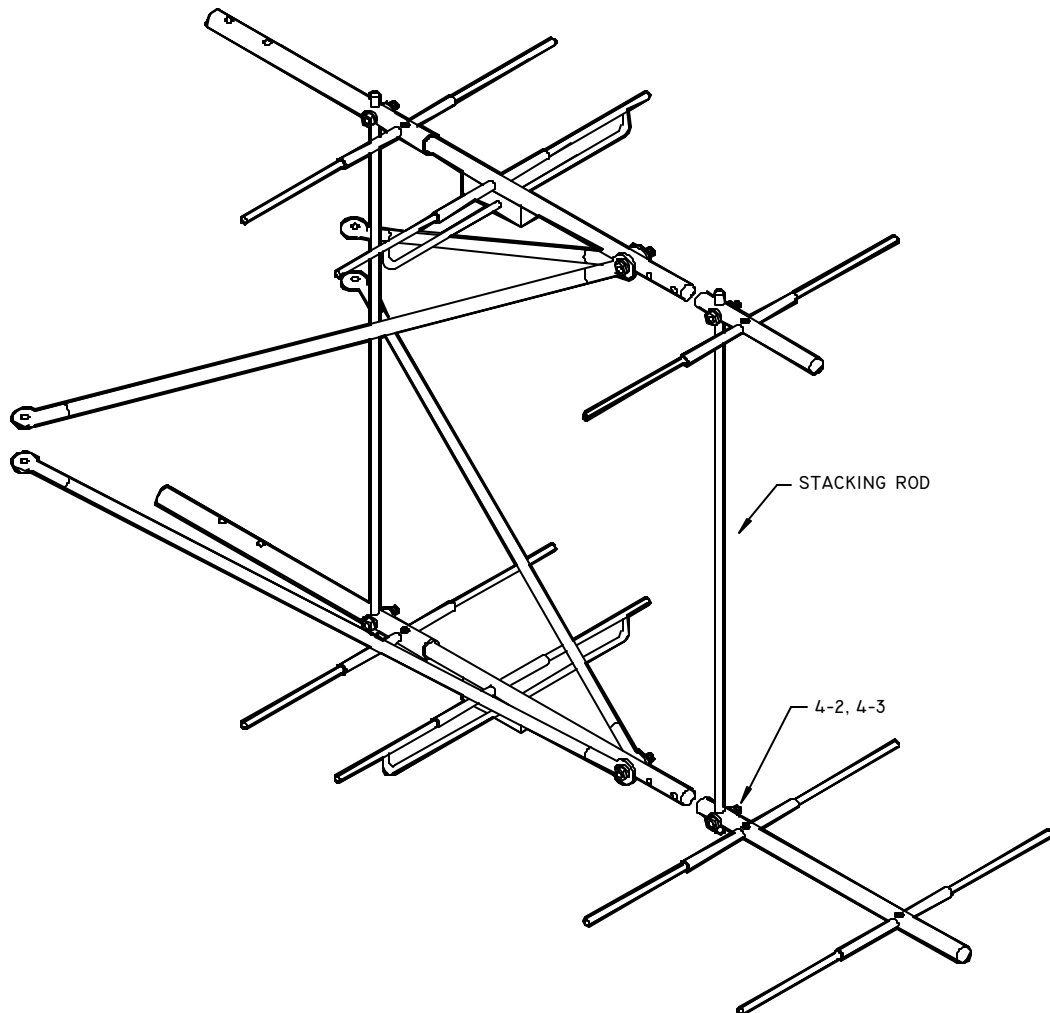


Figure 4



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1.8. INSTALLATION OF ANTENNA BOOMS TO MAST / TOWER LEG

NOTE:

One boom assembly is longer (by ¼ wavelength) than the other.

- a. When mounting the booms to the tower, mount the shorter boom above the longer boom.

NOTE:

Be sure all baluns are pointed downward for phase coherence in the array.

- c. Secure the crossarm tube to the flat plate. Attach the bent end of antenna brace to the crossarm tube. See Figure 5.
- d. Connect the antenna at the end mount boom extension to the angle plates using provided hardware. See Figure 5.
- e. Attach flat plate with installed crossarm tube to the mast / tower leg using the supplied U-bolts. Also, connect the antenna boom angle plates to the mast / tower leg using the supplied U-bolt. See Figure 5.

Space plates as follows:

Your array is cut for channel: _____

Vertical spacing is set for: _____ inches, antenna boom center to center.

- f. List of hardware for installation of antenna booms to mast / tower leg:

ITEM	DESCRIPTION	QTY	FOUND IN
3-1	Antenna	2	Antenna box
3-2	Brace	4	
3-3	Flat plate	1	Hardware box
3-4	Angle plate	2	
3-5	Bolt 1/4-20 x 2-1/4"	4	
3-6	U-bolt	6	
3-7	Nut 1/4-20	12	
3-8	Flat washer 1/4"	12	
3-9	Lock washer 1/4"	12	

NOTE: Tighten all bolts securely. Do not over tighten, as this will compress the clamps and distort the bolts and antenna alignment.



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- g. Standard hardware is for 1-1/2" O.D. mast. Oversize hardware for 2", 2-1/2", 3-1/2" and 4-1/2" O.D. masts are available. See Figure 4, page 6-10.

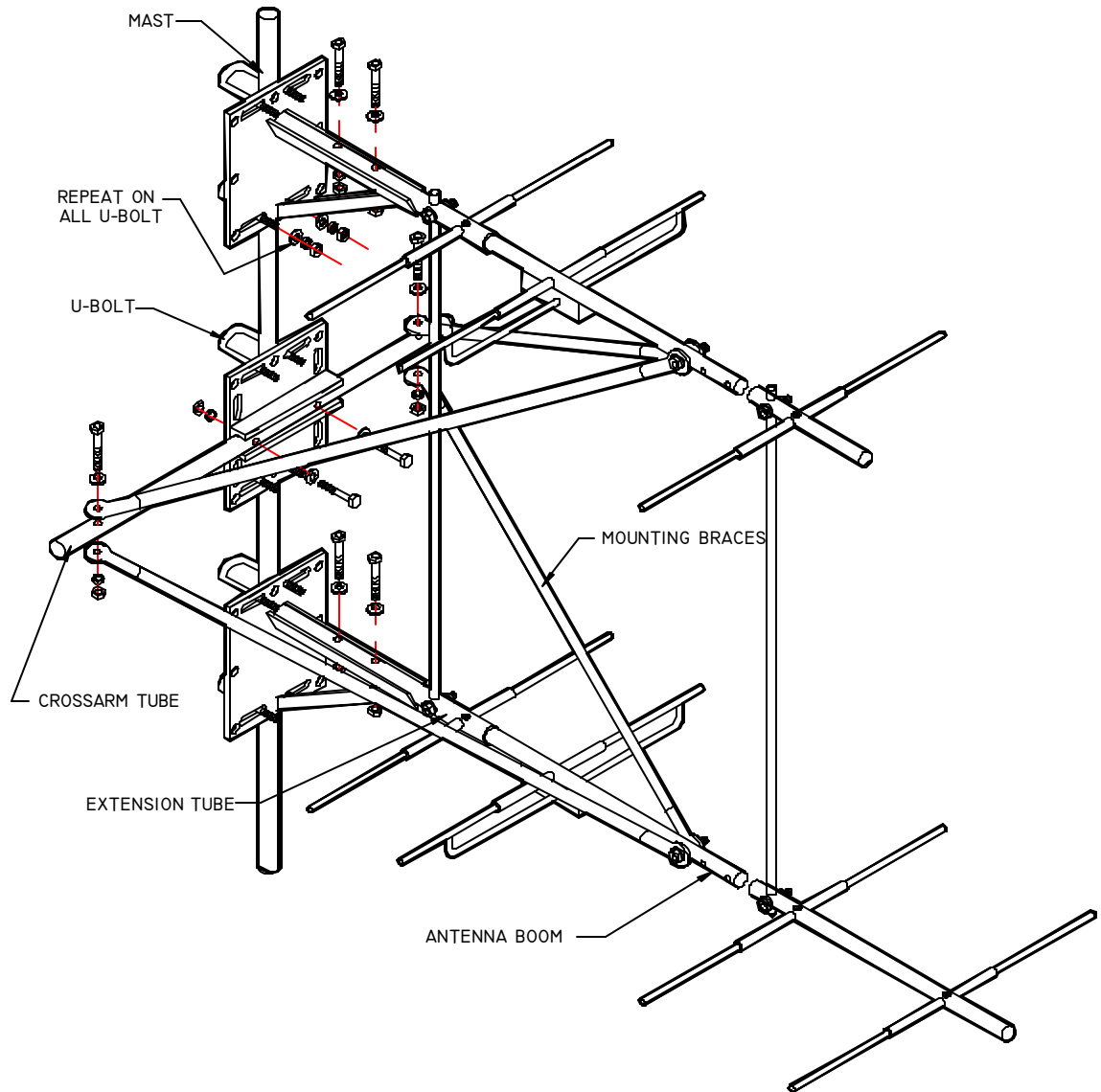


Figure 5



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1.9. INSTALLATION OF PHASING HARNESS

- a. Attach longer harness to the extended (lower) boom and shorter harness to the upper boom. For clarity see Figure 6.

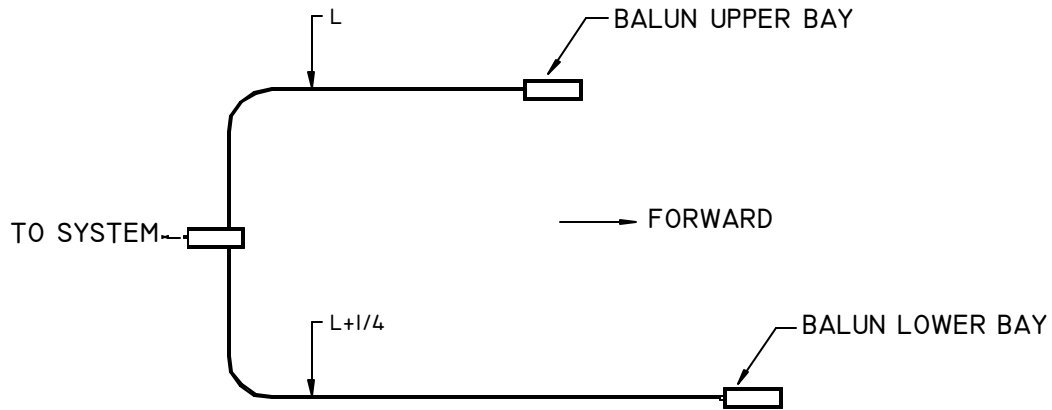


Figure 6

1.10. INSTALLATION FOR OVERSIZE MAST (option)

- a. For oversize mast / tower leg (2", 2-1/2", 3-1/2" and 4-1/2") there would be added sixth carton with hardware. For installation see Figure 7. Page 10-10.

ITEM	DESCRIPTION	QTY	FOUND IN
6-1	Flat Plate	2	Hardware box
6-2	U-bolt	6	
6-3	Hex nut	12	
6-4	Flat washer	12	
6-5	Lock washer	12	



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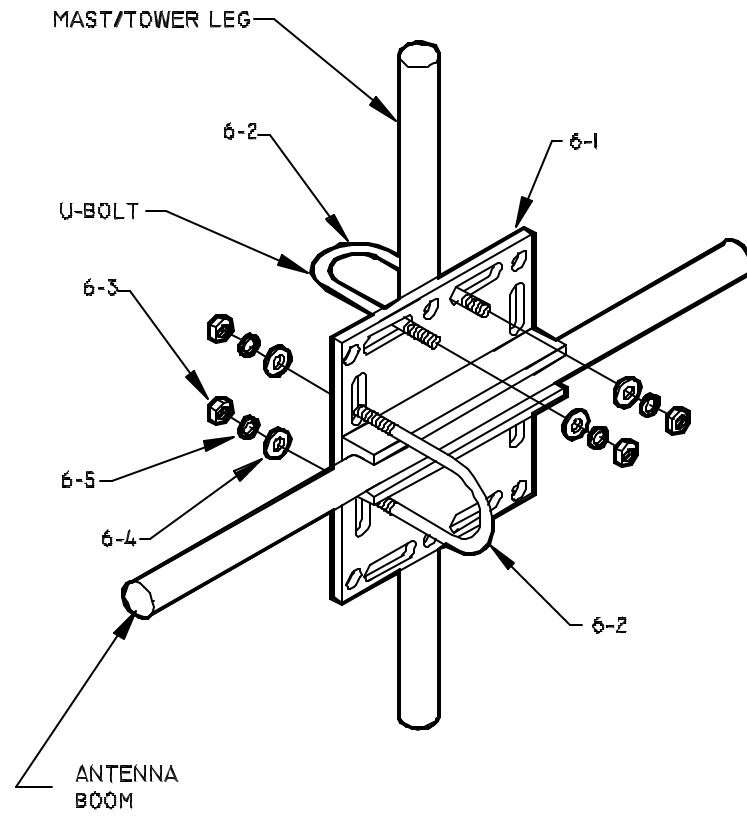


Figure 7