

# JK-65

## Five Element 6M Yagi



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## JK Antennas Limited Warranty and Liability

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JK Antennas (“Manufacturer”) warrants to the original purchaser that this product will be free from defects in material, and workmanship for a period of one (1) year from the date of purchase. The determination of whether any part or parts will be covered by this limited warranty and whether any part or parts will be repaired, replaced or refunded will be solely determined by JK Antennas. Such determination will be made following evaluation of claim of alleged defect and subject to evaluation of possible misuse, abuse, unauthorized modifications, extreme weather conditions or improper installation. This warranty does not cover delivery, transportation, installation or any other costs that may be incurred from any defect.

The purchaser, final customer, installer and user of these products individually and collectively acknowledge that these products can cause injury or death and individually and collectively accept full responsibility and liability for any and all personal and property damage (direct, indirect and punitive) caused during installation and subsequent use.

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## WARNINGS

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- **Installation of this antenna near power lines is dangerous. Contact with any high voltage power lines could result in electric shock or loss of life. Do not install this antenna where there is any possibility that the antenna or any part of the supporting structure could come in contact with power lines.**
- **Also ensure that no persons or pets can come in any contact with the antenna after it is installed. Dangerous voltages can exist on the antenna when it is in operation and no part of the system is insulated to prevent shock.**
- **Consult with FCC OET Bulletin 65 to properly evaluate whether the chosen installation site for this antenna will comply with the FCC guidelines for human exposure limits to radio frequency electromagnetic fields.**
- **This antenna structure is not designed to be used as a support structure. No persons or objects should be supported by or suspended from the antenna structure at any time.**
- **Because most antenna systems are installed at high heights, the installed location must take into account that falling debris may pose a hazard to humans, animals and property on the ground below.**
- **Be aware of and follow all local codes and ordinances when installing this antenna.**

## JK65 5 Elements on 6M / 15 Foot Boom

### INITIAL GUIDELINES

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1. Open the boxes and layout the elements, hardware kits and parts
2. Using the parts list at the end this document, check to make sure all tubing, hardware kits and parts are included (extra numbers of bolts, screws, nuts and washers are included)
3. A tube of Penetrox or Noalox (Anti-seize/Anti-Oxidant) has been included with your antenna. **Use a drop or 2 of this anti-seize paste on all screws before fastening. This will prevent the stainless-steel hardware from accidentally locking up.**

The document has been separated into different assembly sections based on the packaged hardware kits. While it is recommended to assemble in the order presented, please adjust as needed based on your working conditions and assembly area.

### Boom to Mast Plate and Clamps

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The JK65 comes with a 4" x 6" **Boom to Mast Plate**.

The **Boom to Plate Kit** includes two (2) Boom to Plate Half Clamps sized for the JK65 Boom, along with appropriate assembly hardware.

The **Mast to Plate Kit** includes two (2) U-Bolt Clamps sized for a 2" mast (domestic) or a 48mm mast (international), along with appropriate assembly hardware.



*Boom to Mast Plate with Boom mounted using Boom to Plate Half Clamps*

### Boom

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The JK65 has a 1.5" OD **Boom** - with two (2) 6 ft. end sections, one (1) 3 ft. middle section, and two (2) **Boom Sleeves**- for a total boom length of 15'.

Recommended method: Mount a short (5 ft. tall) temporary mast above the ground. Mount the **Boom to Mast Plate** onto the short mast with the clamps and hardware from the **Mast to Plate Kit**.

Identify and mark the **Mast Position** (15" from one end) on the 3 ft. center Boom section, and mount the section at the identified position onto the Boom to Mast Plate using the clamps and hardware from the **Boom to Plate Kit**.

Next, insert a **Boom Sleeve** into one end of the mounted boom section, and attach with the appropriate hardware included in the **Boom Hardware Kit**. Repeat on the other side with the remaining end section.



*Assembled Boom Joint*

NOTE: We recommend the sleeves be attached to the boom with the bolt head on the top side (facing the sky) and nut on the bottom (facing the ground).

## **Element Assembly**

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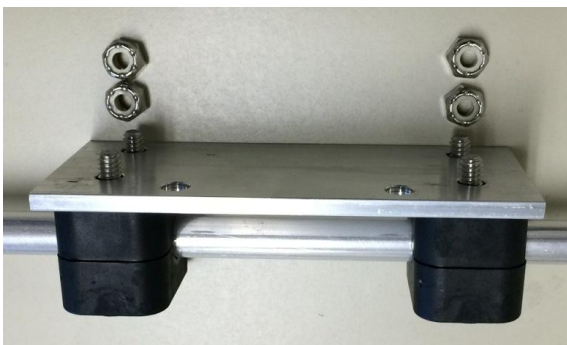
The 6M elements are attached to the Boom using an **Element Plate** and one (1) **Boom to Element Half Clamp**.

The 6M elements are comprised of telescoping sizes of .5" and .375" aluminum tubing. Attach the center (.5" OD) sections of each element to the plate using the **Black Clamps** (.5" ID) and the appropriate hardware from the **Element to Element Plate Kit**.

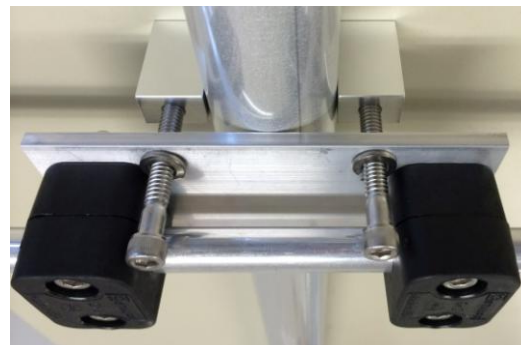
All 6M elements have a 6 ft. center section EXCEPT for the **Driven Element**, which uses two (2) 3 ft. center sections. To assemble the 6M Driven Element, splice the two 3' center sections together using the fiberglass rod in the **Driven Element Hardware Kit**. Align the holes and attach using the provided screws and nylon nuts in the Driven Element Hardware Kit. The remainder of the hardware is used for the coax choke or 1:1 balun leads (see last section).

**IMPORTANT: The 6M center sections have two different size holes - when assembling, the LARGER hole must face towards the SKY and the SMALLER hole must face the GROUND.** Make sure to center the tubing exactly at the mid-point of the plate.

Once the center sections are mounted on the plates, they can be attached to the boom using the half clamps and hardware in the **Boom to Element Plate Kit**, following the element positioning indicated below. *Note the use of the lock washers on the underside of the plate (see photo below on the right).*

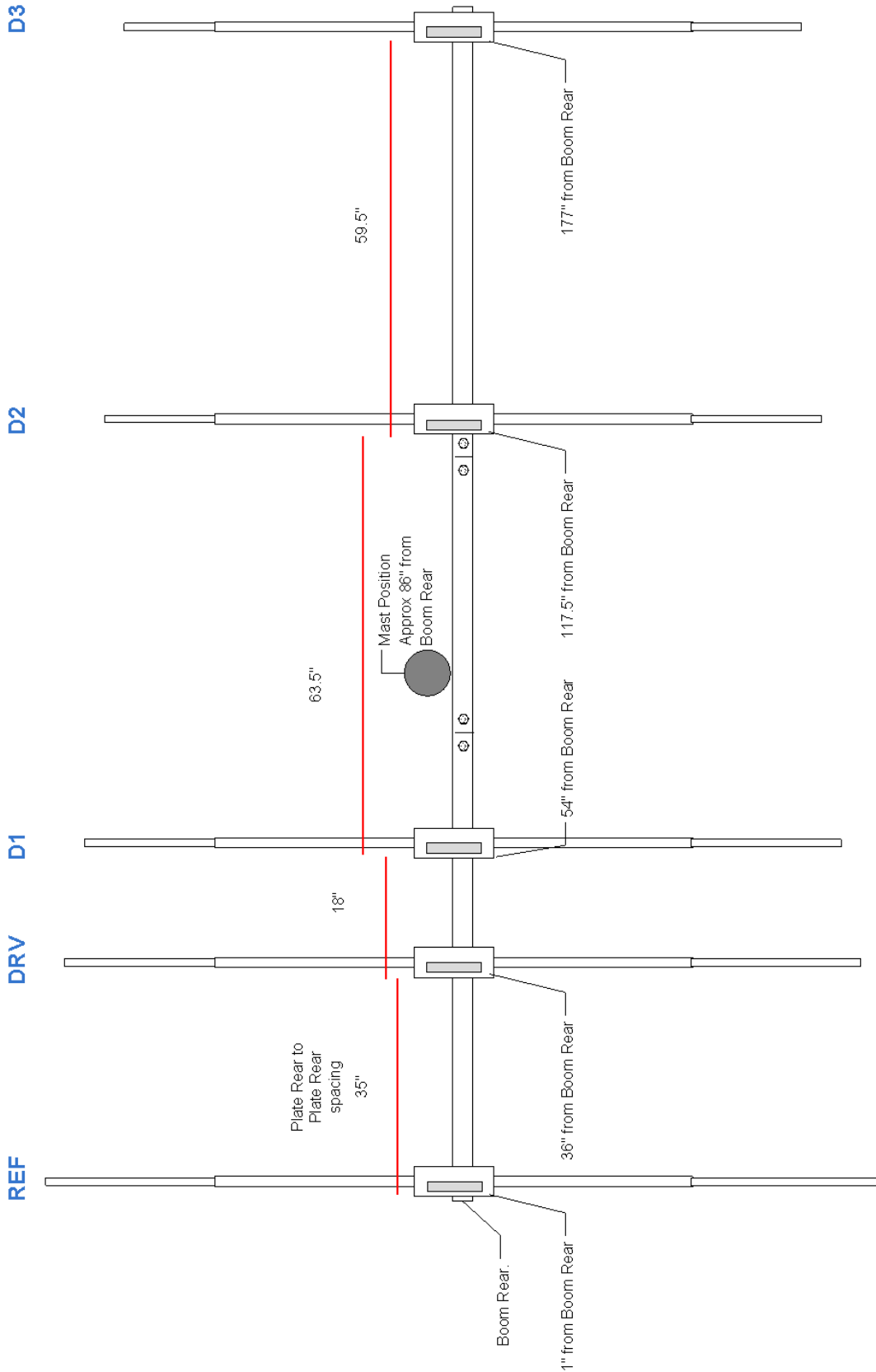


*Element mounted to Plate using Black Clamps*



*Element Plate mounted to Boom using Half Clamp  
(screws not tightened completely)*

**IMPORTANT:** Since JK65 uses only 1 clamp per element plate; attach the plates to the boom so that the clamp side of each plate is closest to the rear of the antenna, with all clamp sides having the same orientation (see diagram below)



**JK65**

The elements for the JK65 are positioned on the boom using the chart below. Measurements are from the BACK of the Element Plate to the BACK of the next Element Plate (or Element Clamp to Element Clamp):

6M Elements	Position
Reflector Element	Back of the plate is 1" from the Rear of the Boom
Driven Element	Back of the plate is 36" from Rear of the Boom OR 35" from the Back of the Reflector Plate
D1	Back of the plate is 54" from Rear of the Boom OR 18" from the Back of the Driven Element Plate
D2	Back of the plate is 117.5" from the Rear of the Boom OR 63.5" from the Back of the D1 Plate
D3	Back of the plate is 177" from the Rear of the Boom OR 59.5" from the Back of the D2 Plate

Once the .5" center sections have been mounted, the .375" **Element Tips** (marked accordingly) can be sleeved into the appropriate center section of each element to complete assembly. Make sure to match the proper tips with the corresponding center section. Aligning the holes and attaching the tubes firmly using the appropriate screws and nuts in the **Element Hardware Kits**. Do not forget to use the anti-seize paste.

6M Element	Exposed Tip Length
Reflector	22.25"
Driven Element	21.5"
D1	18.875"
D2	17.5"
D3	17"

**We recommend assembled elements to have the screw head on the top side of the element (facing the sky) and the nut on the bottom side of the element (facing the ground).**

### Coaxial Choke or 1:1 Balun

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The simplest feed for a 6M Yagi antenna is a **Coaxial Choke**. There are many articles available on the Internet on winding a choke for the HF bands. Our recommendations for 6 meters is to wind approximately 4-1/2 turns of RG-213 type coax, with an inner diameter of approximately 2.5".

**CAUTION: The choke only works well when it is wound for the frequency of operation. A randomly wound choke would have adverse impact on the performance of the antenna.**

The Coaxial Choke should be not be mounted along the boom, but rather it must be hung off the boom for it to be effective. If you are using a 1:1 Balun, then mount the Balun in the front towards the mast. **In either case, it is very important to keep the LEADS as short as possible.** A longer connection lead will alter the driven element characteristics. **We recommend the DXE-COM-BAL-111DT instead of the coax choke.**

Hang the Coax Choke or mount the 1:1 Balun at the balance point (around 38" - 41" from rear of the antenna). The leads are attached as follows, using the remaining washers/nuts from the **Driven Element Hardware Kit**:

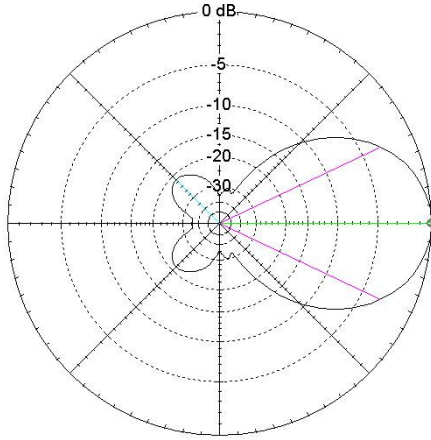
1. Insert the star or toothed lock washer into the Driven Element center screws.
2. Now insert the balun or choke lead (keep as short as possible)
3. Insert the supplied #8 plain hex nut and tighten. Make sure to tighten lightly – NOT OVER TIGHTEN
4. Now insert and screw another plain hex nut, which will act as a lock
5. Check the entire setup for snug fit and no loose joints.

JK65 Parts List	Description		
<b>BOOM TO MAST ASSEMBLY</b>			
BMP 6M		4" x 6" Mast Plate	1
Boom to Plate			
BMC 6M 1S		Boom to Mast Plate Half Clamp	2
SH51618	1-3/8"	Socket Head Screw 5/16-18	4+1
LW516		Lock Washer 5/16	4+1
Mast to Plate			
U-Bolt	2" or 48mm	Mast to Mast Plate U-Bolt 5/16-18	2
<b>BOOM ASSEMBLY</b>			
AT1.5 Boom 2S	3'	Boom Center Section 1.5" OD	1
AT1.5 Boom 1S	6'	Boom End Section 1.5" OD	2
AT1.375 Sleeve		Boom Sleeve	2
Boom Hardware			
HH51618	2"	Hex Head Screw 5/16-18	4+1
NN51618		Nylon Nut 5/16-18	4+1
LW516		Lock Washer 5/16	4+1
<b>BOOM TO ELEMENT ASSEMBLIES</b>			
BEP 6M		Boom to Element Plate	5
Boom to Element Plate			
BEC 6M 1S		Boom to Element Plate Half Clamp	5
SH1420	1-1/4"	Socket Head Screw 1/4-20	10+2
LW14		Lock Washer 1/4	10+2
Element to Element Plate			
BC.5	1/2" ID	Black Polyamide clamps	10
SH1420	1-5/8"	Hex Head Screw 1/4-20 (1-5/8")	20+2
NN1420		Nylon Nut 1/4-20	20+2
<b>6M ELEMENT ASSEMBLIES</b>			
3AT.5	1/2" OD	3 ft Alum Tube - Driven Center	2
6AT.5	1/2" OD	6 ft Alum Tube	4
AT.375	3/8" OD	25.25" Alum Tube - Reflector Tips	2
AT.375	3/8" OD	24.5" Alum Tube - Driven Tips	2
AT.375	3/8" OD	21.875" Alum Tube - Director #1 Tips	2
AT.375	3/8" OD	20.5" Alum Tube - Director #2 Tips	2
AT.375	3/8" OD	20" Alum Tube - Director # 3 Tips	2
Element Hardware			
SH632	3/4"	Socket Head Screw 8-32	10+2
NN632		Nylon Nut 6-32	10+2
6M Driven Element Hardware			
FG 6M DE		Fiberglass Rod for Driven Element	1
SH832	1-1/2"	Socket Head Screw 8-32	2+1
NN832		Nylon Nut 8-32	2+1
PN832		Plain Hex Nut 8-32	2+1
LW8		Lock Washer #8	4+1
LW8ExT		Lock Washer #8 External Tooth	4+1
<b>SUPPLIES</b>			
Noalox		Anti-Oxidant	1

# JK65 Specifications

Total Field

EZNEC Pro/4



50.15 MHz

Azimuth Plot  
 Elevation Angle 13.0 deg.  
 Outer Ring 16.09 dBref  
 Slice Max. Gain 16.09 dBref @ Az Angle = 0.0 deg.  
 Front/Back 34.99 dB  
 Beamwidth 50.8 deg., -3dB @ 334.6, 25.4 deg.  
 Sidelobe Gain -5.2 dBref @ Az Angle = 135.0 deg.  
 Front/Sidelobe 21.29 dB

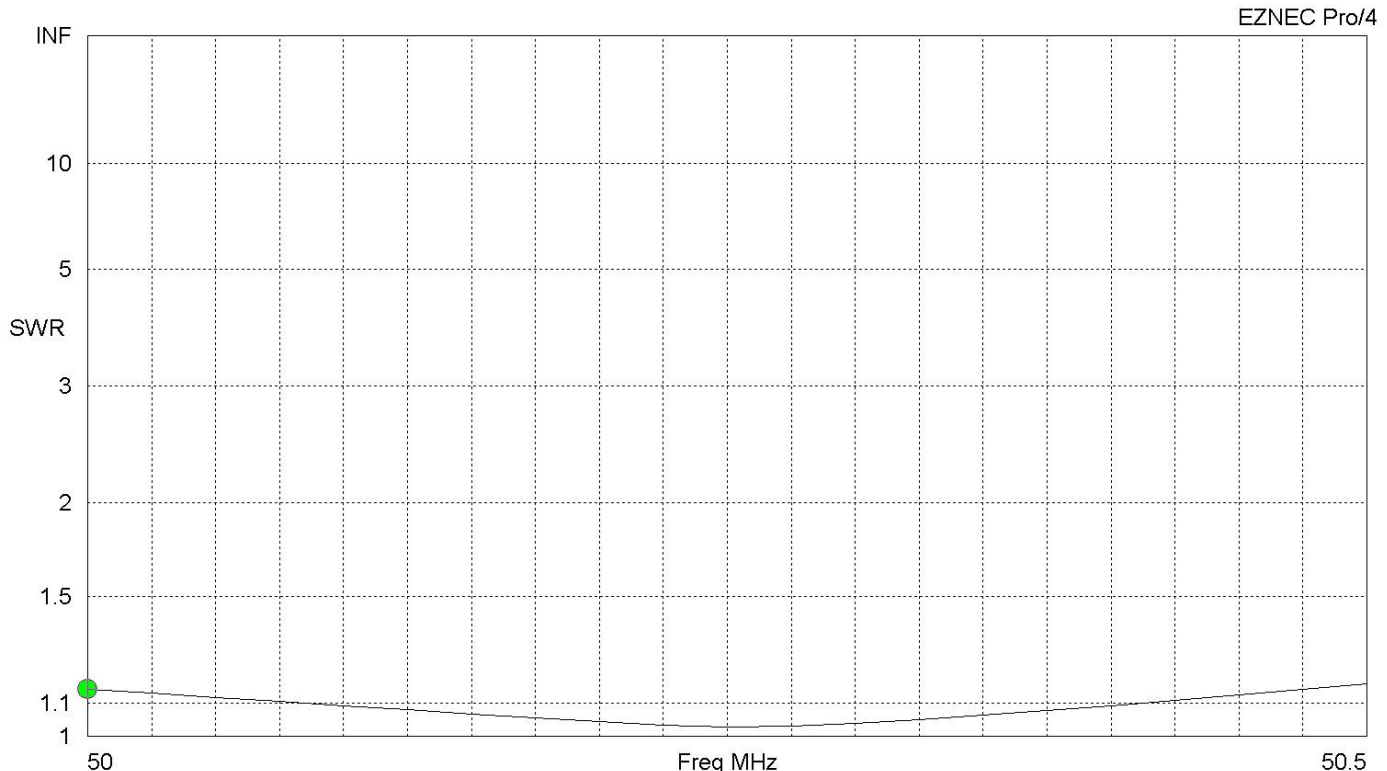
Cursor Az 0.0 deg.  
 Gain 16.09 dBref  
 0.0 dBmax

Plot shown above is 1 wavelength above ground

**JK65**

<b>Number of Elements</b>	5
<b>Active Boom Length</b>	15.0 feet
<b>Peak Gain *</b>	9.2 dBd
<b>Peak F/B</b>	30+ dB
<b>Peak F/R</b>	20+ dB
<b>2:1 SWR Bandwidth</b>	1 MHz
<b>1.5:1 SWR Bandwidth</b>	800 KHz
<b>Max. Element Length</b>	9.67 feet
<b>Approx. Weight</b>	14 lbs.
<b>Wind Area</b>	1.37 square feet
<b>Max. Wind Speed</b>	125 MPH
<b>Max. Turning Radius</b>	9.0 feet

Peak Gain is shown over a dipole in Freespace  
 Dipole in Freespace = 2.14dBi



EZNEC Pro/4

Freq 50 MHz  
 SWR 1.14  
 Z 44.07 at -2.7 deg  
 = 44.02 - j2.073 ohms  
 Refl Coeff 0.06728 at -159.61 deg  
 = -0.06307 - j0.02344  
 Ret Loss 23.4 dB

Source # 1  
 Z0 50 ohms