XM240
40 Meter 2 Element Yagi

CUSHCRAFT
COMMUNICATIONS ANTENNAS
Thank you for your purchase of the Cushcraft XM240. This kit is designed and manufactured to give the best performance and trouble free service. The antenna will perform as specified if the instructions are followed during assembly and installation. If you have technical questions and have access to the World Wide Web you can visit Cushcraft's TECHEXPRESS support service (http://www.cushcraft.com). The site enables the user to place parts orders, ask technical questions, locate part numbers, initiate warranty inquiries and review Frequently Asked Questions. Our technical support staff can be reached by phone at (603) 627-7877 (8 AM to 5 PM Eastern time or voice mail after hours), faxed at (603) 627-1764 or can be e-mailed at techsup@cushcraft.com.

**WARNING**

THIS ANTENNA IS AN ELECTRICAL CONDUCTOR. CONTACT WITH POWER LINES CAN RESULT IN DEATH OR SERIOUS INJURY. DO NOT INSTALL THIS ANTENNA WHERE THERE IS ANY POSSIBILITY OF CONTACT WITH OR HIGH VOLTAGE ARC-OVER FROM POWER CABLES OR SERVICE DROPS TO BUILDINGS. THE ANTENNA, SUPPORTING MAST AND/OR TOWER MUST NOT BE CLOSE TO ANY POWER LINES DURING INSTALLATION, REMOVAL OR IN THE EVENT PART OF THE SYSTEM SHOULD ACCIDENTALLY FALL, FOLLOW THE GUIDELINES FOR ANTENNA INSTALLATION RECOMMENDED BY THE U.S. CONSUMER PRODUCT SAFETY COMMISSION AND LISTED IN THE ENCLOSED PAMPHLETS.

Antenna System Planning

Before assembly, take time to review your installation plans for the antenna. Location of the antenna is very important. Surrounding objects such as trees, power lines, buildings, and other antennas will interact with an HF Yagi. To minimize the effects of surrounding objects, mount the antenna as high and in the clear as possible. Metallic guy wire within 30 feet of this antenna, if broken with strain insulators, will improve performance. **YOU MUST INSURE THAT NEITHER PEOPLE OR PETS CAN COME IN CONTACT WITH YOUR ANTENNA WHILE IT IS IN OPERATION. DEADLY VOLTAGES AND CURRENTS MAY EXIST. ALSO, SINCE THE EFFECTS OF EXPOSURE TO RF ARE NOT FULLY UNDERSTOOD, LONG TERM EXPOSURE TO INTENSE RF FIELDS IS NOT RECOMMENDED. THERE IS A WARNING STICKER WHICH MUST BE ATTACHED TO THE BOOM AS SHOWN IN FIGURE A.** Plan your installation carefully. If you use volunteer helpers be sure that they are qualified to assist you. Make certain that everyone involved understands that you are in charge and that they must follow your instructions. If you have any doubts at all, employ a professional antenna installation company to install your antenna.

System Grounding

Direct grounding of the antenna, mast and tower is very important. This serves as protection from lightning strikes and static buildup. A good electrical connection should be made to one or more ground rods directly at the base of the tower or mast using at least #10 AWG ground wire and non-corrosive hardware. For details and safety standards, consult the National Electrical Code. A coaxial lightning arrester should be used. Cushcraft offers several different models such as the LAC series.

Assembly

The assembly procedure for the XM240 consists of assembling the following subassemblies. 1) Verification of Parts. 2) Boom Assembly. 3) Element Assembly. 4) X-Hat Assembly. 5) Feed System Assembly. 6) Boom-to-Mast Clamp Assembly. 7) Boom Truss Assembly. Assembly of the XM240 will be easiest if the preceding steps are performed in the given order. **Please read through the entire assembly procedure before beginning.**

1-Verification of Parts

Verify all parts are present by using the XM240 Master Parts List. Check off each part when it is counted. There are extra parts intentionally shipped with this antenna. Place common hardware in temporary containers for ease of assembly. Note all hardware is Stainless Steel.

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
<th>Metric Equivalent</th>
<th>Quantity</th>
<th>Qty Check</th>
</tr>
</thead>
<tbody>
<tr>
<td>LCA</td>
<td>40 Meter Loading Coil</td>
<td>6.3 x 152.2 cm</td>
<td>4</td>
<td>___</td>
</tr>
<tr>
<td>MNXM</td>
<td>Matching Network</td>
<td></td>
<td>1</td>
<td>___</td>
</tr>
<tr>
<td>XM240BA</td>
<td>2-1/2” x 59-15/16” Aluminum Tube, 6 holes</td>
<td>6.3 x 152.2 cm</td>
<td>1</td>
<td>___</td>
</tr>
<tr>
<td>XM240BB</td>
<td>2-1/2” x 71-15/16” Aluminum Tube, 6 holes</td>
<td>6.3 x 182.7 cm</td>
<td>2</td>
<td>___</td>
</tr>
<tr>
<td>XM240BC</td>
<td>2-1/2” x 59-15/16” Aluminum Tube, 10 holes</td>
<td>6.3 x 152.2 cm</td>
<td>1</td>
<td>___</td>
</tr>
<tr>
<td>XM240BD</td>
<td>2-3/8” x 12” Aluminum Tube, 8 holes</td>
<td>6.0 x 30.5 cm</td>
<td>2</td>
<td>___</td>
</tr>
<tr>
<td>XM240BE</td>
<td>2-3/8” x 12” Aluminum Tube, 4 holes</td>
<td>6.0 x 30.5 cm</td>
<td>1</td>
<td>___</td>
</tr>
<tr>
<td>XM240EA</td>
<td>1-3/8” X 84” Aluminum Tube slotted both ends</td>
<td>3.5 x 213.4 cm</td>
<td>1</td>
<td>___</td>
</tr>
<tr>
<td>XM240EB</td>
<td>1-1/4” x 48” Aluminum Tube slotted one end</td>
<td>3.2 x 121.9 cm</td>
<td>4</td>
<td>___</td>
</tr>
<tr>
<td>XM240EC</td>
<td>1-1/8” x 48” Aluminum Tube slotted one end</td>
<td>2.9 x 121.9 cm</td>
<td>4</td>
<td>___</td>
</tr>
<tr>
<td>XM240ED</td>
<td>1” x 32” Aluminum Tube slotted one end</td>
<td>2.5 x 81.3 cm</td>
<td>4</td>
<td>___</td>
</tr>
<tr>
<td>XM240EF</td>
<td>1/2” x 48” Aluminum Tube slotted one end</td>
<td>1.3 x 121.9 cm</td>
<td>4</td>
<td>___</td>
</tr>
<tr>
<td>XM240EG</td>
<td>3/8” x 36” Aluminum Tube</td>
<td>.9 x 91.4 cm</td>
<td>2</td>
<td>___</td>
</tr>
<tr>
<td>Part No.</td>
<td>Description</td>
<td>Metric Equivalent</td>
<td>Quantity</td>
<td>Qty Check</td>
</tr>
<tr>
<td>-----------</td>
<td>-------------------------------------------------------</td>
<td>-------------------------</td>
<td>----------</td>
<td>-----------</td>
</tr>
<tr>
<td>XM240EH</td>
<td>1-38&quot; x 42&quot; Aluminum Tube slotted one end, drilled one end</td>
<td>3.5 x 106.7 cm</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>XM240EJ</td>
<td>3/8&quot; x 42&quot; Aluminum Tube</td>
<td>.9 x 106.7 cm</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>X79FS</td>
<td>6&quot; Feed Strap</td>
<td>15.2 cm</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>XHR</td>
<td>34-1/2&quot; x 3/16&quot; Aluminum Rod</td>
<td>.5 x 87.6 cm</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>010011</td>
<td>#8-32 Stainless Steel Nut</td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>010082</td>
<td>1/4-20 x 1&quot; Hex Bolt</td>
<td>0.6 cm - 20 x 2.5 cm</td>
<td>32</td>
<td></td>
</tr>
<tr>
<td>010084</td>
<td>1/4&quot; Stainless Steel Flat Washer</td>
<td>0.6 cm</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>010085</td>
<td>1/4-20 Stainless Steel Nut</td>
<td>0.6 cm</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>010207</td>
<td>3/8&quot; Stainless Steel Flat Washer</td>
<td>0.9 cm</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>010208</td>
<td>3/8&quot; Stainless Steel Lock Washer</td>
<td>0.9 cm</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>010209</td>
<td>3/8&quot; Stainless Steel Nut</td>
<td>0.9 cm</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>010719</td>
<td>1/4-20 x 3&quot; Stainless Steel Hex Bolt</td>
<td>0.6 cm</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>010120</td>
<td>8-32 x 2&quot; Stainless Steel Machine Screw</td>
<td>5.1 cm</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>010231</td>
<td>8-32 x 1-3/4&quot; Stainless Steel Machine Screw</td>
<td>4.4 cm</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>011941</td>
<td>#8 Stainless Steel Lock Washer</td>
<td></td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>013209</td>
<td>2-7/8&quot; Center-to-center U-Bolt 4&quot; Long</td>
<td>7.3 cm -10.2 cm Long</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>014387</td>
<td>#8-32 Stainless Steel Lock Nut</td>
<td></td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>014399</td>
<td>1/4&quot; Stainless Steel Lock Nut</td>
<td>0.6 cm</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>014498</td>
<td>1-3/8&quot; Cush-a-Clamp</td>
<td>3.5 cm</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>014588</td>
<td>1/4&quot; x 3-1/2&quot; Stainless Steel Hex Bolt</td>
<td>0.6 x 8.9 cm</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>014592</td>
<td>1/4&quot; Stainless Steel Flat Washer 1/8&quot; Thick</td>
<td>0.6 x 0.3 cm</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>014597</td>
<td>8-32 x 2-3/4&quot; Stainless Steel Machine Screw</td>
<td>7.0 cm</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>024259</td>
<td>1/8&quot; Thimble</td>
<td>0.3 cm</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>024624</td>
<td>1/8&quot; Cable clamp</td>
<td>0.3 cm</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>024623</td>
<td>5/16&quot; x 4&quot; Turnbuckle</td>
<td>0.8 x 10 cm</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>030407</td>
<td>5/8&quot; Worm Clamp</td>
<td>1.6 cm</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>030409</td>
<td>11/16&quot; Worm Clamp</td>
<td>1.7 cm</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>030411</td>
<td>1-1/8&quot; Worm Clamp</td>
<td>2.9 cm</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>030412</td>
<td>1-1/2&quot; Worm Clamp</td>
<td>3.8 cm</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>050077</td>
<td>3/8&quot; Black Plastic Cap</td>
<td>0.9 cm</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>054526</td>
<td>2-1/2&quot; Black Plastic Cap</td>
<td>6.4 cm</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>094622</td>
<td>30&quot; Phillystran cable</td>
<td>9.14m</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>124567</td>
<td>1&quot; x 8&quot; Drilled Fiberglass Insulator</td>
<td>2.5 x 20.3 cm</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>170035</td>
<td>2-1/2&quot; Formed Aluminum Vee Blocks</td>
<td>6.4 cm</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>190026</td>
<td>Element Bracket</td>
<td></td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>190028</td>
<td>Half Washer</td>
<td></td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>194542</td>
<td>8&quot; x 8&quot; x 1/4&quot; Aluminum Mounting Plate</td>
<td>20.3 x 20.3 x 0.6 cm</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>194791</td>
<td>2&quot; x 4&quot; x 1/8&quot; Drilled aluminum truss bracket</td>
<td>5.1 x 10.2 x 0.3 cm</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>194707</td>
<td>4&quot; x 24&quot; x 3/16&quot;</td>
<td>10.2 x 61.0 x .5</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>290326</td>
<td>Danger Label</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>324506</td>
<td>8&quot; x 5-1/4&quot; x 3/16&quot; Drilled Extruded Aluminum Bracket</td>
<td>20.3 x 13.3 x 0.5 cm</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>324509</td>
<td>4&quot; x 5-1/4&quot; x 3/16&quot; Drilled Extruded Aluminum Bracket</td>
<td>10.2 x 13.3 x 0.5 cm</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>
1-Boom Assembly

Lay out boom sections as shown in Figure 1A. Secure the two outer connections as shown in Figure 1B. The middle connection is made using the mast mounting hardware as shown in Figure 1C.

<table>
<thead>
<tr>
<th>ID</th>
<th>Part #</th>
<th>Description</th>
<th>Dimensions</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>BA</td>
<td>XM240BA</td>
<td>Aluminum Tube</td>
<td>2-1/2&quot; x 59-15/16&quot; (152.2 cm)</td>
<td>1</td>
</tr>
<tr>
<td>BB</td>
<td>XM240BB</td>
<td>Aluminum Tube</td>
<td>2-1/2&quot; x 71-15/16&quot; (182.7 cm)</td>
<td>2</td>
</tr>
<tr>
<td>BC</td>
<td>XM240BC</td>
<td>Aluminum Tube</td>
<td>2-1/2&quot; x 59-15/16&quot; (152.2 cm)</td>
<td>1</td>
</tr>
<tr>
<td>BD</td>
<td>XM240BD</td>
<td>Aluminum Tube</td>
<td>2-3/8&quot; x 12&quot; (30.5 cm)</td>
<td>2</td>
</tr>
<tr>
<td>BE</td>
<td>XM240BE</td>
<td>Aluminum Tube</td>
<td>2-3/8&quot; x 12&quot; (30.5 cm)</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SS Hex Bolt</td>
<td>1/4-20 x 3&quot; (7.6)</td>
<td>8</td>
</tr>
<tr>
<td>19</td>
<td>010719</td>
<td>SS Lock Nut</td>
<td>1/4&quot;</td>
<td>8</td>
</tr>
<tr>
<td>84</td>
<td>010084</td>
<td>SS Lock Washer</td>
<td>1/4&quot;</td>
<td>8</td>
</tr>
<tr>
<td>99</td>
<td>014399</td>
<td>SS Lock Nut</td>
<td>1/4-20</td>
<td>8</td>
</tr>
<tr>
<td>ID</td>
<td>Part #</td>
<td>Description</td>
<td>Dimensions</td>
<td>Qty</td>
</tr>
<tr>
<td>----</td>
<td>-------</td>
<td>-------------</td>
<td>------------</td>
<td>-----</td>
</tr>
<tr>
<td>82</td>
<td>010082</td>
<td>Hex Bolt</td>
<td>1/4-20 x 1&quot; (2.5 cm)</td>
<td>16</td>
</tr>
<tr>
<td>84</td>
<td>010084</td>
<td>SS Lock Washer</td>
<td>1/4&quot; (0.6 cm)</td>
<td>18</td>
</tr>
<tr>
<td>99</td>
<td>014399</td>
<td>SS Lock Nut</td>
<td>1/4&quot; (.6 cm)</td>
<td>18</td>
</tr>
<tr>
<td>506</td>
<td>324506</td>
<td>Aluminum Bracket</td>
<td>8&quot; x 5-1/4&quot; x 3/16&quot; (20.3 x 13.3 x .5 cm)</td>
<td>2</td>
</tr>
<tr>
<td>542</td>
<td>194542</td>
<td>Alu Mounting Plate</td>
<td>8&quot; x 8&quot; x 1/4&quot; (20.3 x 20.3 x .6 cm)</td>
<td>1</td>
</tr>
<tr>
<td>588</td>
<td>014588</td>
<td>SS Hex Bolt</td>
<td>1/4&quot; x 3-1/2&quot; (.6 x 8.9 cm)</td>
<td>2</td>
</tr>
</tbody>
</table>

Figure 1C
2 - Element Assembly

Figure 2A and 2B show the steps required for element assembly. Identify the parts required using the Element Subassembly Parts List. Slide EH sections over fiberglass insulator (567) until #8 screw holes line up (Figure 2B). Insert screws (120) through holes and secure with lock washer (941) and nut (11).

Assemble elements referring to Figure 2A. Pay close attention to all dimensions shown. Use Chart A to determine your final element half length adjustments.

### Chart A
Element Half Lengths

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>CW 7.025 MHz</td>
<td>252.5&quot; (641.3 cm)</td>
<td>262.5&quot; (666.7 cm)</td>
</tr>
<tr>
<td>MID 7.125 MHz</td>
<td>249.5 (633.7 cm)</td>
<td>258.5 (656.6 cm)</td>
</tr>
<tr>
<td>PH 7.225 MHz</td>
<td>246.5 (626.1 cm)</td>
<td>255.5 (649.0 cm)</td>
</tr>
</tbody>
</table>

---

**Figure 2B**

**Figure 2A**
3 - X-Hat Assembly

Figure 3A shows the steps for assembly of the four X-Hats. Identify the parts required using the X-Hat Subassembly Parts List. Two XHR rods attach to each 40 meter coil (LCA). The rods may be mounted in any position relative to the element or boom.

<table>
<thead>
<tr>
<th>ID</th>
<th>Part #</th>
<th>Description</th>
<th>Dimensions</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>31</td>
<td>010231</td>
<td>SS Machine Screw</td>
<td>#8-32 x 1-3/4&quot; (4.4 cm)</td>
<td>4</td>
</tr>
<tr>
<td>87</td>
<td>014387</td>
<td>SS Lock Nut</td>
<td>#8-32</td>
<td>4</td>
</tr>
<tr>
<td>26</td>
<td>190026</td>
<td>Aluminum Bracket</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>28</td>
<td>190028</td>
<td>Aluminum Half Washer</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Aluminum Rod</td>
<td>3/8&quot; x 34-1/2&quot; (1.0 x 87.6 cm)</td>
<td>4</td>
</tr>
</tbody>
</table>

Figure 3A
4 - Element to Boom Assembly

Figure 4A, 4B and 4C show the steps for element mounting on the XM240 boom. Identify the parts required using the Element to Boom Subassembly Parts List. Attach the two brackets (509) to the boom using the hardware shown. The end of the truss assembly is shown in Figure 4A but is not to be assembled at this time. Attach the U-Channel Plate (793). Attach elements using 4 Cush-a-Clamps (98) (Figure 5A). The element pictured in Figure 5A is the Driven Element. Both elements mount with the same hardware.
Figure 5A shows the steps for feed system assembly. Identify the parts required using the Feed System Subassembly Parts List. Attach the Matching Network (MN) to the boom as shown above. Attach the Feed Straps (FS) to the two screws on the MN and the two driven element screws with the hardware shown. Position the Feed Straps away from the U-Channel bracket (707).
6-Boom to Mast Clamp Assembly

The antenna is now ready to be mounted to the mast. Attach the antenna mast clamp assembly to the tower mast as shown in Figure 6A. Secure the U-bolts with the hardware shown.

Attach good quality coax with a PL-259 connector to the MNXM matching network. Form a drip-loop with the coax and secure the coax to the boom. Insure PL-259 connector is waterproofed with a good quality sealant after it is attached to the matching network.

<table>
<thead>
<tr>
<th>ID</th>
<th>Part #</th>
<th>Description</th>
<th>Dimensions</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>35</td>
<td>170035</td>
<td>Aluminum V-Block</td>
<td>2-1/2” (6.3 cm)</td>
<td>2</td>
</tr>
<tr>
<td>207</td>
<td>010207</td>
<td>SS Flat Washer</td>
<td>3/8” (.95 cm)</td>
<td>4</td>
</tr>
<tr>
<td>208</td>
<td>010208</td>
<td>SS Lock Washer</td>
<td>3/8” (.95 cm)</td>
<td>4</td>
</tr>
<tr>
<td>209</td>
<td>010209</td>
<td>SS Nut</td>
<td>3/8” (.95 cm)</td>
<td>4</td>
</tr>
<tr>
<td>326</td>
<td>290326</td>
<td>Danger Label</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>209</td>
<td>013209</td>
<td>U-Bolt</td>
<td>2-7/8” (7.3 cm)</td>
<td>2</td>
</tr>
</tbody>
</table>

Leave 3’ (91 cm) of mast above the antenna to accommodate truss assembly.

Figure 6A

---

The antenna is now ready to be mounted to the mast. Attach the antenna mast clamp assembly to the tower mast as shown in Figure 6A. Secure the U-bolts with the hardware shown.

Attach good quality coax with a PL-259 connector to the MNXM matching network. Form a drip-loop with the coax and secure the coax to the boom. Insure PL-259 connector is waterproofed with a good quality sealant after it is attached to the matching network.

<table>
<thead>
<tr>
<th>ID</th>
<th>Part #</th>
<th>Description</th>
<th>Dimensions</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>35</td>
<td>170035</td>
<td>Aluminum V-Block</td>
<td>2-1/2” (6.3 cm)</td>
<td>2</td>
</tr>
<tr>
<td>207</td>
<td>010207</td>
<td>SS Flat Washer</td>
<td>3/8” (.95 cm)</td>
<td>4</td>
</tr>
<tr>
<td>208</td>
<td>010208</td>
<td>SS Lock Washer</td>
<td>3/8” (.95 cm)</td>
<td>4</td>
</tr>
<tr>
<td>209</td>
<td>010209</td>
<td>SS Nut</td>
<td>3/8” (.95 cm)</td>
<td>4</td>
</tr>
<tr>
<td>326</td>
<td>290326</td>
<td>Danger Label</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>209</td>
<td>013209</td>
<td>U-Bolt</td>
<td>2-7/8” (7.3 cm)</td>
<td>2</td>
</tr>
</tbody>
</table>
7 - Boom Truss Assembly

Figure 9 illustrates the boom truss assembly. Refer to the boom truss assembly parts list for the hardware required. The XM240 uses Phillystran® cable to guy the boom. The cable is one continuous piece from one boom end to the other. Note the Phillystran cable safety loop that goes around the mast truss bracket.

Attach the truss bracket (91) to the mast 3 feet (1m) above the boom to mast clamp using the 3/8” hardware provided. Position the truss bracket on the same side of the mast as the boom to mast clamp. Unscrew the turnbuckle ends until there is 1/2” (1.2 cm) of thread remaining. Place the jaw of each turnbuckle (23) into the holes of the truss bracket. Place a thimble (59) on the eye of each turnbuckle. Place three loose cable clamps (24) onto the cable end. Reference Figure 9 and place the cable clamp saddle over the load bearing cable. The load bearing cable is the cable that attaches to the boom end. Feed the cable through a turnbuckle eye. Run the cable back through the cable clamps. Place three additional cable clamps on the end of the cable. Feed the cable through the other turnbuckle eye. Run the cable back through the cable clamps. Feed enough cable through these parts until the center of the Phillystran cable coil is located at the truss bracket. Insure there is enough slack in the cable to form a loose safety loop between the turnbuckles. Tighten the cable clamps beginning with the clamp closest to the thimble.

Refer to Figure 4B for attachment of the cable to the boom ends. Place a thimble (59) on the 1/4-20 x 1” bolt. Place three loose cable clamps (24) onto the cable end. Feed the cable end through the element bracket and around the thimble. Run the cable back through the cable clamps. Tighten the cable to remove the majority of the sag from the boom. Space the cable clamps 2 inches (5.1 cm) apart. Insure the load bearing cable is seated in the cable clamp saddle as shown above. Tighten the cable clamps beginning with the clamp closest to the thimble. Cut off excess cable 2” (5.1 cm) after the third cable clamp.

Adjust each turnbuckle to bring each boom end level with the center. Phillystran cable has a minimal amount of stretch over time. A safety wire can be placed through the turnbuckle openings to keep the turnbuckles from unscrewing.

Tuning Procedure

The XM240 may be tuned for operation in the 40 meter band according to Chart A in Section 2. Adjust element EJ on the reflector and element EG on the radiator to set the desired half length referred to in Chart A.
### SPECIFICATIONS

<table>
<thead>
<tr>
<th>Frequency Coverage (Meters)</th>
<th>40</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of Elements</td>
<td>2</td>
</tr>
<tr>
<td>Free Space Gain (dB)</td>
<td>6</td>
</tr>
<tr>
<td>Maximum Front to Back Ratio (dB)</td>
<td>28</td>
</tr>
<tr>
<td>VSWR Minimum</td>
<td>1:1</td>
</tr>
<tr>
<td>VSWR 1.5:1 Bandwidth (KHz)</td>
<td>150</td>
</tr>
<tr>
<td>VSWR 2:1 Bandwidth (KHz)</td>
<td>250</td>
</tr>
<tr>
<td>Longest Element, ft (m)</td>
<td>43.75 (13.3)</td>
</tr>
<tr>
<td>Turning Radius, ft (m)</td>
<td>24 (7.3)</td>
</tr>
</tbody>
</table>

| Boom Length, ft (m)        | 22 (6.7) |
| Boom Diameter, in (cm)     | 2-1/2 (6.35) |
| Maximum Mast Diameter OD, in (cm) | 2-1/2 (6.35) |
| Maximum Wind Survival, mph (kph) | 90 (145) |
| Maximum Wind Surface Area, ft² (m²) | 5.5 (.51) |
| Maximum Power Handling (KW) | 2 |
| Weight, lb. (kg)           | 55 (25) |
| Design Safety Factor       | 1.25 |

---

**Limited Warranty**

Cushcraft Corporation, 48 Perimeter Road, Manchester, New Hampshire 03103, warrants to the original consumer purchaser for one year from date of purchase that each Cushcraft antenna is free of defects in material or workmanship. If, in the judgement of Cushcraft, any such antenna is defective, then Cushcraft will, at its option, repair or replace the antenna at its expense within thirty days of the date the antenna is returned (at purchaser’s expense) to Cushcraft or one of its authorized representatives. This warranty is in lieu of all other expressed warranties. Any implied warranty is limited in duration to one year. Cushcraft Corporation shall not be liable for any incidental or consequential damages which may result from a defect. Some states do not allow a limitation on how long an implied warranty lasts or exclusions or limitations of incidental or consequential damages, so the above limitation and exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state. This warranty does not extend to any products which have been subject to misuse, neglect, accident or improper installation. Any repairs or alterations outside of the Cushcraft factory will nullify this warranty.