PRSS®
Emergency Transmitter
Antenna and Mast Kit
Setup Guides
Version 1.0 | April 2019
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Preface

Who Should Read This

This document is intended for radio-frequency engineers at PRSS® interconnected stations: those responsible for installing, operating, and maintaining the transmission equipment at your radio station.

About This Document

This document features a Setup Guide for assembling the PRSS Emergency Transmitter Antenna and Mast Kits.

Supporting Documents

The following documents cover the assembly of the BlueSky Standard Series Mast and are available on the prss.org Web site:

- BlueSky Standard Series Mast Reference Sheet

Instructions for assembling the antenna kit begin on page 7 of this document.

Emergency Transmitter Antenna Kit Contents

The transmitter antenna kit includes the following components and supporting equipment:

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Allan Dick Band II Folded dipole antenna with feed block, coaxial cable</td>
</tr>
<tr>
<td>1</td>
<td>Package of spare hardware</td>
</tr>
<tr>
<td>1</td>
<td>Antenna support with mast saddle clamp</td>
</tr>
<tr>
<td>1</td>
<td>Equipment Inventory list (laminated – THIS LIST)</td>
</tr>
<tr>
<td>1</td>
<td>Reusable cardboard shipping container</td>
</tr>
</tbody>
</table>

Emergency Transmitter Mast Kit Contents

The transmitter mast kit includes the components and supporting equipment illustrated on page 4 (a laminated copy of this illustration is included in the mast kit shipping case).
Safety

![WARNING: TO AVOID SERIOUS INJURY OR DEATH FROM ELECTRICAL SHOCK, PLEASE READ THE BLUESKY MAST USER MANUAL AND REVIEW THE FOLLOWING SAFETY PRECAUTIONS FIRST BEFORE ATTEMPTING TO ASSEMBLE THE MAST.]

**Part I: Power Lines, Lightning and Grounding**

• **LOOK UP AND LIVE!** Before erecting the mast, check for overhead power lines. Never deploy this mast where there is any possibility of direct or indirect contact with a power line. Keep the mast a distance equal to or greater than twice its height away from power lines. This will ensure that the antenna, masts, guy ropes or cables will not contact power if it falls either during installation or later. Any person touching any part of a mast or even standing near a mast that contacts a power line can be seriously injured or killed.

• **BEWARE OF UNDERGROUND POWER LINES!** Ground stakes might penetrate underground power lines. Before deploying any ground stakes, be sure to check the area for warnings of buried cables and contact your local power company to verify. Any person touching any part of a mast or even standing near a mast that contacts a power line can be seriously injured or killed.

• Keep guy ropes away from power lines to eliminate the possibility of a power line falling on the guyrope.

• Never touch a mast or structure that you suspect may be accidentally energized electrically.

• Never work with a mast or related structure during electrical storm activity.

• Contrary to popular belief, most lightning injuries and damage do not come from direct lightning strikes. There are several ways that lightning can injure you:
  
  • “Step Potential” is potentially hazardous voltage that can exist on the ground like stepping on a live wire. This results from electrical energy diverted into the ground from lightning striking nearby. It is the most common injury causing lightning effect.
  
  • “Flashover” is when lightning strikes a nearby object and then jumps to another nearby object. This is usually what injures people standing under trees in an electrical storm.
  
  • Do not stand near the mast, deploy or retract the mast during electrical storm activity.

• Always ground the mast.

**Part II: Guy Ropes and Fasteners**

• Inspect all guy ropes and fasteners for wear or damage before use. Serious injury or death may occur if a guy-rope failure causes a mast to fall.

• Mark guy ropes clearly to prevent personnel from tripping over them. Personnel who trip may suffer injury.
and may also pull up a guy rope and cause the mast to fall.

- Monitor the tension of the guy ropes to ensure proper tension.

- Ensure that stakes and anchors are secure in the ground before attaching guy ropes. Use extra caution when anchoring guy ropes, especially in sandy or loose soil.

- Never fasten a guy rope over a sharp edge or in a manner that causes abrasion. This may cause guy-rope failure. Pad any contacting surfaces if necessary.

- Do not install guy ropes across roadways or other paths of travel. Always clearly mark guy ropes.

- Ensure guy ropes are clear of branches and other obstructions.

- Use only authorized parts. Unapproved substitutes may not be strong enough for the equipment.

- Periodically inspect the mast to ensure that it remains structurally sound and properly installed.

- Never overload the mast or structure. Use ONLY the equipment and accessories in proper quantities as described by the manufacture specifications. Do not use unauthorized equipment or modifications.

- BE CAUTIOUS of ice that may form on the antenna/mast. The area around the antenna/mast should be marked and roped off to avoid falling ice. Special care must be taken when retracting the mast or structure to avoid falling ice.

- Use additional guy ropes for the mast, if heavy ice loading or wind is expected or anticipated.

- Ensure that the wind speed is not excessive during deployment/retraction operations. Maximum safe wind speeds are available from manufacturer for your specific mast.

- BlueSky Mast User Manual, pages 5-6


Antenna Setup Guide

Attaching the Alan Dick Band II Folded Dipole Antenna to the Antenna-Support Arm

Figure 1: Assembled Antenna with Support Arm

**Step 1**
Remove the nuts and washers from the rear of the antenna feed block (Figure 2). Insert the two antenna feed lugs into the two holes on the support arm labeled “ANTENNA FEED BLOCK” (Figure 3). Secure with nuts and washers.

**Figure 2: Antenna Feed Block (rear)**

**Figure 3: Antenna Feed Block on Antenna-Support Arm**

**Step 2**
Remove the nuts from the cable strain relief tab bolts attached to the feed cable leaving tabs and screws on the cable.

**Step 3**
Insert the three strain relief bolts into the three holes labeled “1, 2, 3” (Figure 5) on the side of the antenna-support arm. Secure with nuts and washer. The cable should be above the strain reliefs.
Step 4
Remove the mounting nut, aluminum spacer and washer from the antenna bolt (Figure 6).

Step 5
Place the aluminum spacer between the antenna and support arm (Figure 7).
Step 6
Insert the bolt into the antenna element and then feed it through the space washer into the antenna support-arm hole (Figure 8).

Figure 8: Bolt Inserted into Antenna Element

Step 7
Secure antenna element on the antenna-support arm with nuts and washers.

Step 8
Antenna will be secured to the right side, perpendicular to the antenna-support arm with the cable above the strain-relief tabs (Figure 9).

Figure 9: Antenna Attached to Antenna-Support Arm
Attaching the Antenna-Support Arm to the BlueSky Mast Short-Mount Pole

Attach the BlueSky Mast guy-wire ring red side up to the bottom hole on the short-mount pole (Figure 10). Attach to the hole that is just above the notched end of the pole with the pin provided. Push the blue button on the pin and insert in the hole near the notched end on the short mast mounting pole. Attach antenna-support to mast short-mount pole (Figure 11)

Figure 10: BlueSky Mast Short-Mount Pole

Figure 11: Antenna-Support Arm Attached to BlueSky Mast Short-Mount Pole
Connect the antenna cable and transmission cable as shown in Figure 12. The connector should hang vertically. Ideally, the transmission cable would have a drop loop that would be secured to the antenna mounting arm with Velcro straps included with the mast kit. Use the remaining Velcro straps to secure the transmission cable to the mast (Figure 13).

**Figure 12: Antenna Cable Drip Loop**

![Figure 12: Antenna Cable Drip Loop](image1)

**Figure 13: Antenna Mounted on Mast with Transmission Cable Secured to Mast with Velcro straps (lower left).**

![Figure 13: Antenna Mounted on Mast with Transmission Cable Secured to Mast with Velcro straps (lower left).](image2)
Mast Setup Guide – Steps 1 – 10

1. Stand the tripod up with the base plates on the ground and release the Velcro Strap.
2. Unfold the tripod legs and make sure the cross bars are locked into position.
3. Loosen turn knobs on each of the tripod legs and allow them to fully extend.
4. Make sure the base plates are flat on the ground and tighten all three turn knobs.
5. Level the tripod by using the two bubbles levels and adjusting the tripod legs.
6. Secure the tripod by driving stakes through the two holes on each of the base plates.
7. Release the cam lock on the bottom of the tripod.
8. Insert first center mast pole leaving at least 4 inches above the tripod collar.
9. Lock the cam lock.
10. Add the mounting pole. The mounting pole is 1/2 the size of a mast pole.
**Mast Setup Guide – Steps 11 – 20**

11. Add the red primary guy ring and pin it to the bottom hole on the mounting pole.

12. Attach and secure your devices to the mounting pole. Use velcro straps to secure cables.

13. Attach the 1st primary guy rope to the round hole on the red primary guy ring.

14. Start at the center of the tripod and unwind the guy rope while walking away from the mast.

15. Take one NORMAL step for each meter of height of the mast.

16. Stop - unwind all guy rope, drive a stake into the ground and clip the guy rope to the stake.

17. 7 Feet

18. For mast heights 8 - 10 meters, slide the handle towards the mast approx. 7 feet. This will take up the slack in the guy rope during deployment and prepare you for incremental guying (if required). Shorter mast heights do not require this. Repeat these steps until all 4 primary guy ropes have been deployed 90 Degrees from each other.

19. Holding the center mast pole, slowly release the cam lock.
# Mast Setup Guide – Steps 21 – 30

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>21</td>
<td>Raise the center mast pole until 4 inches are showing below the cam lock.</td>
</tr>
<tr>
<td>22</td>
<td>Lock the cam lock.</td>
</tr>
<tr>
<td>23</td>
<td>Insert another center mast pole, release the cam lock and raise the mast.</td>
</tr>
<tr>
<td>24</td>
<td>Repeat this process until desired height is reached. Incremental guying may be required.</td>
</tr>
<tr>
<td>25</td>
<td>WARNING: If at any point the mast begins to slip while the cam lock is locked - STOP</td>
</tr>
<tr>
<td>26</td>
<td>Use the 7/16 wrench provided with the system to make adjustments to the cam lock.</td>
</tr>
<tr>
<td>27</td>
<td>Tighten the nut on the cam lock a quarter turn until slipping no longer occurs.</td>
</tr>
<tr>
<td>28</td>
<td>Insert the base pole and lower the mast to the ground.</td>
</tr>
<tr>
<td>29</td>
<td>Adjusting the primary guy ropes and make sure the mast is straight and perpendicular.</td>
</tr>
<tr>
<td>30</td>
<td>Hold the guy rope in one hand and slide the guy handle back and forth to adjust.</td>
</tr>
</tbody>
</table>
Mast Assembly Guide – Steps 31 – 37

If the guy ropes are too loose it will allow the mast to lean. If the guy ropes are too tight then they will put unnecessary strain and load on the mast causing it to bend or bow. The tension should be firm, not slack nor taunt.

Re-level the mast by simply tapping or nudging the base pole with your foot.

Drive two tripod stakes through the two holes in the base plate.

Lock the four primary guy ropes

Pull some slack in and loop the rope over the front horn on the guy handle.
Getting Help

If you still have questions regarding the setup and/or use of the antenna or mast kits after reading this guide and the manuals, please contact the PRSS Help Desk.

How to get help from the PRSS Help Desk

Desk Website: www.prss.org
Email: prsshelp@npr.org
Telephone: 800.971.7677