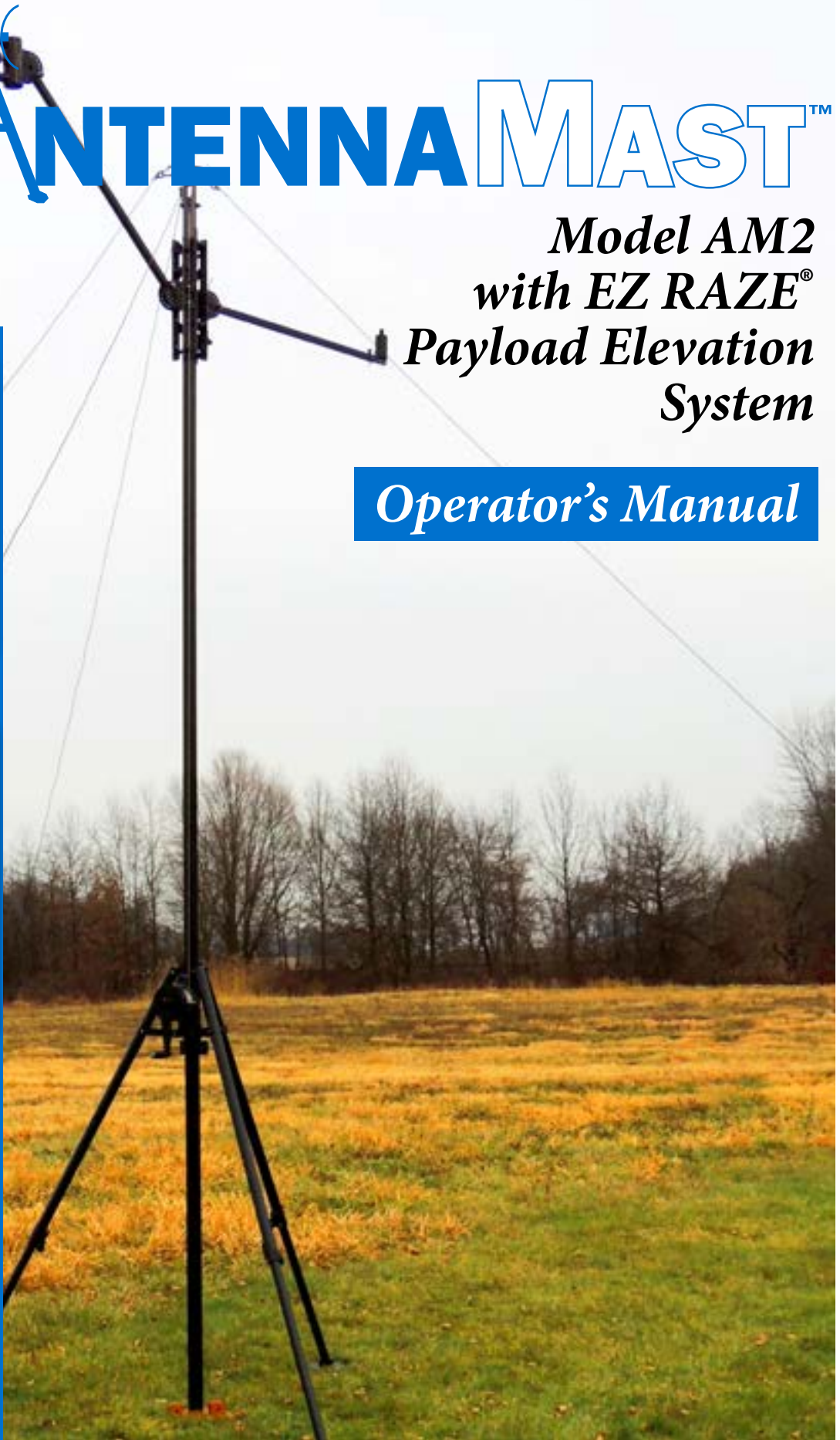




# ANTENNA MAST™

*Model AM2  
with EZ RAZE®  
Payload Elevation  
System*

*Operator's Manual*



# Introduction



Will-Burt's AntennaMast masts are portable, field-erected masts. They are a fast and easy solution for elevating a variety of payloads, including antennas, cameras and other sensors. The AntennaMast is lightweight and can be manually transported and deployed by one person.

This manual describes the installation, removal, and maintenance of Will-Burt's AntennaMast and accessories. The AntennaMast is available in 5 cm / 2 in. diameter and maximum height of 15 meters. The AntennaMast will be referenced as the "mast" in the remainder of this manual.

By adding accessories, the mast can be configured with 2, 3, or 4 arms in 6, 12, 24, 36 or 44 inch (15, 30, 60 cm or 1 meter) lengths. Optional payload adapters offered are:

- Bolster plate
- Cup holder
- NATO plate
- Blank plate

\*Page 6 explains the installation of the mast and accessories.

\*\*Page 7 lists the mast contents.

## Document History

Version	Date	Remarks
TP-5000901-00	04/03/14	Original Release

# ANTENNA MAST™

## **Safety Precautions**

General Safety Precautions ..... 4  
Operating Safety Precautions ..... 5

## **Mast Deployment**

Payload Capacity & Wind Effects ..... 6  
Mast Contents ..... 7  
    Installing the Tripod ..... 9-10  
    Deploying the Mast ..... 11  
    Deploying the EZ RAZE System ..... 12-16  
    Installing the Accessories ..... 17  
    Guying the Mast ..... 18-19  
Disassembling & Maintaining the Mast ..... 20

## **Customer Support**

Warranty Information ..... 21

**Model #** \_\_\_\_\_

**Serial #** \_\_\_\_\_



# Safety Precautions



Per the ANSI Z535.4 standard, the following signal words and definitions are used to indicate hazardous situations:



**DANGER** indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury.



**WARNING** indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury.



**CAUTION** indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury. It is also used to alert against unsafe practices.

Throughout this document safety precautions that are related to specific procedures appear in this publication for emphasis. These are recommended precautions that personnel must understand and apply during specific phases of installation, operation and maintenance.



**Lifting Hazard!** In the UK, all lifting equipment must be thoroughly examined annually by a trained person according to the Lifting Operations and Lift Equipment Regulations 1998. Equivalent regulations exist in other EU states.



**Safety Instructions - Follow Procedure!** Failure to follow drain kit installation instructions could damage the mast and render the mast inoperable. Read and understand the installation instructions before installing the drain kit.



Do not deploy the mast if power lines are less than 80 ft. (24.4 m) from the center of the deployment site.



Do not attempt to deploy the mast on soft or loose soil. The base plate and guy stakes could become unstable under wind loading and cause the mast to fall.



Do not attempt to deploy or retrieve this mast during electrical storms or when winds exceed 20 mph.



The mast must be vertical before deployment. Adjust guy lines as required until the bubble level indicates the mast is vertical.



Helmets or hard hats, eye protection, gloves, and safety shoes or combat boots must be worn while working in the mast deployment area.

# Safety Precautions



Do not attempt to deploy the tripod on ground that slopes more than 5°.



Always observe weight lift limits.



Be mindful of buried cables when staking the mast.



**Tip Over Hazard!** Mast tip over could result in death or serious injury. Do not operate in high winds. Operate on level ground only. Stand clear of mast and mast payload during operation. Be certain that the mast is level and secure before and during installation, operation and maintenance.



**Safety Instructions - Trained Personnel Only!** Death or serious injury could result if proper inspection, installation, operation and maintenance procedures are not observed. Installation, operation and maintenance to be performed by trained and authorized personnel only. Proper eye protection should be worn when servicing the mast.



**Pinch Point Hazard!** Moving parts can crush and cut resulting in death or serious injury. Keep clear of moving parts while operating mast.



**Relocation Hazard!** Relocating the mast during operation or after extension could result in death or serious injury. Do not relocate the mast during operation or while extended.



**Lifting Hazard!** The mast is intended to lift a specific payload for lighting, surveillance or communication use only. Any other use without written consent is prohibited and could cause death or serious injury. Do not exceed specified payload capacity.



**Electrocution Hazard!** Contact with high voltage will result in death or serious injury. Observe general safety precautions for handling equipment using high voltage. Do not locate or operate mast near electrical lines, cables or other unwanted sources of electricity. Do not operate mast in lightning. Be certain electrical cables are undamaged and properly terminated. Always disconnect power before performing service, repair or test operations.



# Payload Capacity & Wind Effects



The maximum payload for the mast is 22.6 kg / 50 lbs total. The payload weight should be evenly distributed around or divided per arms on the mast. For example, if you have 4 arms and a total payload of 22.6 kg / 50 lbs, place 5.65 kg / 12.5 lbs on each arm. The cable and platform bracket weight must be considered in the maximum payload weight. If the cable weight is significant, it may be possible to route the cable opposite the payload weight or to loosely wrap the cable around the tubes.

Do not deploy the mast in winds greater than 32 kmh / 20 mph. For payload weights and wind sail areas outside website specified limits, contact the Will-Burt Company.

## **2m / 8 ft. to 15m / 49.2 ft. Deployment**

Depending on the payload weight and the current wind speeds at deployment, two or three people are required to raise a 2m / 8 ft. to 15m / 49.2 ft. mast. One person is typically required to load the mast tubes while one or two people manage the guy lines. Typically, single staking the tripod base plates is sufficient. Contingent upon the payload weight and the current wind speeds at deployment, three to five people are required to raise a 13m / 42.6 ft. to 15m / 49.2 ft. tall mast. One or two people are required to load the mast tubes while two or three people manage the guy lines. Double staking the tripod base plates is required.

### **To install the mast and accessories, you will perform the following major tasks:**

1. Select a Level and Safe Site
2. Begin Mast Installation
  - Unpack
3. Set Up the Tripod
  - Level the Tripod
  - Stake the Tripod
4. Install the Top of the Mast
  - Insert the Top Tube
  - Install Accessory Arm Collar and Guy Collar (for Accessories only)
  - Install the 4-way Guy Collar
  - Connect to Guy Collar
  - Fully Raise the Tripod Legs
5. Raise the Mast
  - Stage & Stake guy lines
  - Load Tubes
  - Install Base Tube
  - Stake the Base Plate
  - Tighten the guy lines



# Mast Contents



The following items are required for deployment of Will-Burt's AntennaMast.

<b>Accessory Bag</b>	<b>Description</b>
<b>Wheeled Bag</b>	Guy Accessory Kit
	EZ RAZE Payload Elevation Kit
	Mast Tube Lift Winch Kit (some models)
	Payload Accessory Kit (as ordered)
	1m Mast Tubes
	Base Tube
	Tripod
	Operator's Manual
	Quick Reference Sheet
<b>Guy Accessory Kit</b>	Ground Stakes
	Guy lines
	Hammer
	Stake Puller
	Manual Lifter (supplied in place of Mast Tube Lift Winch)
<b>EZ RAZE Payload Elevation Kit</b>	EZ RAZE Carriage
	EZ RAZE Top Tube
	EZ RAZE Winch
<b>Mast Tube Lift Winch Kit</b>	Orange Lift Plate
(Some models)	Orange Winch w/Key
<b>Payload Accessory Kit</b>	As ordered

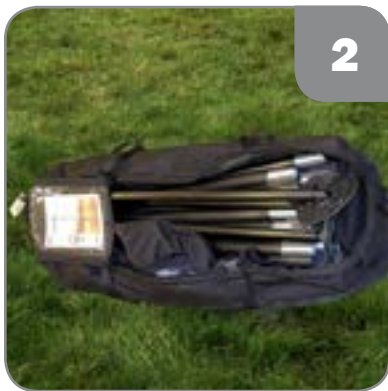
A tall, black, tripod-based antenna mast stands in a field of yellow wildflowers. The mast has a central vertical pole and three legs. At the top, there are two horizontal arms extending outwards, one of which has a small antenna or sensor attached. Several thin cables are attached to the top of the mast and extend outwards. The background shows a line of bare trees under a cloudy sky.

# ANTENNA MAST™

*Manual Deployment*



# Installing the Tripod



1. To Ensure Safe Installation: Select a level site to deploy the system that has no more than a 5° slope. Beware of surroundings and ensure that the center of the site is approximately 2.1m / 7 sq. ft. The center of the site is where the tripod will be located in the installation. Ensure that the site has adequate overhead and ground clearances. The overhead clearance must be at least the height of the mast. The ground clearance must be a radius equal to the height of the mast. For example, for a 4m / 13.1 ft. mast, ensure that the site has an overhead clearance of 4m / 13.1 ft. and a clear radius of 4m / 13.1 ft. from the center of the site.

2. Unzip the wheeled bag, remove the tripod, guy bag and accessory bag.

3. With all three base plates of the tripod on the ground, loosen each leg clamp by turning the knob to the left.

4. Step on the base plates and lift the tripod up until the legs are fully extended. Lock each clamp by turning the knob to the right until tight.

# Installing the Tripod



5. Pull on the key ring then pull on the tripod leg to deploy the tripod. This unlocks the tripod.



6. Open the tripod by pushing down on the central collar until the pin snaps into the next groove and the base plates are flat on the ground. **Keep fingers away from the pinch points.**



7. Make sure the tripod is fully deployed before adding the next tube and payload(s). Check the front level. If the tripod is not level, loosen one of the adjacent leg clamps and adjust leg length to level the tripod. Tighten the leg clamp. Check the side level. If the tripod is not level, loosen one of the adjacent leg clamps and adjust the length. Tighten the leg clamp. **Make sure all leg clamps on the tripod are tight.**



8. Stake the Tripod: Remove the stakes and hammer from the guy bag. For masts 2m / 6.5 ft. to 12m / 39.3 ft. tall and smaller payloads, one stake per tripod leg plate may be sufficient. For masts taller than 12m / 39.3 ft., two stakes are required on each tripod leg plate. Stake the base plates of each leg by driving a stake(s) in the two stake holes aligned with the pivot point of the base plate using the hammer. Stakes should be driven at an angle with the eyelet toward the tripod leg. **Be careful of buried cables and utilities when staking the mast.**

# Deploying the Mast



1. Locate the base tube and keep separate from the other mast tubes. **The AM2 has three different tubes:**

**EZ RAZE Top Tube**



**Tube Sections**



**Base Tube**



2. Retrieve the EZ RAZE top tube and tube section and insert the tube section from the bottom of the tripod with the locating notches toward the ground. Take note of small dimple in one of the locating notches on the bottom of the mast tube. Orient this dimple toward you during deployment of the mast.



3. Lift the tube until there is one hand width from the bottom of the tube and tighten the clamp.



4. To install the EZ RAZE system, open up the restrain system by engaging the kick stand lever to the lower bar. Then, slide the EZ RAZE carriage over the top of the tube section until resting on the top of the tripod.

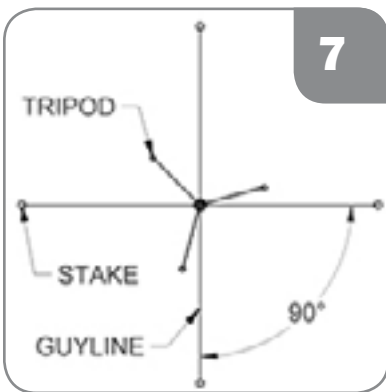
# EZ RAZE Deployment



5. Slide EZ RAZE top tube down through carriage and rotate it until locating notches fully engage with the tube making sure to align dimples for proper orientation. **Make sure the restrain mechanism is the opposite direction as the operator.**



6. Before deploying the mast tube sections, attach guy lines to the top guy collar. Preferred method of attaching the hook is to hook up through the guy plate on the EZ RAZE top tube as shown.



7. Align the guy stakes to coincide with the four holes on the guy collar on the top of the mast (not required to align for the swivel collar since it automatically adjusts to the stakes) and place 90° apart. **See guy line instructions.**



1. To install the lift winch, insert the round key of the blue winch into the tripod receiver below the blue hold down clamp.

**Tripod Receiver**



**Hold Down Clamp**



# EZ RAZE Deployment



2. With the winch in place, rotate the carriage so the corner with 2 eyelets are aligned above the blue winch. Also, make sure the pulley in the top of the EZ RAZE tip is in line with the winch. Take the end of the cable and feed it up through the 2 eyelets on the EZ RAZE carriage.



3. Winch cable routing is always between the spool and standoffs. Never route the cable over standoffs to the next contact point.



4. Take the end of the cable and feed it up through the 2 eyelets on the EZ RAZE carriage.



5. Then feed the cable through the top pulley of the tip and back down the other side of the carriage. Make sure the cable passes back down through the backside (180°) to single eyelet.



# EZ RAZE Deployment



13

6. Attach the end of the cable to the carriage safety restraint. To do this, feed the ball end of the cable through the top hole in the black receiver plate from the side with the slot cutout at the top.



14

7. Hold the ball end of the cable down and take up the slack in the cable from the top, seating the ball into the recess in the bottom of the black receiver plate.



15

8. Then take the end of the cable and feed it through the bottom hole in the black receiver plate from the side with the slot cutout between the two holes.



16

9. Correct installation of cable end to the receiver plate.



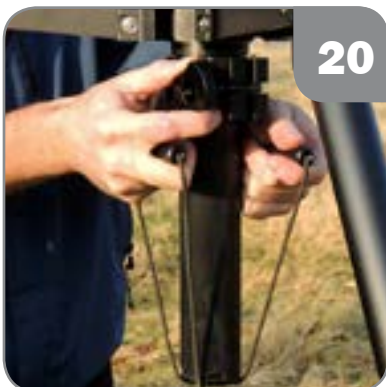
10. Reset the restrain lever to open if accidentally tripped when raising the mast.



11. Leave cable loose while deploying the mast by unwinding several feet of cable from the winch with every tube section deployed.



12. Manually load tube sections into the bottom of the installed top tube, matching the notches on the top tube with the notches on the top of the next tube in the tripod. Match dimple profiles if payload alignment is required.



13. While holding onto the tube that was just loaded, loosen the lower clamp to the left. Push the tube up until only a hand's length is visible, then tighten the clamp to the right. The manual lifter can also be used to push the tubes up. Repeat this step until all tubes are loaded.  
**Tighten tripod clamp to maintain azimuth direction.**

# EZ RAZE Deployment

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14. Place the base tube (tube with the base plate attached) into the bottom tube matching the locating notches and aligning the dimples. Raise the base tube until the locating notches are fully engaged. While holding onto the base tube, loosen the clamp and slowly allow mast tubes to be lower to rest on the ground. Tighten clamp.



15. Stake the base plate of the base tube by driving the stake, with the hammer provided, at a point aligned with pivot point of the base plate.



16. Stake the base plate of the tube by driving the stake through holes with the hammer provided. For masts 2m / 8 ft. to 12m / 40 ft. tall and smaller payloads, one stake may be sufficient. For masts taller than 12m / 40 ft., two stakes are required, depending on the soil type.

# Installing the Accessories



1

1. Attach payload platform to the carriage by inserting the ¼" quick release pins through carriage and platform. **Shown is an extension arm carriage attachment.**



2

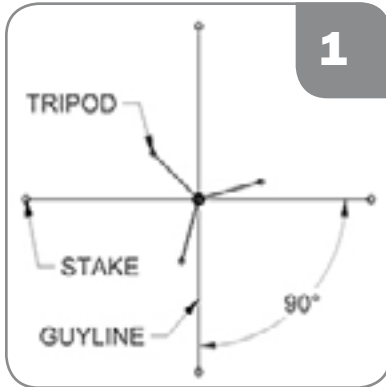
2. Pick a preferred angle for the arm, line up the arm hole with the arm collar hole, and pin the arm in place by pressing the button.



3

3. Match a corresponding angle for the payload adaptor, line up the arm hole with adapter hole, and pin the arm in place by pressing the pin button.

# Guying the Mast

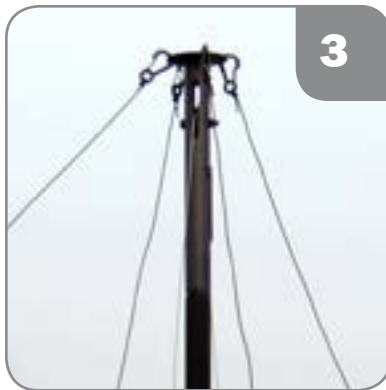


**CAUTION**

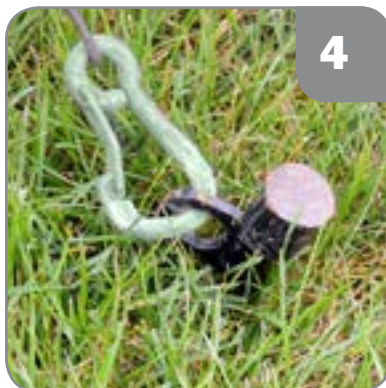
1. Set-Up the guy lines: Align the guy stakes from the mast at 90° apart (not required to align for the swivel collar since it automatically adjusts to the stakes).



2. Drive each stake, with the hammer provided, into the ground at a 45° angle away from the tripod. Ensure that the stake is driven into the ground up to the eyelet of the stake and that the eyelet is pointing towards the tripod. **If possible, drive the stakes a distance equal to the mast height from the center of the mast. Consult The Will-Burt Company for modified distance.**



3. Clip the carabineer to the swiveling guy collar which is done before raising the mast.



4. Clip the carabineer of each of the tensioners to the ring of the guy stake.



# Guying the Mast



5. Stage the guy lines: For masts near maximum payloads and for masts 13m / 44 ft. to 18m / 60 ft. tall, prepare the guy lines by loosening a maximum of 1.5m / 5 ft. of guy line from each tensioner.



6. Tighten the guy lines: Tension the lines by sliding the tension toward the mast. Do not over tighten the guy lines. Tighten the lines to the point that the mast is stabilized, sway is minimized, and the mast is stable during winds. Over tightening the guy lines causes an additional or unlevel load on the mast and reduces the overall load capacity of the mast. **Ensure that the guy lines are not crossed, and that the guy line attached to the stake coincides with the aligned hole in the guy collar on top of the mast.**



7. Lock the tensioner into position by sliding the tensioner toward the mast and placing the tensioner hook over the double guy line. **Check to make sure the center mast tube remains straight and perpendicular. Check guy lines to ensure no interfering with raising payload has occurred. To adjust the guy line, move the ground stake related to the guy line by a couple of degrees.**

# Disassembling the Mast



To disassemble the mast, proceed as follows:

1. Lower payload back down to tripod level. It is optional to dismantle the payload at this time.
2. Loosen the cable and guy lines to relieve tension on the mast and to pick up the mast to remove the base tube.
3. While holding the exposed portion of the tube (held by the mast clamp), loosen the mast clamp and ease the tube down to where the tube is free from the clamp. Allow the next tube to slowly lower until it enters the clamp and a hands width of tube is exposed. Tighten the clamp and remove the free tube from under the tripod. If using winch, rotate handle counter clockwise to lower. Crank the cable onto the winch while lowering the mast sections.
4. If accessories are installed on the tube, disassemble the accessories and place in the bags.
5. Repeat steps 3 and 4 for the remaining tubes until all the tubes have been removed (except for the top tube). Place the tubes in the tube bag.
6. Remove the ground stakes from the tripod base plate and place them in the guy bag.
7. Loosen the clamps on the tripod legs and allow the legs to retract within themselves, bringing the mast to a comfortable working height. (Optional)
8. Detach the guy line hooks from the guy collar on the top tube.
9. Detach the guy line hooks from the stakes. Wind the guy line around the tensioner. Remove the stakes. Place the guy lines and stakes in the guy bag.
10. Remove the 4-way guy collar or the accessory guy collar from the top tube and place the guy collar and top tube in a bag.
11. Pull the spring loaded pin on the tripod and fold up the tripod for transport.
12. Place the tripod and base plates in a bag.

# Maintaining the Mast

To maintain the mast and accessories, perform the following checks on a regular basis:

1. Inspect nuts and bolts.
2. Inspect all clamps for cracks or uneven wear.
3. Inspect the tripod for uneven wear.
4. Inspect all guy lines for frayed or cut lines.
5. Inspect guy handles for cracks or tears.
6. Wipe down all parts with a cloth

# Warranty



Will-Burt warrants its AntennaMast™ to be free from defects in material and workmanship for a period of two (2) years, with such time period running from the date of shipment by Will-Burt. Will-Burt shall not be responsible for any damage resulting to or caused by its products by reason of failure to properly install, maintain or store the product, use of the product in a manner inconsistent with its design, unauthorized service, alteration of products, neglect, abuse, accident, or acts of God. This warranty does not extend to any component parts not manufactured by Will-Burt; provided, however, Will-Burt's warranty herein shall not limit any warranties by manufacturers of component parts which extend to the buyer.

THE FOREGOING WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, AND NO REPRESENTATIONS, GUARANTEES OR WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO, A WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR NON-INFRINGEMENT ARE MADE BY WILL-BURT IN CONNECTION WITH THE MANUFACTURE OR SALE OF ITS PRODUCTS. NO EMPLOYEE, DISTRIBUTOR, OR REPRESENTATIVE IS AUTHORIZED TO CHANGE THIS WARRANTY IN ANY WAY OR GRANT ANY OTHER WARRANTY ON BEHALF OF WILL-BURT.

Claims for defects in material and workmanship shall be made in writing to Will-Burt within thirty (30) days of the discovery of defect. Failure to provide notice as required hereby shall be conclusive evidence that the product was in conformity with the warranty, and Will-Burt shall be released from any and all liability relating to the product. Will-Burt may either send a service representative or have the product returned to its factory at Buyer's expense for inspection. If judged by Will-Burt to be defective in material or workmanship, the product will be replaced or repaired at the option of Will-Burt, free from all charges except authorized transportation.

THE REMEDIES OF BUYER SET FORTH HEREIN ARE EXCLUSIVE AND ARE IN LIEU OF ALL OTHER REMEDIES. THE LIABILITY OF WILL-BURT WHETHER IN CONTRACT, TORT, UNDER ANY WARRANTY, OR OTHERWISE, SHALL NOT EXTEND BEYOND ITS OBLIGATION TO REPAIR OR REPLACE, AT ITS OPTION, ANY PRODUCT OR PART FOUND BY WILL-BURT TO BE DEFECTIVE IN MATERIAL OR WORKMANSHIP. WILL-BURT SHALL NOT BE LIABLE FOR COST OF INSTALLATION AND/OR REMOVAL, OR BE RESPONSIBLE FOR DIRECT, INDIRECT, SPECIAL OR CONSEQUENTIAL DAMAGES OF ANY NATURE.

## The Will-Burt Company

169 S. Main Street  
Orrville, OH 44667 USA  
**Corporate Telephone:** +1-330-682-7015  
**Customer Service:** +1-330-684-4000  
**Service & Parts:** +1-330-684-5244  
**Fax:** +1-330-684-1190  
**E-Mail:** [contact\\_us@willburt.com](mailto:contact_us@willburt.com)



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