



THE EXPEDITION SERIES™

Ranger™ Mast with EZ Raze™ Option Operator's Manual



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Expedition Series® Ranger Mast® Ranger Pack® Warranty

Will-Burt warrants its Expedition Series® Ranger Mast® Ranger Pack® masts 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.

Document History

Version	Date	Remarks
TP-4548101-00	10/4/10	Original Release
TP-4548101-A	2/15/11	Added reference to replacement kits (Section 4.2)
TP-4548101-B	5/17/11	Added staging guy lines.
TP-4548101-C	5/8/12	Added cable weight note and height to stage guy lines.
TP-4548101-D	7/1//12	Improved J-hook close up photo and added inspection for EZ Raze™ cord.
TP-4548101-E	12/3/13	Updated warranty page.
TP-4548101-F	3/4/16	Updated images in Sections 2.3 and 2.5.

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1 Introduction

Will-Burt's Expedition Series masts are portable, field-erected masts available in Ranger™ and Ranger Pack™ models. They are a fast and easy solution for elevating a variety of payloads, including lighting, cameras and antennas. The masts are lightweight and can be manually transported and deployed by one, two, or three people.

This manual describes the installation, removal, and maintenance of the Ranger™ mast with the EZ Raze™ option. The Ranger™ is available in 2" diameter and maximum height of 60 feet. The Ranger Pack™ model is described in a separate manual.

The EZ Raze™ Option is a high capacity winch, pulley and payload carriage system. Once the mast is installed, this optional system permits a single person to raise multiple antennas and equipment weighing up to 40 pounds (when evenly distributed) in a safe and controlled manner. The EZRaze™ Option mast can be configured with 2, 3, or 4 arms in 24" to 48" lengths. Figure 1-1 shows the EZ Raze™ Option tripod with accessories non-deployed. Figure 1-2 shows the parts shipped for the EZ Raze™ Option. The payload adapters available for the EZ Raze™ Option are:

- Cup Holder – used to secure whip antennas one to two inches in diameter
- Bolster Plate – used to secure a payload with U-bolts or with a payload plate



Figure 1-1 EZ Raze Option Non-deployed

Accessory Bag	QTY	Description
Guy Bag	8	Guy Stakes
	4	Guy Ropes
	1	Lift Puck
	1	Hammer
Tube Bag	3	Section tubes for 16'
	4	Section tubes for 20'
	5	Section tubes for 24'
	6	Section tubes for 28'
	7	Section tubes for 32'
	8	Section tubes for 36'
	9	Section tubes for 40'
	10	Section tubes for 44'
	11	Section tubes for 48'
	12	Section tubes for 52'
	13	Section tubes for 56'
	14	Section tubes for 60'
Short Bag	2	Side Brackets
	1	Top Pulley/Guy Tip
	1	Carriage
	1	Winch Handle
	4	Base Plates
	1	Tripod Step
	1	Manual (TP-4548101-A)
Long Bag	2	Extension Arms
	2	Cup Holders
	1	Bolster Plate
Wheeled Bag	1	Guy Bag
	1	Long Bag
	1	Tube Bag
	1	Short Bag
	1	Tripod
	1	Winch Base Section

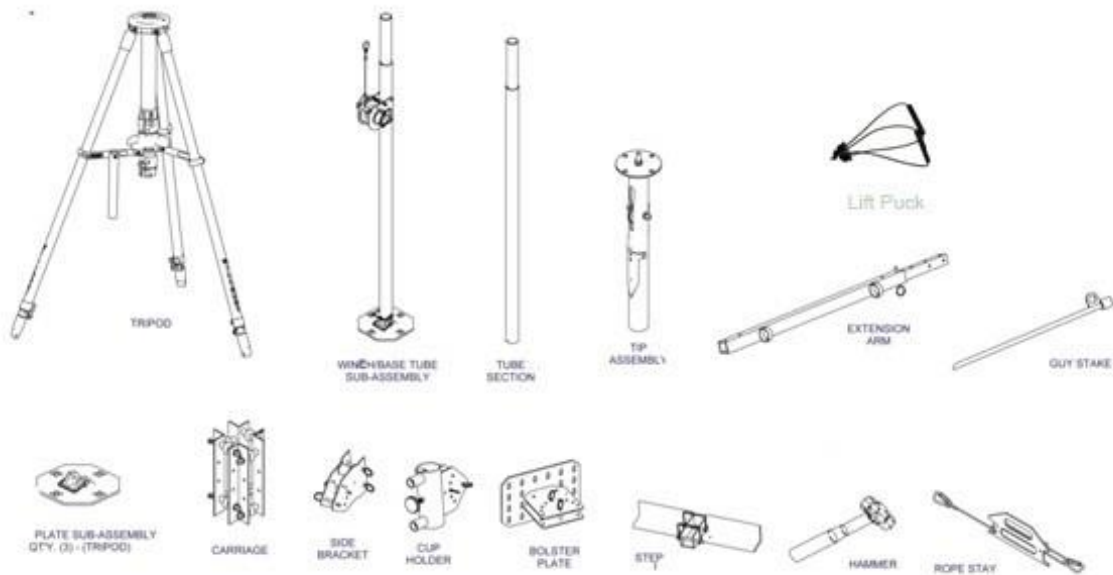


Figure 1-2 EZ Raze™ Option Parts

1.1 Safety Precautions

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

DANGER

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

WARNING

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

CAUTION

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.

CAUTION

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

CAUTION

Safety Instruction – 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.

WARNING

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

WARNING

Be mindful of buried cables when staking the mast.

⚠ WARNING

Use ground stakes to secure any mast deployed above 24 feet.

⚠ WARNING

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.

⚠ WARNING

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

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

⚠ WARNING

Do not attempt to deploy the tripod on ground that slopes more than 2 degrees.

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

⚠ WARNING

Always observe weight lift limits.

⚠ WARNING

Read all instructions before deploying this mast. Always follow guystake removal instructions to avoid injury and/or guystake damage.

⚠ WARNING

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.

⚠ WARNING

Safety Instruction - 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.

⚠ WARNING

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

⚠ WARNING

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.

⚠ WARNING

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.

⚠ DANGER

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.

2 Installing the Mast with EZ Raze™ Option

The maximum payload for the mast with or without the EZ Raze™ option is 40 lbs total and 20 lbs maximum per arm. The payload weight should be evenly distributed between arms on the mast. For example, if you have 4 arms and a total payload of 40 lbs, place 10 lbs on each arm. Furthermore, payloads of 30 lbs and 8 lbs are not supported even though the total payload is 38 lbs since the maximum payload weight per arm is 20 lbs. The cable 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.

Three people are required to install the mast at maximum load (40 lbs total, 20 lbs per arm). This allows enough people to raise the payload and to steady the payload arms as the mast is being guyed. Do not deploy the mast in winds greater than 20 mph. For payload weights and wind sail areas outside website specified limits, contact the Will-Burt Company.

8 to 40 Foot Deployment

Depending on the payload weight and the current wind speeds at deployment, two or three people are required to raise an 8 to 40 foot 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.

44 to 60 Foot Deployment

Depending on the payload weight and the current wind speeds at deployment, three to five people are required to raise a 44 to 60 foot 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 with the EZ Raze™ Option, you will perform the following major tasks:

- Select a Level Site
- Begin Mast Installation
 - Unpack
 - Set Up the Tripod
 - Partially Raise the Tripod Legs
- Install the Top of the Mast
 - Insert the Top Tube
 - Install Carriage
 - Install the Tip Tube
 - Install the Carriage Arms
 - Connect the Carriage
 - Connect to Guy Collar
- Complete Tripod Installation
 - Fully Raise the Tripod Legs
 - Level the Tripod
 - Stake the Tripod
- Raise the Mast
 - Set Aside the Winch Tube
 - Stake the Guy Lines
 - Place the Winch in the Retainer

- Stage Guy Lines
 - Add Slack to the Winch Cable
 - Breech Load Tubes
 - Install Winch as Base Tube
 - Stake the Winch Base Plate
 - Tighten the Guy Lines
- Raise the Payload
 - Connect the Step
 - Unlock the Winch Spool
 - Turn Winch to Raise the Payload
 - Tighten the Guy Lines

2.1 Select a Level Site

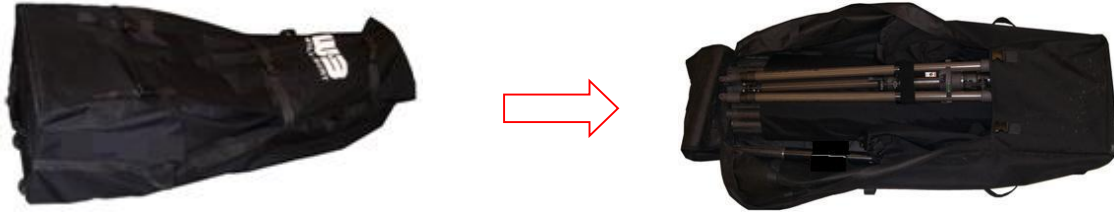
To ensure a safe installation:

1. For the base of the deployed tripod, select a site that has no more than a 2 degree slope.
2. Ensure that the center of the site, about a two foot square, is level and smooth. The center of the site is where the base tube for the mast will land later in the installation.
3. 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 12 foot mast, ensure that the site has an overhead clearance of 12 feet and a clear radius of 12 feet from the center of the site.

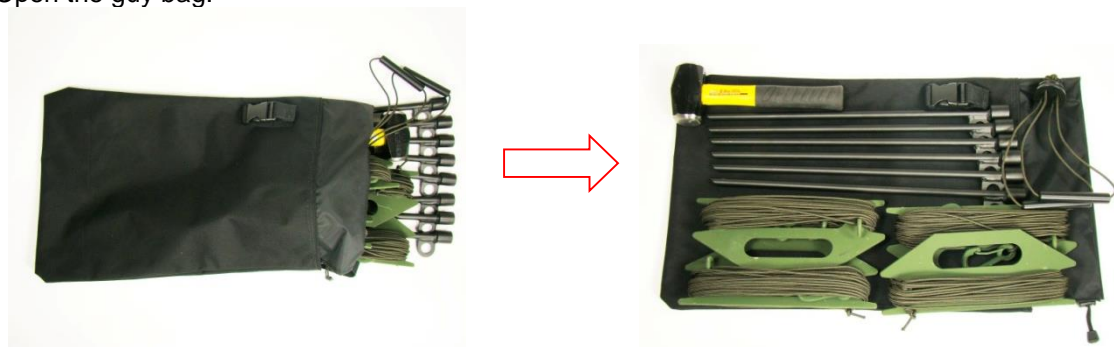
2.2 Begin Mast Installation

Unpack

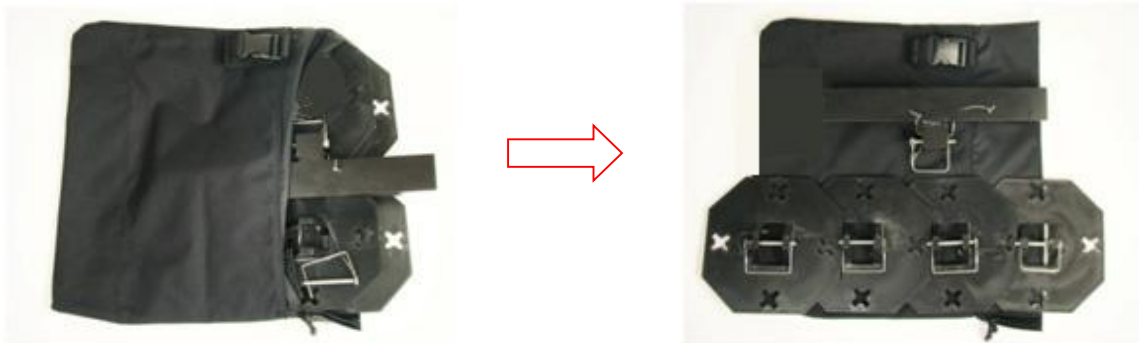
4. Unzip the wheeled bag and remove the tripod and base tube.



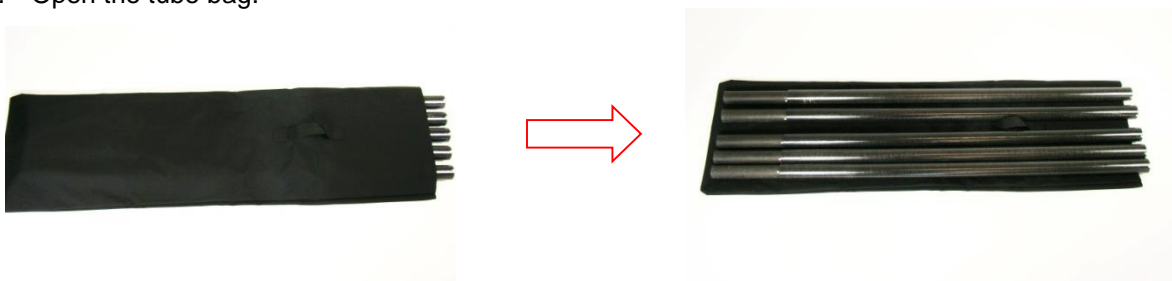
5. Open the guy bag.



6. Open the short bag.

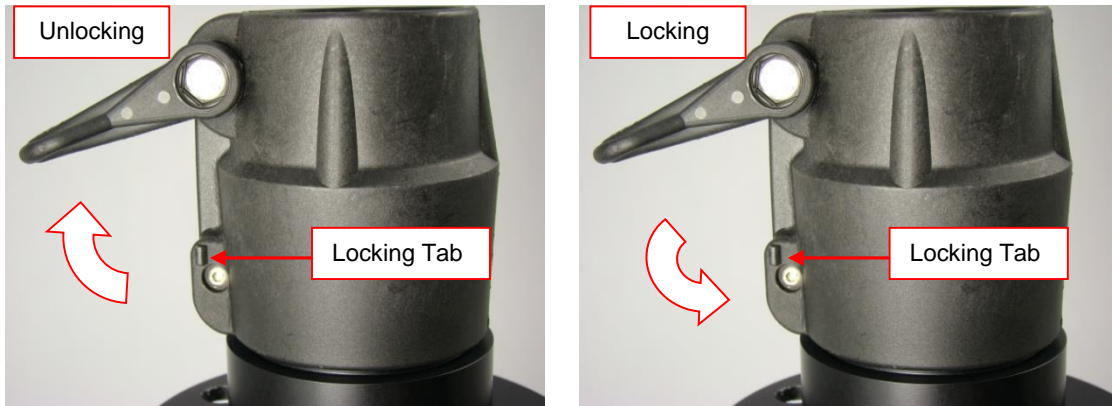


7. Open the tube bag.

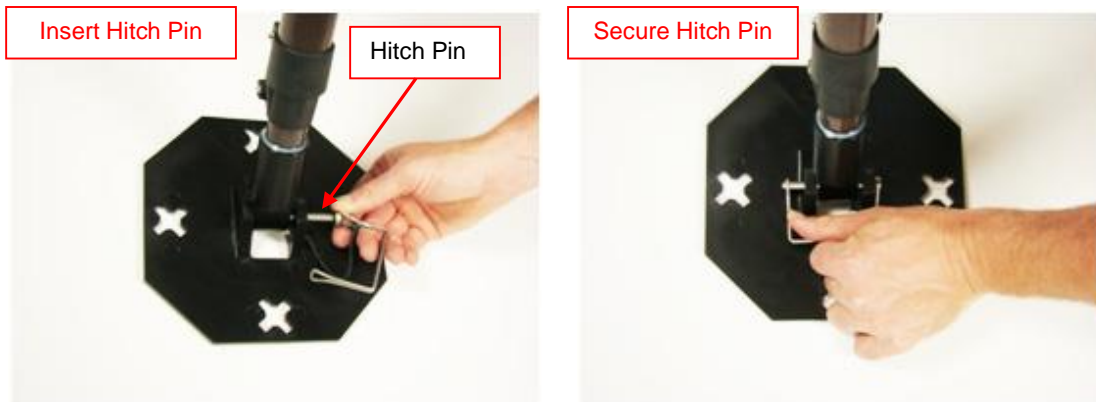


Set Up the Tripod

There are five clamps on the tripod. Three clamps are on the tripod legs and two clamps are in the center of the tripod. To unlock a clamp, push the lever towards the open position away from the locking tab. To lock a clamp, push the lever to the closed position and towards the locking tab. When locking a clamp, ensure that the lever locks into place on the tab. The clamps hold the weight of the mast and payload. See Section 4 to check that the clamps are sufficiently tight.



8. Loosen the Velcro strap from around the tripod legs. With the tripod on the ground, attach three base plates to the three tripod legs by pushing the hitch pin through the leg and securing at the other end.



9. Lift the tripod and unlock the upper clamp. This unlocks the tripod.



10. Open the tripod by pushing down on the center collar keeping fingers away from the pinch points. Push down on the collar until the collar hits the stop and the base plates are flat on the ground.



Partially Raise the Tripod Legs

11. Partially raise the tripod legs to ensure that the tripod is at a comfortable working height for attaching the carrier and payload in the later steps. With one person on each of the legs, unlock the leg clamp, step on the leg base, and lift the tripod until the tripod collar is about waist high. Lock the leg clamps.



2.3 Install the Top of the Mast

Figure 1-3 shows a disassembled view of the mast with the EZ Raze™ Option.

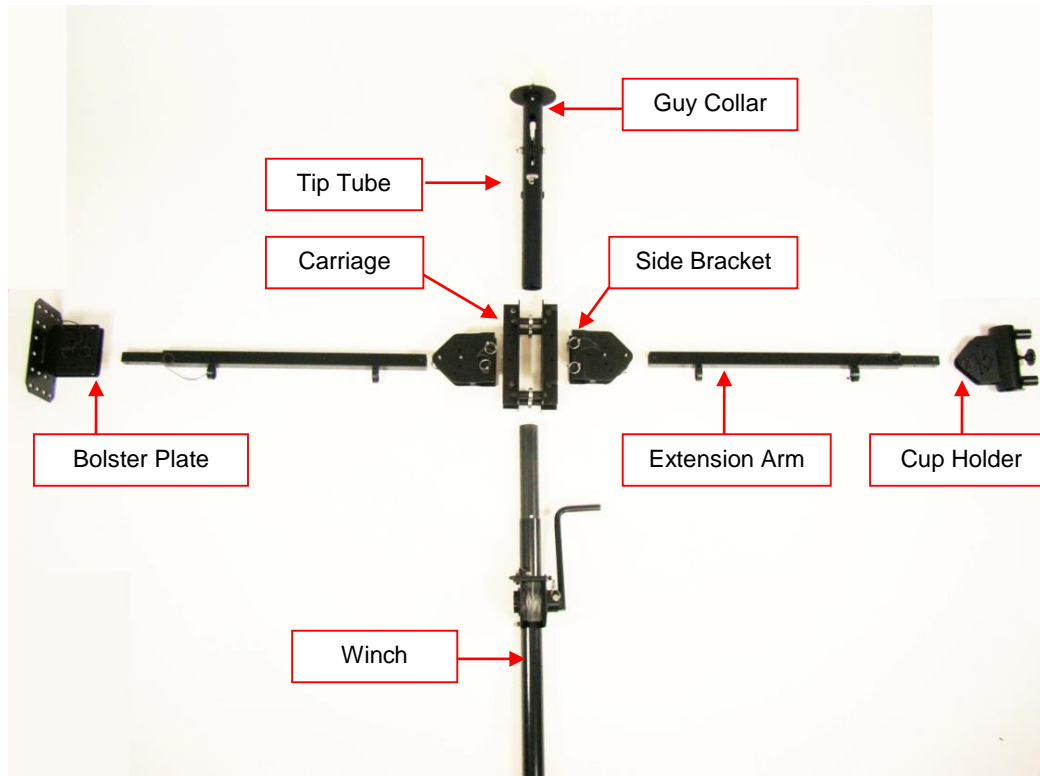


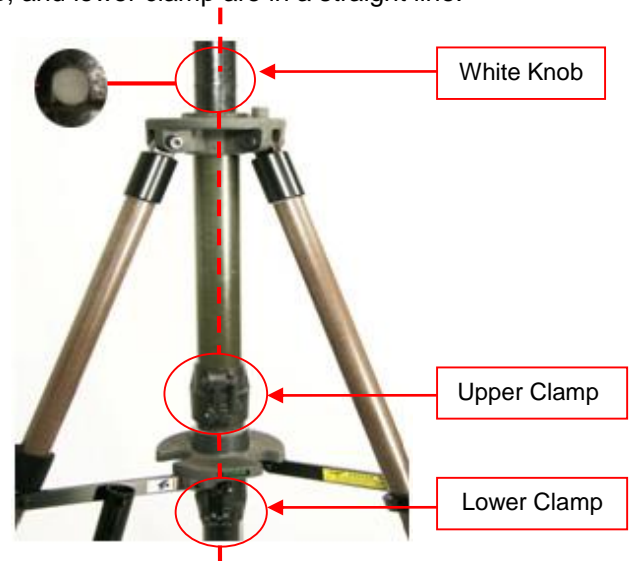
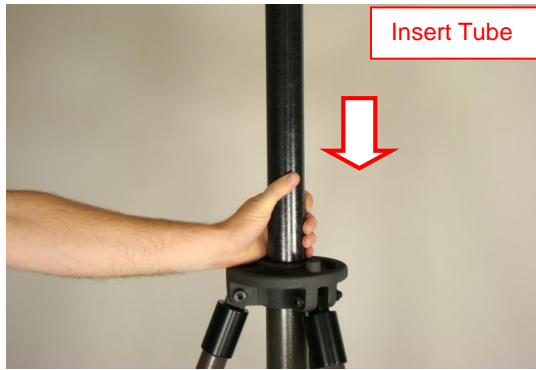
Figure 2-1 EZ Raze™ Option Disassembled

Insert the Top Tube

12. Stand in the operator's quadrant. This area is next to the winch holder and in front of one of the levels. Lock the upper clamp. See Section 4 to check that the clamp is sufficiently tight. Unlock the lower clamp.



13. Retrieve a tube from the tube bag. This will be used as the top tube. Insert the top tube from the top of tripod. Ensure that the white knob, upper clamp, and lower clamp are in a straight line.

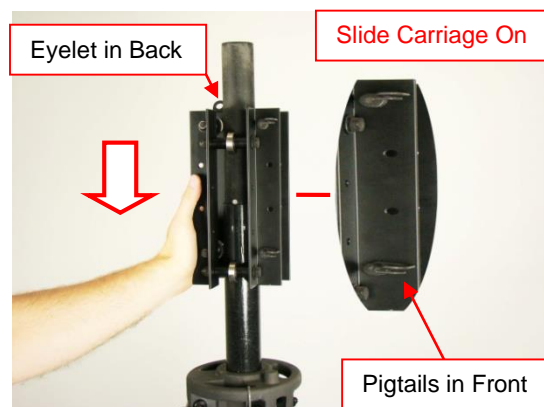
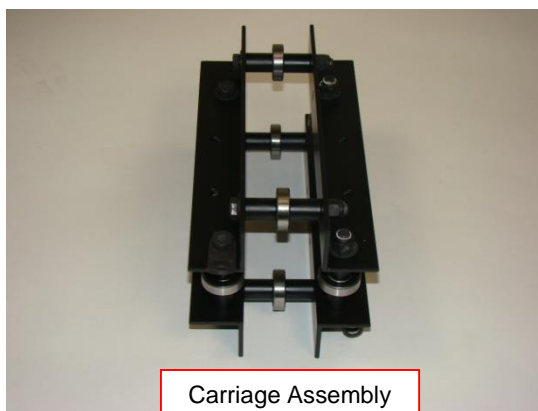


14. Lower the top tube until there is one hand width from the bottom of the tube and lock the lower clamp. See Section 4 to check that the clamps are sufficiently tight.



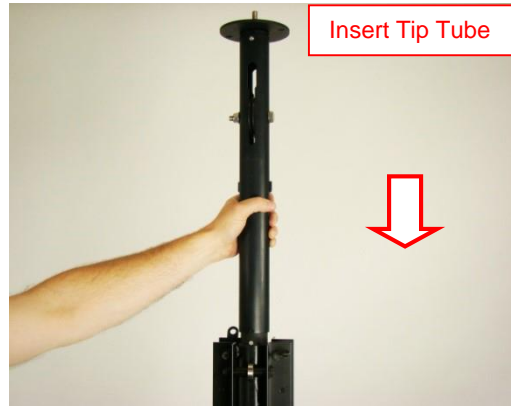
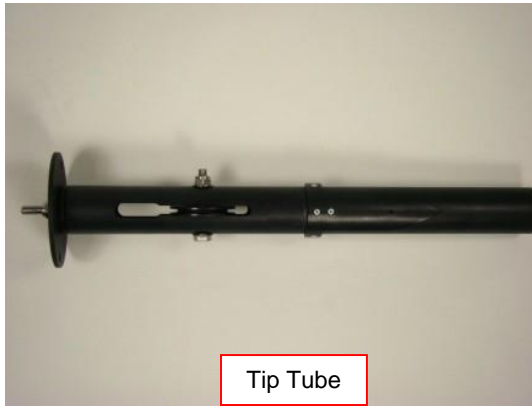
Install Carriage

15. After the tripod and the top tube have been installed, slide the carriage assembly onto the top tube. Ensure that the pigtails are in the front and the eyelet is up and in the back.

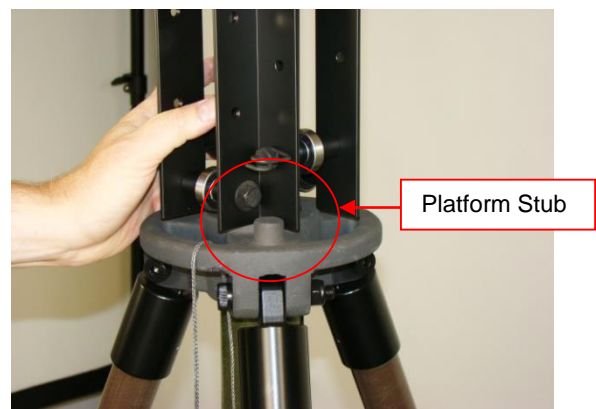


Install Tip Tube

16. Retrieve the tip tube from the tube bag. The tip tube is the tube has an integrated pulley and guy collar. Insert the tip tube from the top of the tripod with the white button in the notch of the top tube. Ensure that the white knob, upper clamp, and lower clamp are in a straight line.

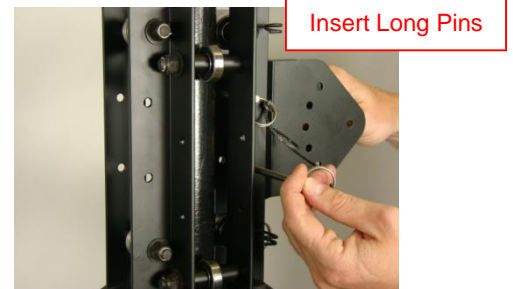
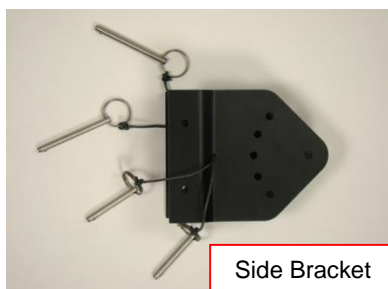


17. Ensure that the assembly eyelet is on the backside of the mast. Ensure that the tripod platform stub goes between the edges of the carriage.



Install the Carriage Arms

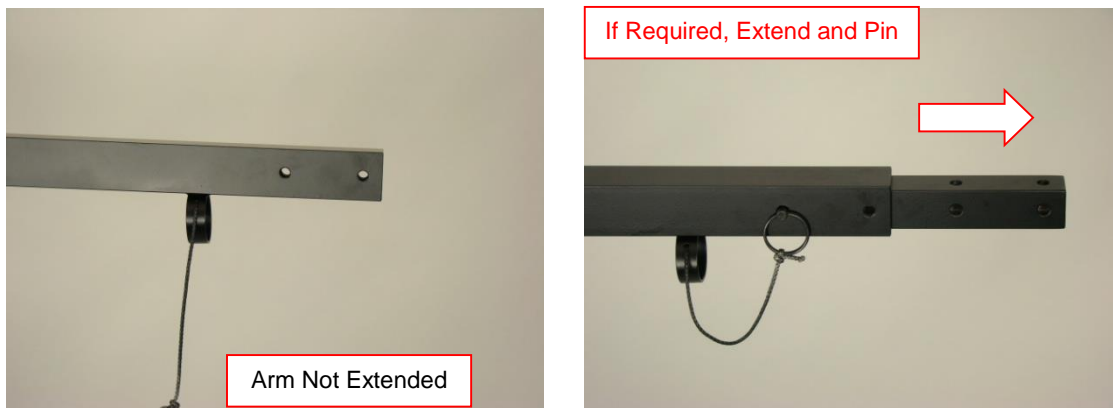
18. Remove the two side brackets from the small bag. There are two long pins and two short pins on each bracket. Put the brackets on the inside of the carriage and secure with the two long pins from the back of the bracket so the pin loops will not snag on the cable that is installed later.



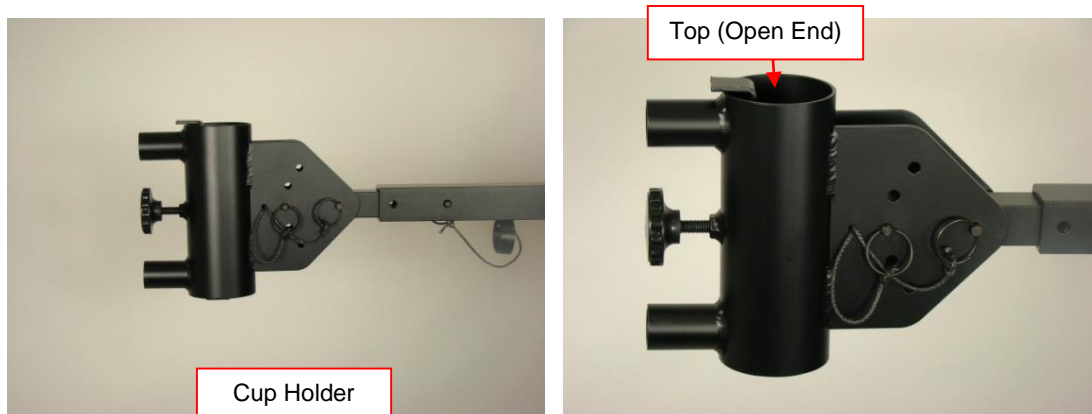
19. Connect the arm to the bracket with the front small pin. Ensure that the coax loops are facing down. Also ensure that the 8 holes are at the end of the arm. This will prevent you from pinning the extension when you pin the arm to the carriage. Pick an angle for the extension arm and pin into one of the directional holes with the rear small pin.



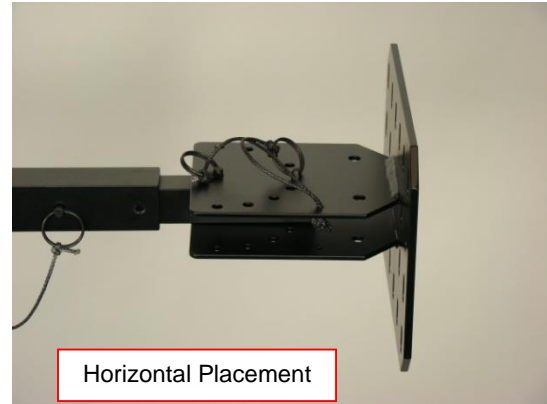
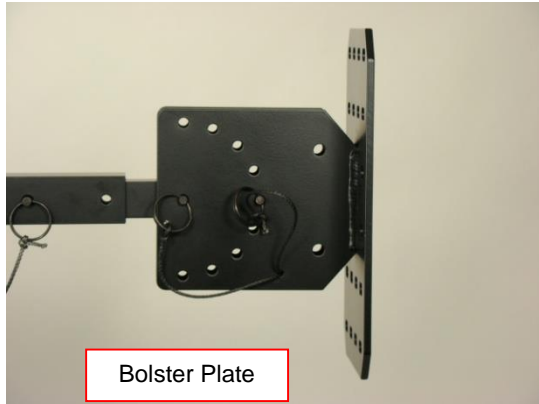
20. If additional length is required pull out the extension inside the arm and pin it.



21. If a cup holder is required, on the end of the extension arm, connect the cup holder to the carriage with one front pin. Ensure that the top of the cup holder is open (bottom is closed). Determine the angle of the extension arm and pin using one of the directional holes. Connect the payload to the cup holder. For payload weights and wind sail areas outside website specified limits, contact the Will-Burt company.

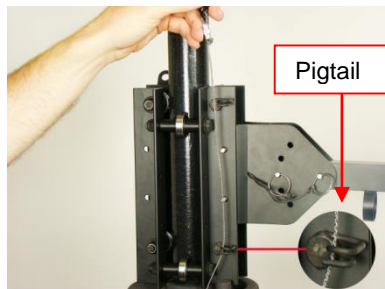
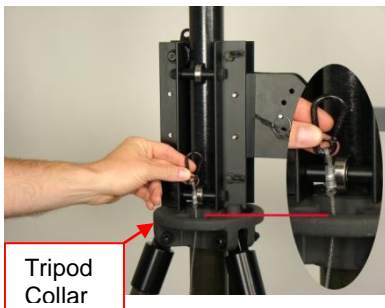


22. If a bolster plate is required, on the end of the extension arm, connect the bolster plate to the carriage with one front pin. The bolster plate can be connected vertical or horizontal. Determine the angle of the extension arm and pin using one of the directional holes. Connect the payload to the bolster plate. For payload weights and wind sail areas outside website specified limits, contact the Will-Burt company.

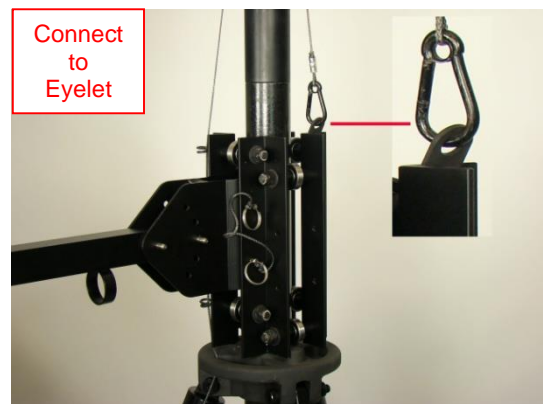
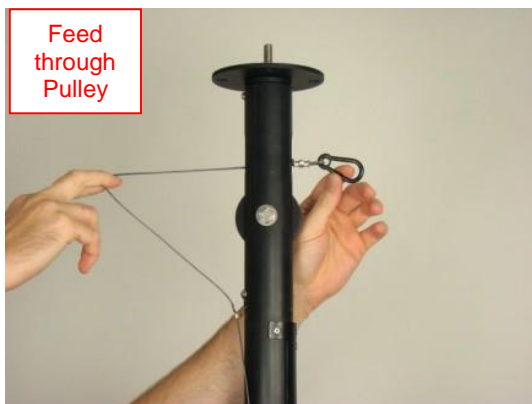


Connect the Carriage

23. Take more slack from the winch cable to allow for feeding the cable through the tip tube.
24. Connect the cable to the carriage by pushing the snap hook on the winch cable through the hole in the tripod collar. Feed the cable through the pigtails of the carriage. Then feed the snap hook through the top tube.

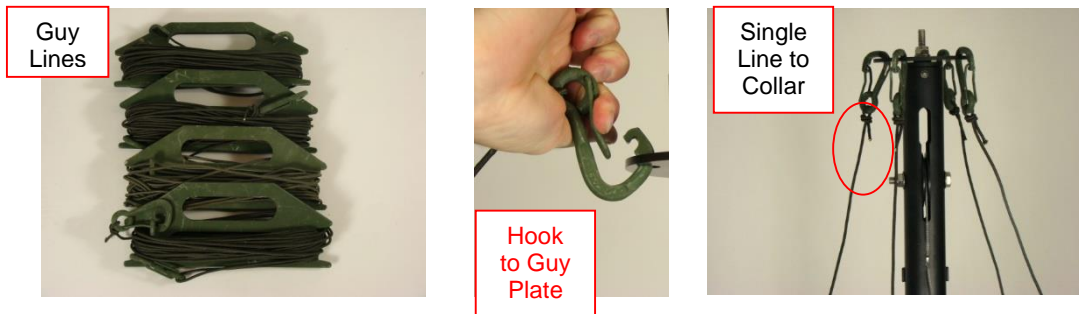


25. Feed the snap hook through the top pulley and down to the carriage eyelet and snap into place.



Connect to Guy Collar

26. Remove the four guy line spools from the guy bag. Connect the single-line, hook ends from the bottom, to the four larger, guy plate holes at 90 degree angles.



27. Let enough slack out of each guy line and place the spools on the ground about 10 feet from the center of the tripod in the general area where the stakes will be driven. Ensure that the lines are free of obstructions and snags. Check that the guide lines will not hit the payload as it is raised. If you are raising the mast during windy conditions, the mast will need to be guyed as you raise the mast.

2.4 Complete Tripod Installation

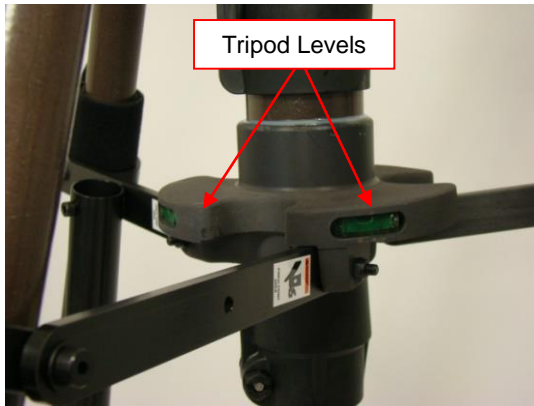
Fully Raise the Tripod Legs

28. As a team, unlock the leg clamps, step on the leg bases, and lift the tripod until the nested legs drop and are fully extended, lock the leg clamps.



Level the Tripod

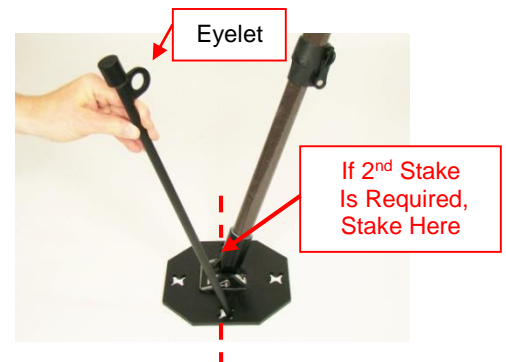
29. Check the front level. If the tripod is not level, unlock the one of the adjacent leg clamps and lower one of the legs. Relock the leg clamp.



30. Check the side level. If the tripod is not level, unlock one of the adjacent leg clamps and lower one of the legs. Lock the leg clamp.
31. Check that all clamps on the mast are locked. There are three clamps on the legs, and two on the center of the tripod.

Stake the Tripod

32. Remove the stakes and hammer from the guy bag. For masts 8 to 40 foot tall and smaller payloads, one stake may be sufficient. For masts taller than 40 feet, 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 points aligned with the shaft of the hitch pin using the hammer. Stakes should be driven at an angle toward the center of the mast with the eyelet toward the tripod leg.



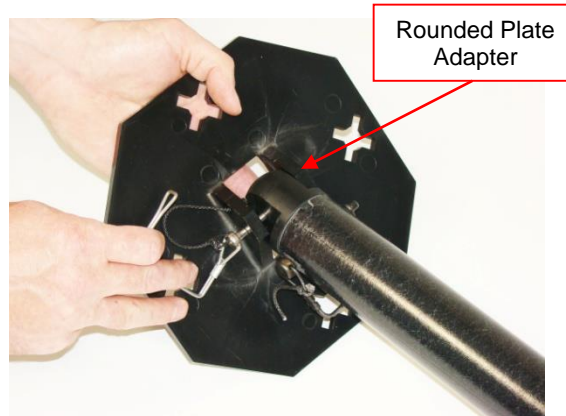
⚠ WARNING

Be careful of buried cables and utilities when staking the mast.

2.5 Raise the Mast

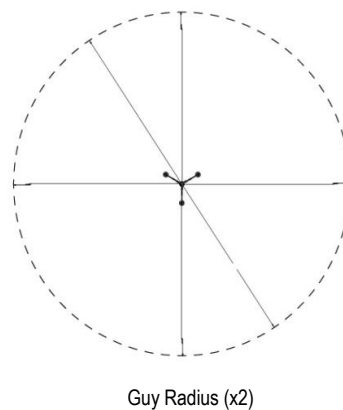
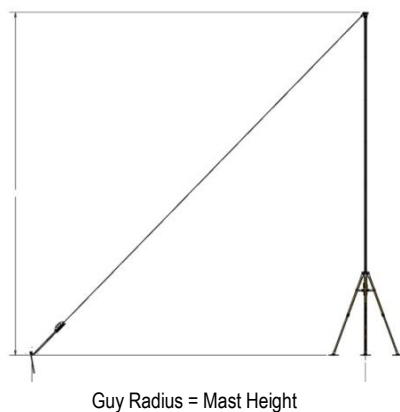
Set Aside the Winch Tube

33. So that the winch tube does not get confused with the other mast tubes, it is best to place the plate on the winch tube now. The winch tube has the rounded plate adapter at the bottom. Locate the winch and place a base plate on the bottom. Set this tube off to the side, it will be installed last.



Stake the Guy Lines

34. 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). Place the stakes 90 degrees apart.
35. If possible, drive the stakes a distance equal to the mast height from the center of the mast.



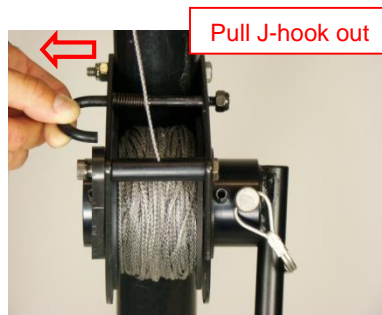
36. Drive each stake into the ground at a 45 degree angle away from the tripod. Ensure that the stake is driven into the ground up to the eyelet of the stake and that the eyelet is facing the tripod. Clip the carabineer of each of the tensioners to the ring of the guy stake.



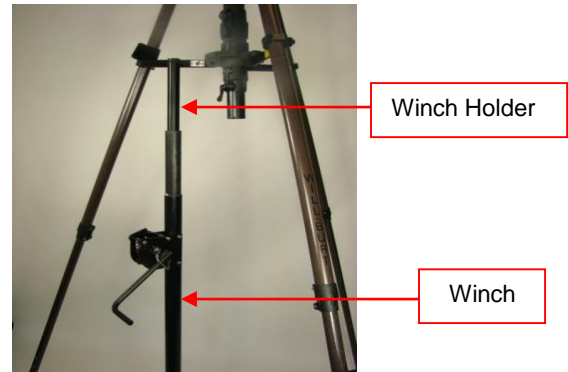
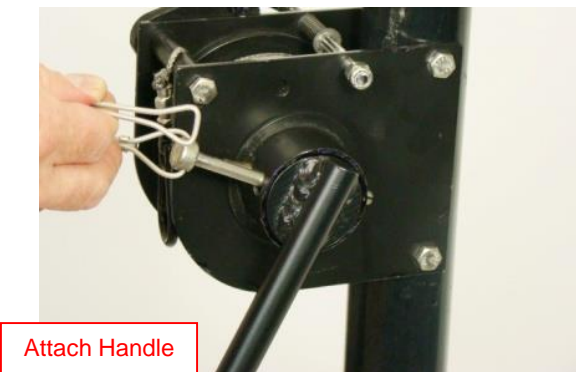
Mast is on
this Side of
the Stake

Place the Winch in the Retainer

37. Unlock the winch spool by pulling the J-hook and resting on top the winch assembly.

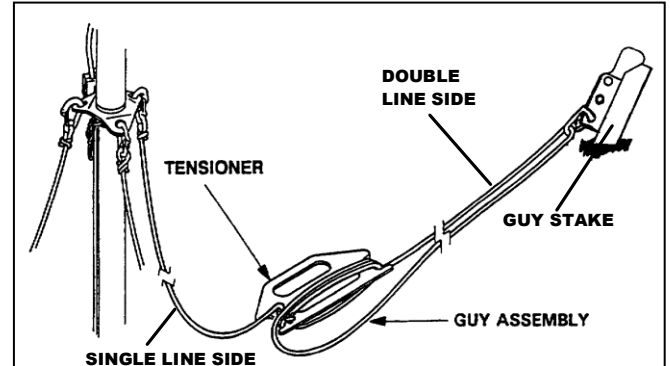
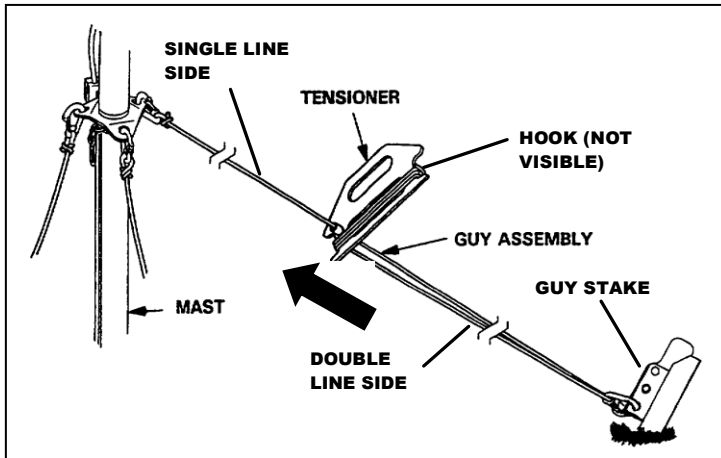


38. Use the hitch pin to attach the handle to the winch. Place the top of the winch into the bottom of the winch holder. For 1 1/4" tubes, the winch tube will go inside the holder. For 2" tubes the winch tube will go outside the holder.



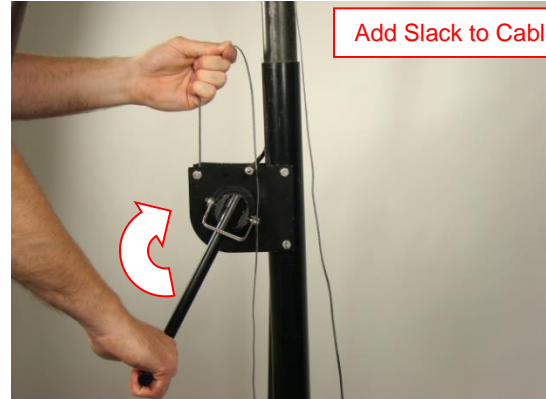
Stage the Guy Lines

39. For masts 44' to 60' tall, prepare the guy lines for a tube to be breech loaded by loosening a maximum of five feet (1.5 meters) of guy line from each tensioner.



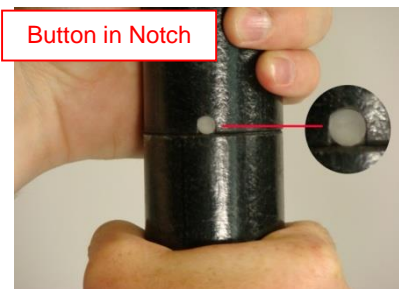
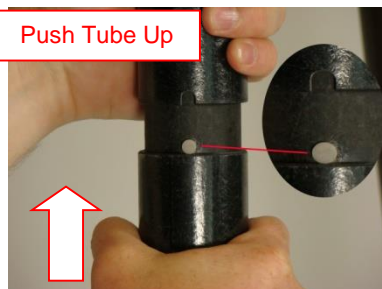
Add Slack to Winch Cable

40. Since the cable pulley is attached to the tip tube, the cable must be adjusted before each tube is breech loaded. Before loading a tube, add slack to the cable line by turning the winch handle clockwise. This allows the pulley to be raised when the tubes are breech loaded. Ensure that the winch line is free of obstructions and snags.

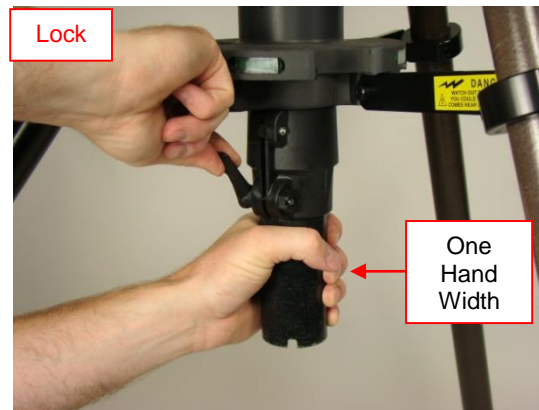
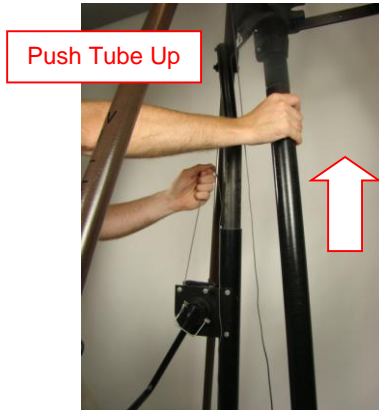


Breech Load Tubes

41. Place a tube into the bottom with white button up and aligned with the notch in the other tube.

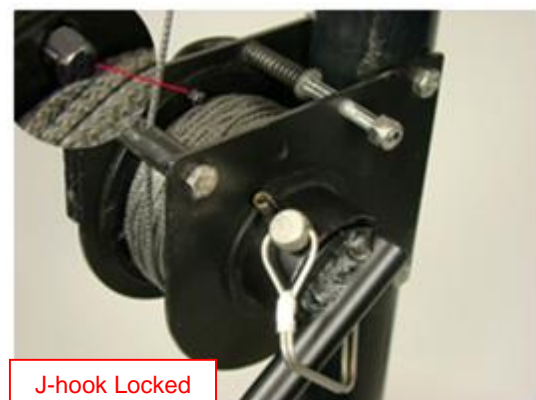
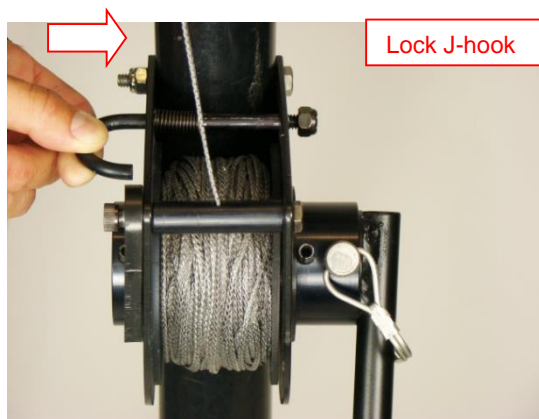


42. While holding onto the tube just loaded, unlock the lower clamp, push the tube up until only a hand's length is visible, then lock the lower clamp. Repeat steps 39, 40, 41 and 42 until all tubes are breach loaded.



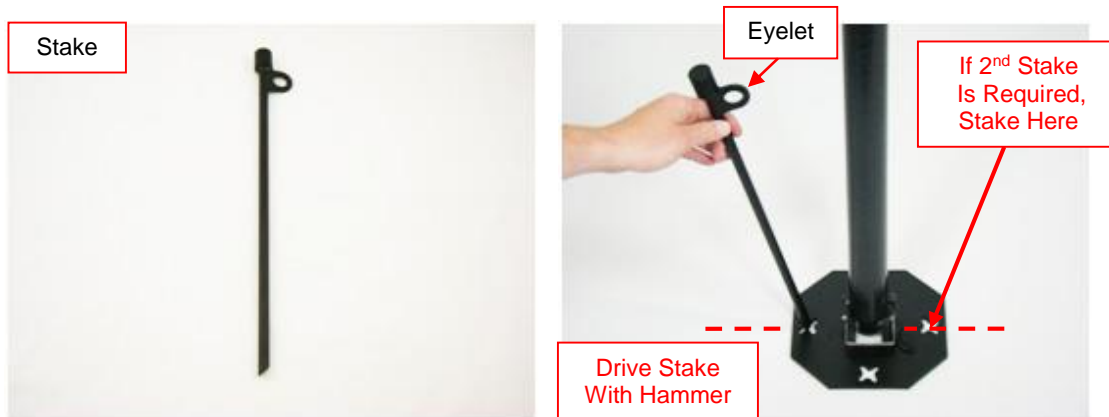
Install Winch as Base Tube

43. Once the desired height is reached, remove the winch from the winch holder. Insert the winch tube into the bottom tube with the white button up and in the notch of the other tube. Ensure that the pulley and the white button are properly aligned.
44. While holding onto the winch base tube, unlock the lower clamp and slowly allow the winch tube to lower and rest on the ground. Lock the lower clamp.
45. Pull the J-hook and place it through the locking hole in the winch. If it does not seat, turn the winch handle counter clockwise until the J-hook seats through the locking hole and a spool hole in the winch. This will safely lock your payload.



Stake the Winch Base Plate

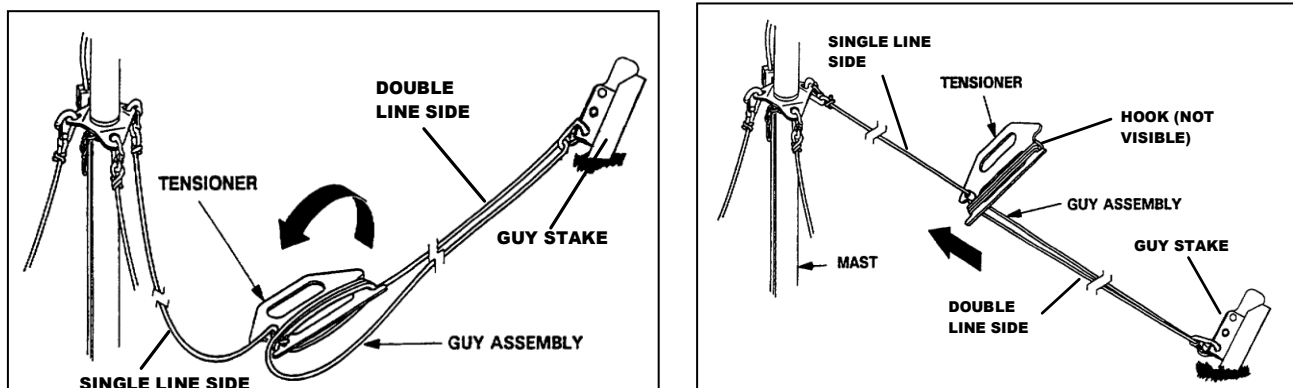
46. Stake the base plate of the winch base tube by driving a stake in one of the two stake points aligned with the shaft of the hitch pin using the provided hammer. Stakes should be driven at an angle toward the center of the mast. For masts 8 to 40 foot tall and smaller payloads, one stake may be sufficient. For masts taller than 40 feet, two stakes are required, depending on the soil type.



Tighten the Guy Lines

When tightening the guy lines, 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 wires causes an additional or unlevel load on the mast and reduces the overall load capacity of the mast.

47. Ensure that guy line attached to the stake coincides with the aligned hole in guy collar on top the mast. Ensure that none of the guy lines are crossed.
48. Ensure that none of the guy lines are crossed.
49. Tension the lines by sliding the tensioner toward the mast and lock it into position by placing the tensioner hook over the double guy line.



50. Check that the center mast tube remains straight and perpendicular.

2.6 Raise the Payload

Connect the Step

51. Use the hitch pin to attach the step to the tripod. The step allows easier access to the payload.

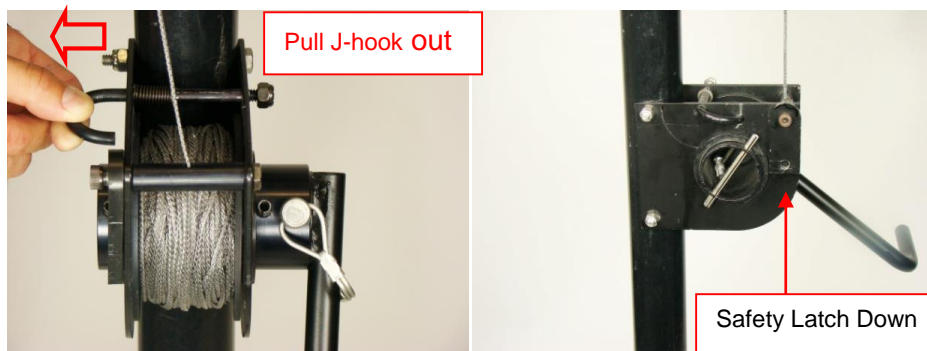


Unlock the Winch Spool

52. Pull on the J-hook to unlock the safety latch and spool. Turn the safety latch downward. Ensure that the safety latch moves freely.

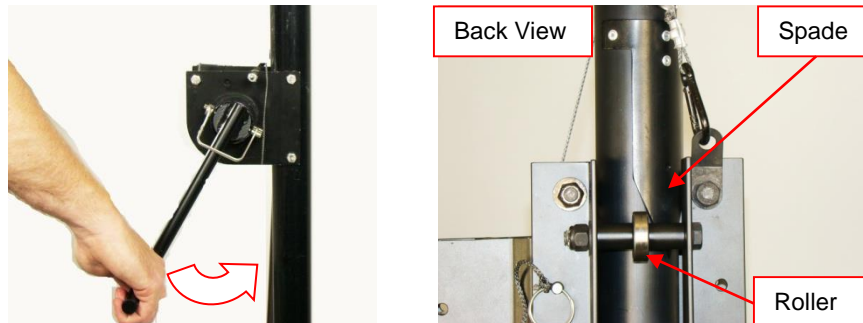


There is no brake on the EZ Raze™ Option. Ensure that the safety latch is properly functioning to ensure that when the payload is raised, it cannot fall freely. If the winch cable ever breaks, quickly get away from the tripod because the payload will drop freely.



Turn Winch to Raise the Payload

53. Turn the winch handle counter clockwise to raise the payload. Ensure that the carriage slides smoothly up the shaft of the mast. The mast may bend slightly on the initial lift but should straighten out quickly. If the mast bends but does not straighten out, the payload is too heavy. See the specification sheets to ensure you have not overloaded the mast. For payload weights and wind sail areas outside website specified limits, contact the Will-Burt company. The payload is fully raised when the carriage roller engages the spade causing the payload to slightly pivot.



3 Disassembling the Mast

1. Unlock the winch, lower payload, and remove the devices from the mast.
2. Slightly loosen the guy ropes and then loosen the lever on the lower clamp and remove the base pole by lifting slightly on the base pole. Tighten the clamp lever so that the next pole remains in place. Place the base pole (with winch) into the winch holder. Warning – Do not allow poles to separate above the lower collar – the mast will be unstable.
3. Remove the next mast section using the same process. Once the mast section has been removed take up the slack from the cable using the winch on the base pole. Leave enough slack in the cable to allow for the easy removal of the next mast section.
4. Repeat the process for the remaining mast sections using the same procedure as above until all of the mast sections have been removed. However, do not remove the last tube until the tip and carriage are removed. Store the mast sections in the carry bag.
5. Detach the snap hook on the winch cable from the carriage assembly and wind up the remaining cable. Remove the base pole (with winch) and store it in the carry bag.
6. Detach the guy ropes from the ground stakes and top pulley and wind them on to the rope stay. Remove the ground stakes and store them along with the guy ropes in the carry bag.
7. Remove the top pulley and the carriage assembly. Make sure all of the pins are properly stored on the side plates and attachments and place it in the carry bag.
8. Remove the ground stakes from the tripod and store them in the carry bag.
9. Collapse the tripod and allow the nested legs to telescope into the tripod legs. Fold the tripod and tighten all clamps on the tripod legs. You may find it easier and quicker to store the tripod with the base plates attached. Store the tripod in the carry bag.



Ranger™ Mast with EZ Raze™ Option

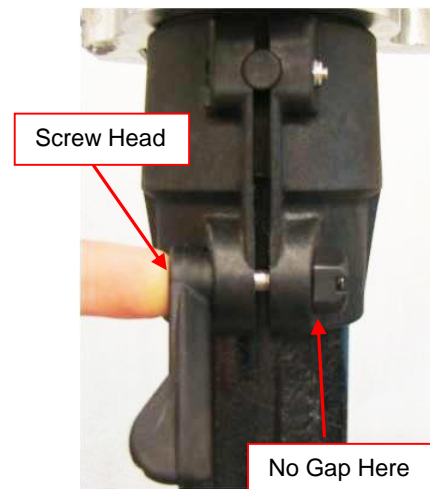
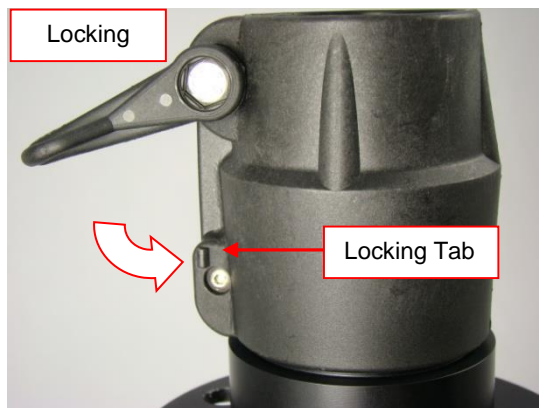
4 Maintenance

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

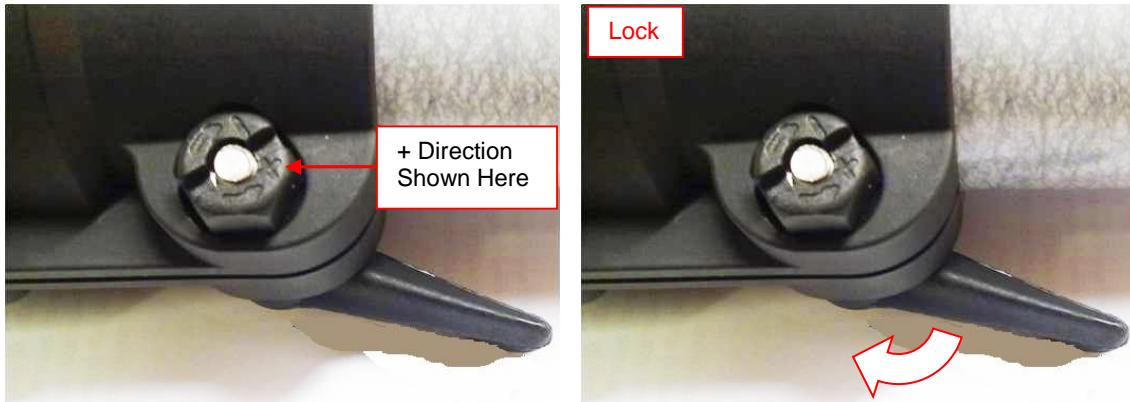
- Inspect nuts and bolts.
- Inspect all clamps for cracks or uneven wear.
- Inspect all clamps for tightness when locked.
- Inspect the tripod for uneven wear.
- Inspect all guy lines for frayed or cut lines.
- Inspect guy handles for cracks or tears
- Inspect base plates for tears
- Wipe down all parts with a cloth
- Inspect EZ Raze™ cord

4.1 Checking and Adjusting Clamp Tightness

1. The tube clamps hold the weight of the mast and payload. It is very important that the clamps are sufficiently tight. This section describes the steps to follow to ensure that the clamps are sufficiently tight and how to tighten if necessary.
2. Before checking for proper tightness, load a mast tube of the same outer diameter into the clamp.
3. Lock the clamp and ensure that the lever locks onto the locking tab. Check that the screw head is fully nested in the back of the hexagon hole of the clamp lever. Ensure that there are no visible gaps between the clamp housing and nut.



4. To ensure that the clamp is tight, by hand, turn the nut in the “+” direction shown on the nut. The clamp is tight when the nut cannot be tightened further by hand. Do not use tools to tighten. Oscillate the lever to ensure tightness. The correct tightness should have minimum movement from side to side. Do not rely on the notch of the nut to mark the fully tight orientation of the clamp.



5. Occasionally, unlocking and locking a clamp causes the screw head to better seat in the clamp. Unlock the clamp then repeat steps 3 and 4 to lock and check for proper tightness.

4.2 Replacement Kits

To replace the white pins on the tubes and the levers on the clamps, the following two kits are available:

- Indicator Pin Replacement Kit (P/N 4592101)
- Friction Lock Lever Kit (P/N 4494901)