



**THE EXPEDITION SERIES™**  
RANGER PACK™ MAST  
SET-UP AND OPERATION INSTRUCTIONS



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## 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

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.



**WARNING** 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.



**WARNING** 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.

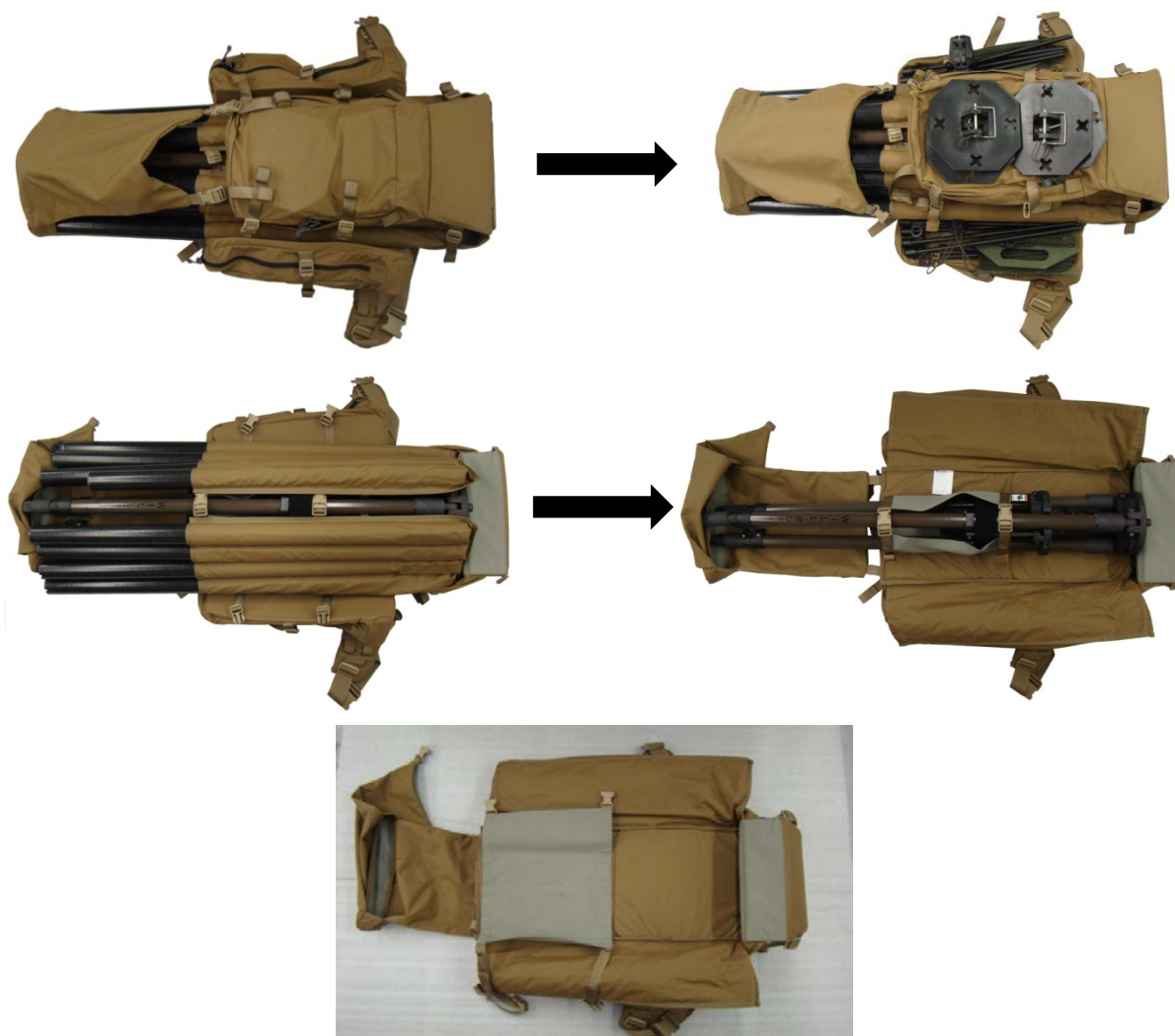
**⚠ WARNING**

**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.

1 REMOVE THE COMPONENTS FROM THE RANGER PACK.



2 REMOVE THE VELCRO STRAP FROM AROUND THE LEGS OF THE TRIPOD.



3 ATTACH THE BASE PLATES TO THE TRIPOD

RETRIEVE 3 BASE PLATES AND ATTACH THEM TO THE BOTTOM OF THE NESTED LEGS USING THE HITCH PIN ATTACHED TO THE BASE PLATE.



4 SET THE TRIPOD

A RELEASE THE LOCK ON UPPER CLAMP OF THE TRIPOD BY MOVING THE LOCK FROM THE DOWN POSITION TO THE UP POSITION.



B OPEN THE TRIPOD MAKING SURE THE BASE PLATES ARE FLAT ON THE GROUND AND THAT THE UPPER CLAMP OF THE TRIPOD IS FULLY DEPRESSED IN A DOWNWARD POSITION.



C LOCK THE UPPER CLAMP INTO PLACE (THEREBY LOCKING THE TRIPOD LEGS INTO POSITION) BY MOVING THE LOCK FROM THE UP POSITION TO THE DOWN POSITION.



5 ADD THE TOP TUBE TO THE TRIPOD

A UNLOCK THE LOWER CLAMP OF THE TRIPOD BY MOVING THE LOCK FROM THE UP POSITION TO THE DOWN POSITION.



B INSERT THE TOP MAST SECTION FROM THE TOP AND SECURE IN PLACE (AT A COMFORTABLE WORKING HEIGHT) BY LOCKING THE LOWER CLAMP ON THE TUBE. THE TOP SECTION CAN BE IDENTIFIED AS THE SHORTEST OF ALL OF THE MAST SECTIONS.



6 ATTACH GUY COLLAR/TOP TUBE ADAPTER AND GUY ROPES

- A ATTACH THE GUY COLLAR/TOP TUBE ADAPTER TO THE TOP MAST SECTION BY SLIDING THE UNLOCKED ADAPTER OVER THE TOP END OF THE TOP TUBE (AS DEPICTED). ONCE IN PLACE, LOCK THE ADAPTER ONTO THE TOP TUBE. SECURE THE PAYLOAD TO THE ADAPTER.



- B ATTACH THE GUY ROPES TO THE GUY COLLAR BY LATCHING THE CARABINERS OF THE GUY LINE TENSIONER INTO THE PROVIDED HOLES OF THE GUY COLLAR. LET THE GUY LINE TENSIONERS LAY LOOSE AND PAY-OFF AS THE MAST IS RAISED.

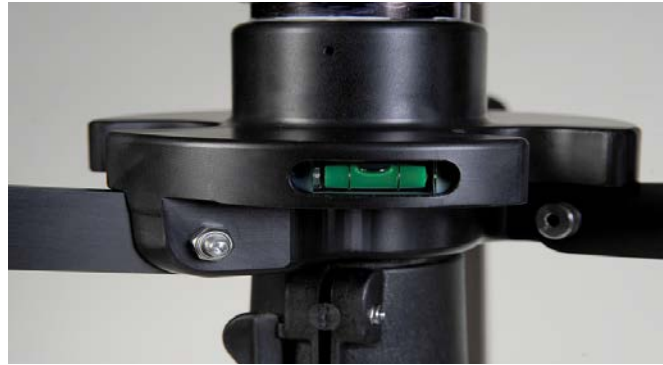


7 EXTEND THE TRIPOD LEGS

- A UNLOCK THE LOCKING MECHANISM OF THE 3 LEGS AND EXTEND THE LEGS TO THEIR FULL HEIGHT POTENTIAL. ONCE THE LEGS HAVE BEEN FULLY EXTENDED, LOCK THEM IN PLACE USING THE LOCKING MECHANISM (WHICH WILL NOT BE MID-WAY UP THE LEGS). LEVEL THE TRIPOD BY MAKING SMALL ADJUSTMENTS TO THE LOCKING MECHANISMS OF THE LEGS UNTIL THE TWO BUBBLE LEVELS (90° APART) READ LEVEL. THE TRIPOD NEEDS TO BE RAISED HIGH ENOUGH TO PERMIT THE INSERTION OF INTERMEDIATE MAST SECTIONS THROUGH THE LOWER COLLAR ASSEMBLY.



USE GUY LINES/STAKES TO SECURE ALL TRIPOD/MAST SYSTEMS



- B STAKE THE BASE PLATES OF EACH OF THE LEGS (ONCE THE TRIPOD HAS BEEN LEVELED) BY DRIVING A STAKE IN ONE OF THE TWO STAKE POINTS ALIGNED WITH THE SHAFT OF THE HITCH PIN USING THE PROVIDED HAMMER AND STAKES. BE SURE TO HAMMER THE GROUND STAKES IN AT AN ANGLE TOWARD THE CENTER OF THE MAST.

**⚠ WARNING**

BE MINDFUL OF BURIED CABLES WHEN STAKING THE MAST



8 EXTEND THE MAST TO THE REQUIRED HEIGHT

- A SEPARATE THE BASE TUBE FROM THE REST OF THE TUBES TO BE SURE THAT IT GETS LOADED LAST. THIS SECTION CAN BE IDENTIFIED BY THE ADAPTER (WITH HOLE) ON ONE END OF IT (DEPICTED BELOW).



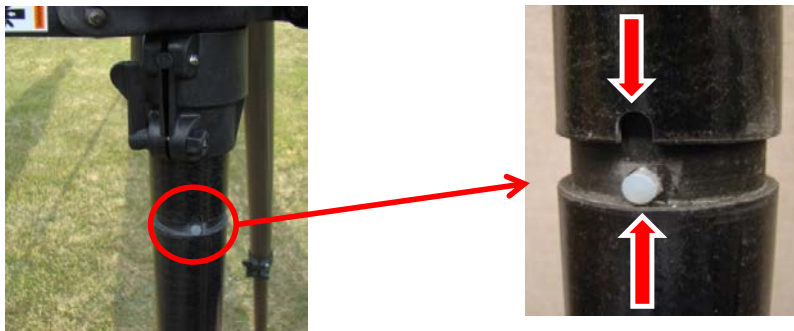
- B BREACH LOAD THE REQUIRED NUMBER OF SECTIONS OF THE MAST TO REACH THE REQUIRED WORKING HEIGHT OF THE PAYLOAD.



- 1 MAKE SURE THE TUBE CURRENTLY LOADED IN THE TRIPOD (INITIALLY THE TOP TUBE) IS LOCKED INTO PLACE (BY THE BOTTOM CLAMP) WITH THE BOTTOM KEYWAY EXPOSED UNDER THE BOTTOM COLLAR OF THE TRIPOD. IT IS CRITICAL THAT EACH MAST SECTION IS SECURELY LOCKED INTO THE LOWER CLAMP AFTER IT IS BREACH LOADED. THIS LOCK BEARS THE WEIGHT OF THE ENTIRE MAST/PAYLOAD AND NEEDS TO BE SECURED IN ORDER TO PREVENT THE MAST FROM RETRACTING ON IT'S OWN.



- 2 PLACE THE NEXT TUBE TO BE LOADED UNDER THE BOTTOM CLAMP OF THE TRIPOD (CURRENTLY LOCKED). ALIGN THE KEY OF THE TUBE BEING LOADED WITH THE KEYWAY OF THE TUBE LOCKED IN THE LOWER CLAMP. BE SURE THE KEY AND THE KEYWAY ARE ALIGNED/MATED PROPERLY IN ORDER TO ENSURE PROPER DEPLOYMENT OF THE MAST AS WELL AS PREVENT THE KEYS FROM BEING SHEARED UNDER THE WEIGHT OF THE MAST/PAYLOAD (IF NOT IN PLACE AS DESCRIBED).

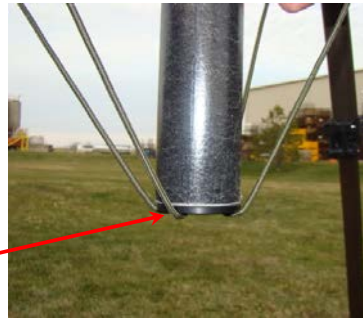


- 3 UNLOCK THE BOTTOM COLLAR (LOADING ALL OF THE WEIGHT OF THE MAST ONTO THE TUBE BEING LOADED) AND BREACH LOAD THE TUBE BY (A) PUSHING UP ON IT OR (B) PULLING UP ON THE PROVIDED LOADING PUCK (DEPICTED BELOW). CONTINUE TO PUSH/PULL THE TUBE UPWARDS UNTIL THE KEYWAY OF THE SECTION IS JUST BELOW THE BOTTOM COLLAR OF THE TRIPOD.
- 4 REPEAT THE PREVIOUS STEPS FOR EACH SECTION UNTIL THE MAST REACHES THE REQUIRED HEIGHT.



UNLOCKED BEFORE  
TUBE IS LOADED.  
LOCK AFTER TUBE IS  
BREACH LOADED  
INTO PLACE.

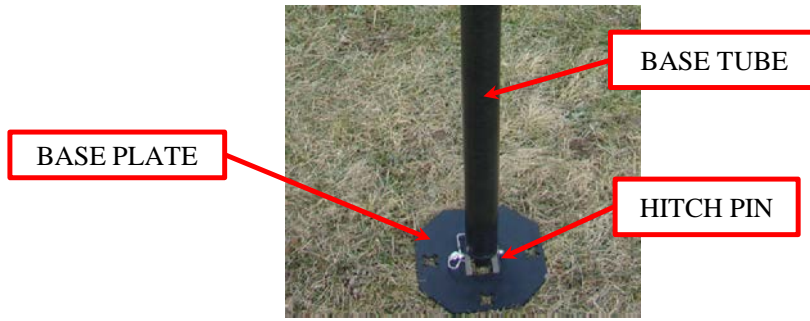
LOADING PUCK



9 ADD THE BASE TUBE TO THE TRIPOD

ONCE THE MAST IS EXTENDED TO THE DESIRED HEIGHT, THE BASE TUBE MUST BE LOADED INTO THE TRIPOD IN ORDER TO PROVIDE ADDITIONAL SUPPORT AND BEAR THE MAIN LOAD OF THE MAST/PAYLOAD.

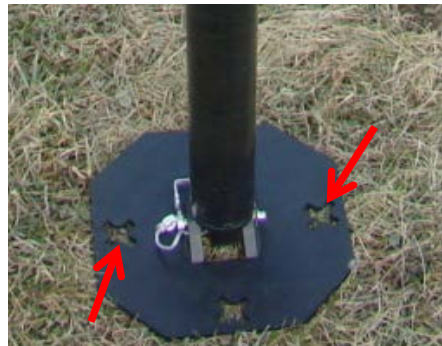
- A ATTACH THE BASE PLATE TO THE BASE TUBE AND SECURE USING THE HITCH PIN OF THE BASE PLATE.



- B BREACH LOAD THE BASE TUBE INTO THE TRIPOD (BEING SURE THE KEY OF THE BASE TUBE ALIGNS WITH THE SLOT OF THE TUBE ABOVE). THE BASE PLATE OF THE BASE TUBE WILL BE SLIGHTLY OFF THE GROUND WHEN THE TUBES ARE PROPERLY MATED. UNLOCK THE BOTTOM CLAMP OF THE MAST AND EASE THE BASE PLATE DOWN TO THE GROUND. BE SURE THE BASE PLATE SITS FIRMLY ON THE GROUND AND IS STABLE. KEEP THE BOTTOM CLAMP UNLOCKED TO ENSURE THE FULL WEIGHT OF THE MAST/PAYLOAD RESTS ON THE BASE TUBE.



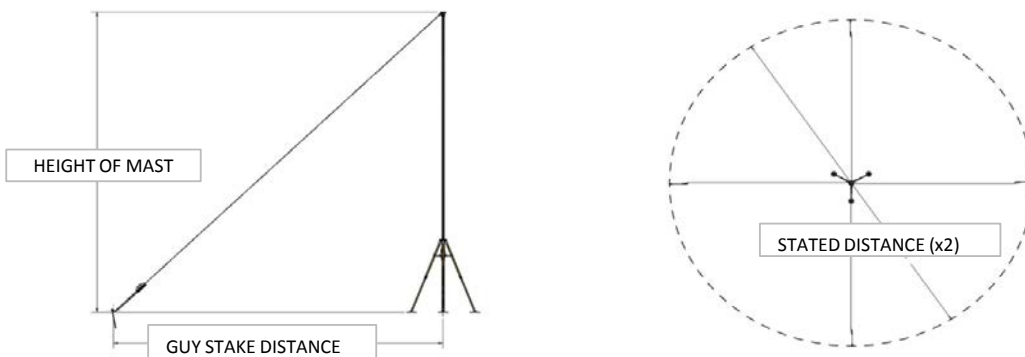
10 STAKE THE BASE PLATE OF THE BASE TUBE WITH ONE OF THE PROVIDED GROUND STAKES. BE SURE TO DRIVE THE STAKE IN ONE OF THE TWO STAKE POINTS ALIGNED WITH THE SHAFT OF THE HITCH PIN OF THE BASE PLATE.



11 STAKING THE GUY ROPES

- A RETRIEVE THE 4 GUY STAKES AND HAMMER.
- B DIRECTIONALLY, ALIGN THE GUY STAKES TO COINCIDE WITH THE 4 HOLES LOCATED IN THE GUY COLLAR/TOP TUBE ADAPTER. THE STAKES SHOULD BE APPROXIMATELY 90 DEGREES APART FROM ONE ANOTHER.
- C AS FAR AS DISTANCE FROM THE TRIPOD/MAST CONFIGURATION, THE GUY STAKES SHOULD BE OPTIMALLY PLACED AT A DISTANCE EQUAL TO THE HEIGHT OF THE MAST. PLEASE SEE THE CHART BELOW FOR REFERENCE HEIGHTS VS. GUY STAKE PLACEMENT.

HEIGHT OF MAST (FT.)	LOCATION OF GUY STAKES FROM BASE OF TRIPOD (FT.)
9	9
12	12
15	15
18	18
21	21
24	24



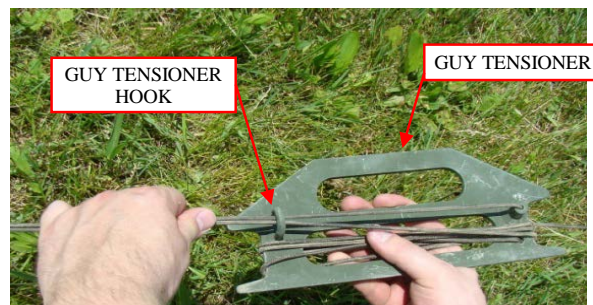
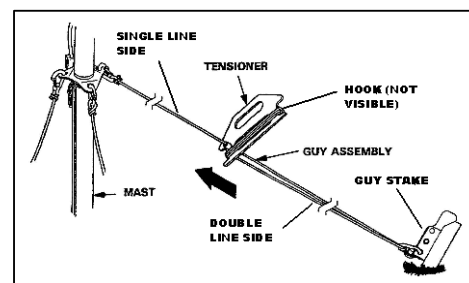
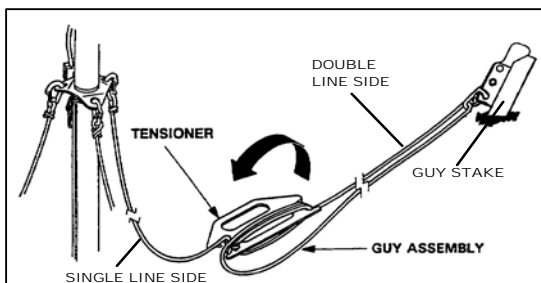
- D DRIVE EACH GROUND STAKE INTO THE GROUND AT A 45 DEGREE ANGLE AWAY FROM THE TRIPOD. MAKE SURE THE STAKE IS DRIVEN INTO THE GROUND UP TO THE RING OF THE STAKE AND THAT THE RING IS FACING THE TRIPOD.



## 12 GUYING THE MAST

WHEN GUYING THE MAST, BE SURE NOT TO OVER-TIGHTEN THE GUY ROPES. THE OBJECTIVE TO GUYING THE MAST IS TO STABILIZE THE CENTER MAST SECTION, REDUCE MASTHEAD SWAY AND PROVIDE STABILITY DURING WIND LOADING. IF THE GUY ROPES ARE OVER-TIGHTENED, THE DOWNWARD LOAD ON THE MAST IS INCREASED AND THE OVERALL LOAD CAPACITY OF THE MAST IS REDUCED, WHICH CAN LEAD TO MAST INSTABILITY.

- A CLIP THE CARABINER OF EACH OF THE TENSIONERS TO THE RING OF THE GUY STAKE, MAKING SURE THE GUY ROPE ATTACHED TO THE GUY STAKE COINCIDES WITH THE ALIGNED HOLE IN THE GUY COLLAR/TOP TUBE ADAPTER. BE SURE NONE OF THE GUY LINES ARE CROSSED OR INTERSECTING.
- B TENSION THE LINES BY SLIDING THE TENSIONER TOWARD THE MAST (LOOSEN BY SLIDING AWAY FROM THE MAST) AND LOCK IT INTO POSITION BY PLACING THE GUY TENSIONER HOOK OVER THE DOUBLE GUY LINES. BE SURE THAT THE CENTER MAST SECTIONS REMAIN STRAIGHT AND PERPENDICULAR.



### 13 RETRACTING THE MAST

- 1 SLIGHTLY LOOSEN THE GUY ROPES IN ORDER TO RELIEVE ANY TENSION OR BINDING THAT MAY EXIST BETWEEN THE MAST SECTIONS.
- 2 AFTER MAKING CERTAIN THAT THE LOCK OF THE LOWER CLAMP IS DISENGAGED, LIFT UP ON THE BASE TUBE ENOUGH TO ALLOW IT TO BE REMOVED. LOCK THE LOWER CLAMP OF THE TRIPOD ONTO THE NEXT SECTION OF THE MAST. REMOVE THE BASE SECTION OF THE MAST.
- 3 WHILE HOLDING THE EXPOSED PORTION OF THE SECTION NOW LOCKED INTO THE LOWER CLAMP, DISENGAGE THE (LOWER CLAMP) LOCK AND EASE THE SECTION DOWN TO WHERE (A) THIS SECTION IS COMPLETELY FREE OF THE LOWER CLAMP AND (B) THE NEXT SECTION ENTERS THE LOWER CLAMP AND HAS A SMALL PORTION OF THE TUBE EXPOSED UNDER THE LOWER CLAMP. ONCE AGAIN, LOCK THE LOWER CLAMP ONTO THIS SECTION AND REMOVE THE NOW FREE SECTION FROM UNDER THE TRIPOD.
- 4 REPEAT THE PROCESS FOR THE REMAINING MAST SECTIONS UNTIL ALL THE MAST SECTIONS HAVE BEEN REMOVED (OTHER THAN THE TOP TUBE). RETURN THE MAST SECTIONS TO THE RANGER BAG.
- 5 REMOVE THE GROUND STAKES FROM THE TRIPOD BASE PLATES AND RETURN TO THE RANGER BAG.
- 6 UNLOCK THE LOCKING MECHANISMS OF THE TRIPOD LEGS AND ALLOW THE LEGS TO NEST WITHIN THEMSELVES, BRINGING THE MAST TO A COMFORTABLE WORKING HEIGHT.
- 7 REMOVE THE CARABINERS OF THE GUY LINES FROM THE GUY COLLAR/TOP TUBE ADAPTER.
- 8 DISCONNECT THE CARABINERS FROM THE GROUND STAKES AND WIND THE ROPE AROUND THE TENSIONER. REMOVE THE GROUND STAKES AND RETURN THEM TO THE RANGER BAG ALONG WITH THE GUY LINE TENSIONERS.
- 9 REMOVE THE GUY COLLAR/TOP TUBE ADAPTER FROM THE TOP SECTION AND RETURN IT (ALONG WITH THE TOP TUBE) TO THE RANGER BAG.
- 10 UNLOCK THE UPPER CLAMP OF THE TRIPOD AND COLLAPSE THE TRIPOD.
- 11 REMOVE THE BASE PLATES FROM THE TRIPOD AND RETURN THE TRIPOD AND THE BASE PLATES TO THE RANGER BAG.



