

# PORTABLE ANCHOR SYSTEMS: TERRADAPTOR™ MODULE 1

STUDENT MANUAL Version 1.0

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**Appendix**

- TerrAdaptor™ Module 1 - Written Exam (30 points total)
- Release and Assumption of Risk Form
- TerrAdaptor™ User's Manual

Acknowledgement - This manual could not have been made possible without the hard work, attention to detail and dedication of Pat Rhodes.

\* Cover Shot by Jack Perry.

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## Course Description

This is a two-day rope technician introductory course that instructs participants in the use of portable anchor systems, focusing on the TerrAdaptor™. Rigging theory that supports sound and reliable manipulative tripod and quad-pod skills congruent with the requirements of NFPA 1670 and 1006 Technician Level and Basic force multiplier theory of portable anchors are key components of Module 1.

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## Prerequisites

Technician Level Rope Rescuer as certified by the participant's Authority Having Jurisdiction, or permission of the lead instructor.

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## Learning Objectives

Upon successful completion of Module 1, all participants will be able to safely and efficiently accomplish the following tasks and objectives:

1. Understand and demonstrate the proper safety protocol when working with and around portable anchors and vertical environments
2. Demonstrate the proper assembly of the TerrAdaptor™ Portable Anchor System congruent to the TerrAdaptor™ Users Manual and the satisfaction of the lead instructor
3. Construct and operate individual and system belays congruent to the use of elevated anchor systems/portable anchor systems
4. Build and operate a mainline system congruent to the use of elevated anchor systems/portable anchor systems
5. Understand practical applications of principals of force multipliers as they apply to portable anchor systems, with a focus on tripods and quad-pods
6. Rig and manage tripods and quad-pods congruent to the requirements of this course
7. Perform commands congruent to the incident management of elevated anchor systems
8. Complete and pass a written test

## Order of Instruction

1. Introduction and Overview of Course
  - The purpose of VRS™
  - The instructor's expectations for the course as well as your classmate's and your own
  - The flow of the course
2. Safety Issues
  - Release and Assumption of Risk Form
  - Two points of contact for anyone within six-feet of the edge (for flat surfaces, this may be more depending on the terrain)
    - No one is allowed to approach the edge without full approval and inspection of the instructor
    - Anyone can call STOP at any time if they have a safety question or issue about what is taking place
  - Required Personal Gear and PPE
    - Class 3 Harness
    - Helmet (rescue type with three-point chin strap)
    - Gloves (leather rappel type)
    - Appropriate Footwear (hiking boots or duty boots, no tennis or jogging shoes)
    - Appropriate attire to meet climate requirements
    - Personal snacks and water
3. NFPA - Standards and Guidelines
  - The role of NFPA
  - NFPA 1670 and Portable Anchors/Elevated Anchor Systems
    - Understanding of the basic physics involved in constructing rope systems, including system safety factors, critical angles, and the causes and effects of force multipliers within rope rescue systems
    - Constructing an elevated point to facilitate safe transition of rescuers or victims over difficult edges
    - Horizontal Systems, Offsets and Highlines
4. The TerrAdaptor™ - Key Features, Parts and Assembly
  - Major component overview
  - Testing applied to the TerrAdaptor™
  - Assembly instructions
  - Head angle adjustments
  - Leg clamps
  - Feet
  - Attachment points
  - Head assembly
  - Final assembly
  - Standard configurations
5. Resultant Forces Applied to Tripods and Quad-Pods
  - Vector formula for directional pulley anchors
  - Vector formula for multipoint anchors
6. Edge Safety Considerations
  - Edge Management Protocol

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**Order of Instruction (Cont.)**

7. Fall Factors
  - Fall Factor defined
  - Theoretical Fall Factor
  - Actual Fall Factor
8. Command and Communication
  - Pre-rescue team meeting
  - Assignment of tasks
    - Command
    - Control Officer
    - Safety
    - Belay
    - Mainline
    - Elevated Anchor Team
    - Attendant(s)
  - Command and Communication Skills
9. TerrAdaptor™ Inspection and Maintenance Guidelines
  - Before use
  - Inspection before use
  - Set-up for use
  - Maintenance after use
  - Removal from service
  - Additional information
  - Records
10. TerrAdaptor™ Documentation and Record Keeping
  - Field Use Charts
11. TerrAdaptor™ Module 1 Participant Written Exam

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## Lesson 1: Introduction and Overview of Course

At the end of this lesson, you should expect to understand:

- The purpose of VRS™
- The instructor's expectations for the course as well as those of your classmates
- The flow of the course

This is a two-day rope technician's skills course for the purpose of learning the rigging theory that supports sound and reliable manipulative tripod and quad-pod skills congruent with the requirements of NFPA 1670 and 1006 Technician Level. Basic force multiplier theory of portable anchors is a key component of this Module.

***This course will focus on the specific use of the TerrAdaptor™ portable anchor system. Participants must read and have a complete understanding of the TerrAdaptor™ User's Manual. The TerrAdaptor™ User's Manual will be covered in its entirety in the Appendix of this Module.***

It is expected that the participant has at least an operations skill level as certified by the participant's AHJ, or has the permission of the lead instructor to be in this class. Participants in Module 1 should possess the following basic rigging skills PRIOR to the start of this course:

### 1. Knot Craft and Anchors

- Figure 8 on a Bight
- Bowline with Appropriate Backup
- Butterfly
- Clove Hitch
- Basket Hitch
- Munter Hitch
- Wrap 3, Pull 2 Webbing Anchor System

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**Lesson 1: Introduction and Overview of Course (Cont.)**

2. Mechanical Advantage

- 3:1
- 5:1
- 6:1 Compound; (3:1)(2:1)
- 9:1 Compound; (3:1)(3:1)

3. Belay Skills

- Single Person Belays (up to 100Kg)
- Systems/Belays (over 100Kg)

4. Mainline Skills

- Descent Control Device Management, i.e. Brake Rack, Tube
- Changing a Loaded Line from a Lowering System to a Raising System

5. Descending and Ascending a Fixed Line

**Please Make the instructor aware of any deficiencies or reservations you may have concerning the above mentioned prerequisites.**



## Lesson 2: Safety Issues

By the end of this lesson, you should expect to understand:

- The importance of the overall safety briefing
- Edge safety protocols
- Required personal protective gear (PPE)

Lack of safety during a rescue and/or training becomes an emergency in its own right. It is the responsibility of each participant in this class to be on guard against unsafe situations. Catastrophic failures can often be traced back to an accumulation of several “lesser” mess-ups, over-sights, or in many cases, simple lack of knowledge and training. Safety is a state of mind.

This course will involve work that is in close proximity to dangerous edges; **anyone within six-feet of an unprotected edge shall be connected to an appropriate fall arrest system and subject to the direction and interpretation of the lead instructor.** Dependant on the conditions of the terrain, a great distance from the edge may require fall arrest.

**ANYONE MAY CALL FOR A “STOP” IF A SAFETY ISSUE OR QUESTION OF SAFETY ARISES!**

1. Review Safety Issues, Including:

- *Release and Assumption of Risk Form*
- Two points of contact are required for anyone within six feet of the edge (for flat surfaces, this may be more depending on the terrain)
- No one is allowed to approach the edge without full approval and inspection of the instructor
- Anyone can call STOP at any time if they have safety questions or issues about what is taking place

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**Lesson 2: Safety Issues (Cont.)**

2. Required Personal Gear and PPE:

- Class 3 Harness
- Helmet (rescue type with three-point chin strap)
- Gloves (leather rappel type)
- Appropriate Footwear (hiking boots or duty boots, no tennis or jogging shoes)
- Appropriate Attire to Meet Climate Requirements
- Personal Snacks and Water

### Lesson 3: NFPA - Standards and Guidelines

By the end of this lesson, you should expect to understand:

- How NFPA 1670 applies to Portable/Elevated Anchor Systems
- What level of training NFPA 1670 applies to technical rescue procedures

The National Fire Protection Association (NFPA) is the most recognized Firefighter/Rescuer general consensus standard in the United States. **Although NFPA does not have any authority to enforce or regulate the standards it has published, they do offer substantial guidance for today's technical rescue technician.** To quote NFPA 1670:

*"While the NFPA administers the process and establishes rules to promote fairness in the development of consensus, it does not independently test, evaluate, or verify the accuracy of any information or the soundness of any judgements contained in its codes and standard".*

*"Anyone using this document should rely on his or her own independent judgment or, as appropriate, seek the advice of a competent professional in determining the exercise of reasonable care in any given circumstances".*

NFPA 1670 applies to technical rescue procedures of the department, while NFPA 1006 is geared more to the skill level of the individual technician.

#### NFPA 1670 and Portable Anchors/Elevated Anchor Systems

To meet the requirements of NFPA 1670 for rope rescue at the Technician Level, technicians must demonstrate proficiency in the following:

- Understanding of the basic physics involved in constructing rope rescue systems, including system safety factors, critical angles, and the causes and effects of force multipliers within rope rescue systems
- Constructing an elevated point to facilitate safe transition of rescuers or victims over difficult edges

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**Lesson 3: NFPA - Standards and Guidelines (Cont.)**

- Horizontal Systems, Offsets and Highlines

It is difficult to discuss one facet of rope rigging and not address all the many other aspects at the same time. The study of portable anchor systems is an extremely complex subject that must address all of the above mentioned NFPA 1670 technician requirements with special focus on the following factors:

- Edge trauma
- Maintaining a coefficient of friction at the edge that best meets the needs of the rescue
- Application of elevated anchors
- Vector analysis and resultant management

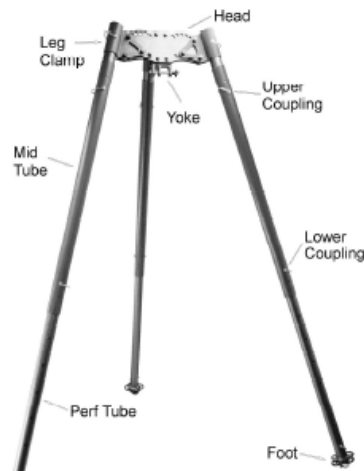
## Lesson 4: The TerrAdaptor™ - Key Features, Parts and Assembly

By the end of this lesson, you should expect to understand:

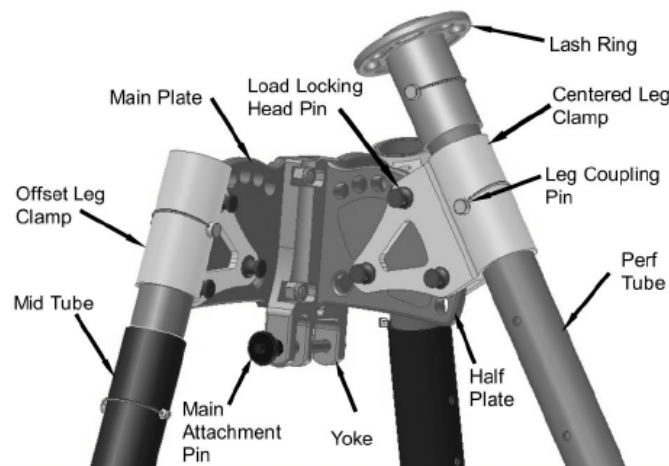
- How to identify the parts of the TerrAdaptor™
- How to assemble a basic tripod configuration of the TerrAdaptor™
- TerrAdaptor™ usage tips and key features
- The NFPA G rated configurations
- The quad-pod and gin pole kit options for the TerrAdaptor™

### TerrAdaptor™ Part Identification<sup>1</sup>

The images below are an overview of a tripod set-up.



An overview of the head section along with the correct names of each component is presented below. Please refer to this image while learning how to assemble the TerrAdaptor™ as outlined in Section 2.



1. Note: This page is a snapshot from the TerrAdaptor™ User's Manual, page 3.

## Lesson 4: The TerrAdaptor™ - Key Features, Parts and Assembly (Cont.)

### TerrAdaptor™ Usage Tips and Key Features

- The TerrAdaptor™ Portable Anchor is NFPA-06 G Rated (MBS of 36kN or 8,093lbf) up to 9 feet in height, when the Main Plate angle is set to “A” and the Half Plate angle is set to “B”
- The TerrAdaptor™ Portable Anchor can be rigged to a height of 12 feet, which has a manufacturer’s rating of 5,000lbf
- Wider and taller configurations are inherently weaker
- Regardless of published strengths of the TerrAdaptor™, they should not be used in place of professional training when calculating a System Safety Factor (SSF)
- See the TerrAdaptor™ User’s Manual for additional information (see Appendix)

### Minimum Breaking Strength versus Safe Working Load and Safety Factors

- The minimum breaking strengths of individual TerrAdaptor™ components do not necessarily indicate the total Safe Working Load of the TerrAdaptor™. Direction of pull, TerrAdaptor™ set-up configuration and type of usage all play a role in determining any system’s Safety Factor. Consult the Quick Reference NFPA G Rating Guideline Chart on the legs of the TerrAdaptor™ when in doubt
- Accessory gear such as pulleys, ropes and carabiners may also impact the target Safety Factor

### Main and Half Plates

- Only five points on the TerrAdaptor™ Main and Half Plates are designed to be used for rigging when used in the tripod configuration. There are two points on the main attachment pin, and three points on the Main and Half Plates.
- Rigging points on the head are rounded holes near the bottom center of the head and are slightly larger than the adjustment and pivot holes.
- NEVER USE THE ADJUSTMENT OR PIVOT HOLES AS RIGGING POINTS

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## Lesson 4: The TerrAdaptor™ - Key Features, Parts and Assembly (Cont.)

### Lash Rings

- Lash rings can be used for back ties or safeties.
- They can be used as an attachment point above the head or on the perf tube of any leg or below the head on the perf tube of any leg
- There are eight slots on each of the two Lash Rings that accompany the standard TerrAdaptor™ Tripod Kit
- The Lash Ring is rated to a 25kN MBS when pulled from end-to-end, and 20kN when pulled straight down
- When using as an attachment point for tensioned back-ties special care should be taken to oppose these attachment points to prevent torque or twisting

### Locking Easel Leg

- The locking third “easel” leg of the TerrAdaptor™ creates a more stable and manageable tripod during the initial set-up than a free-floating leg on a tripod with no locking capability
- Typically, the higher an adjustment hole, the higher the third leg angle and wider the footprint of the tripod. The greater the angle, the weaker the tripod will be. So “A” would be the stronger configuration and “F” the weaker

### Hobbles

- The hobbles that come standard with the TerrAdaptor™ are made from 7mm accessory cord with 5mm sewn prusiks for adjustment
- The hobbles are designed to stabilize the legs of the TerrAdaptor™ by using the prusiks to adjust to every configuration from the smallest footprint to the largest
- Beware of moving rope running over the hobbles during a raising or lowering
- If so desired, chain hobbles can be used in place of the cord hobble but must be supplied separately by the user

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## Lesson 4: The TerrAdaptor™ - Key Features, Parts and Assembly (Cont.)

### Feet

- Ball feet come standard with the TerrAdaptor™ and can be used either smooth-side or spike-side down, depending on the terrain
- A flat foot option is available separately
- For additional stability against uplift during loading it may be necessary to lash each foot down
- Feet can be attached to either the perf tube or the mid tube

### TerrAdaptor™ Quad-pod Configuration

- If the quad-pod configuration of the TerrAdaptor™ is required, additional parts must be purchased
- The quad-pod manufacturer's ratings are the same as the tripod's
- The quad-pod is usually a more stable configuration but is heavier
- TerrAdaptor™ Gin Pole Configuration
- The gin pole (aka mono-pod) configuration of the TerrAdaptor™ can be made from the standard tripod kit or purchased as a standalone kit
- The gin pole is the lightest option for a Portable Elevated Anchor
- Professional instruction with respect to rigging and compression and tensile forces needed to keep the gin pole stationary during use is essential

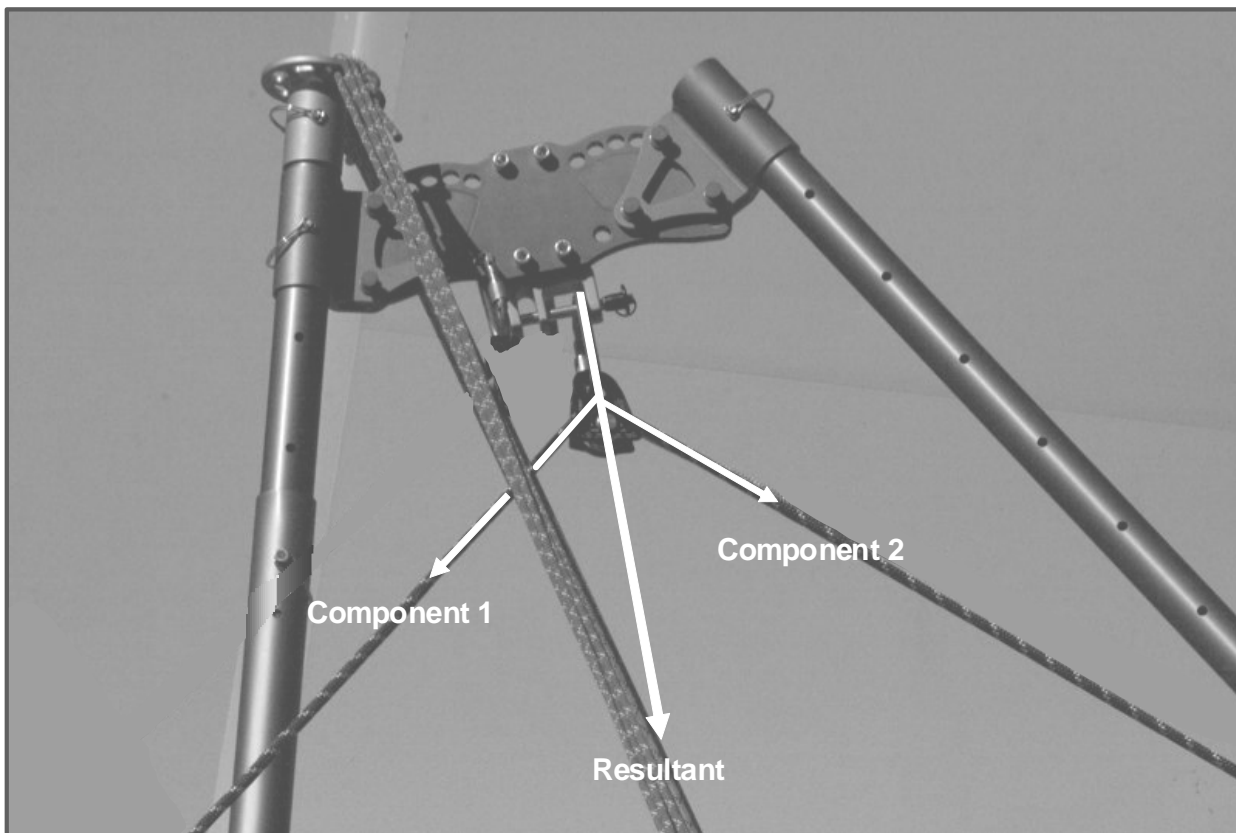
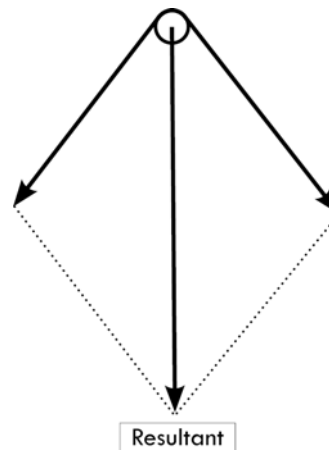


## Lesson 5: Resultant Forces Applied to Tripods and Quad-pods

By the end of this lesson, you should expect to understand:

- How to apply field analysis of resultant forces with respect to anchor resultants and critical angles

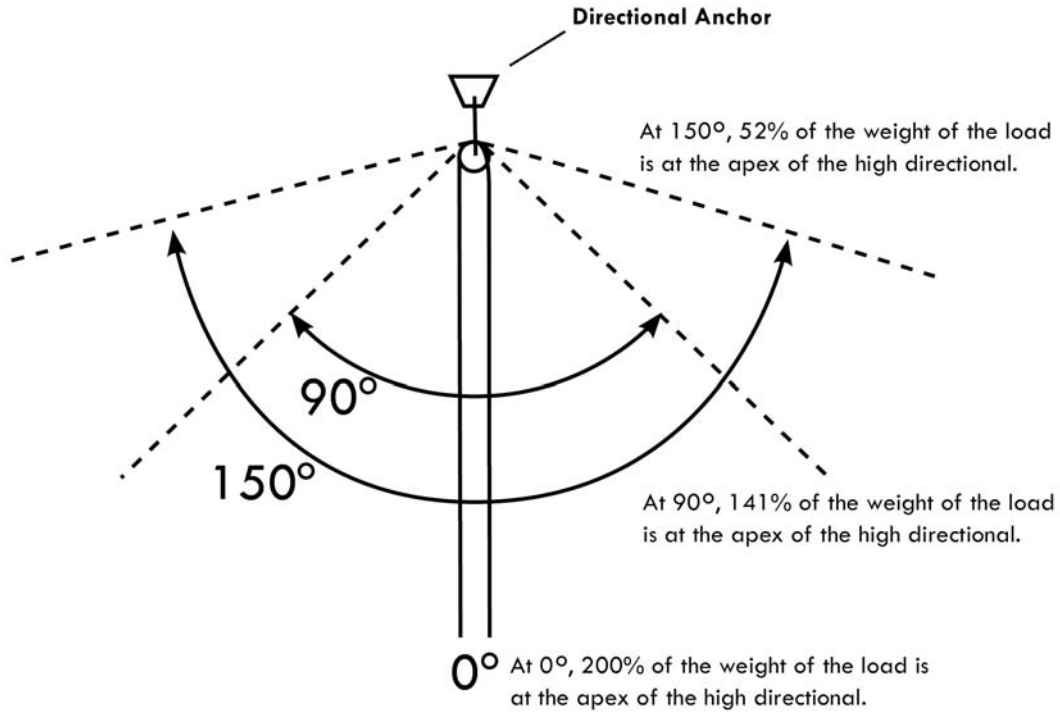
The resultant of a pulley is the absolute indicator of where the force of the pulley is directed



**Lesson 5: Resultant Forces Applied to Tripods and Quad-pods (Cont.)**

**Vector Formula for Directional Pulley Anchors**

Load on Pulley =  $\text{COS} \frac{\angle}{2}$  (2) ( $\angle$  = vector angle)

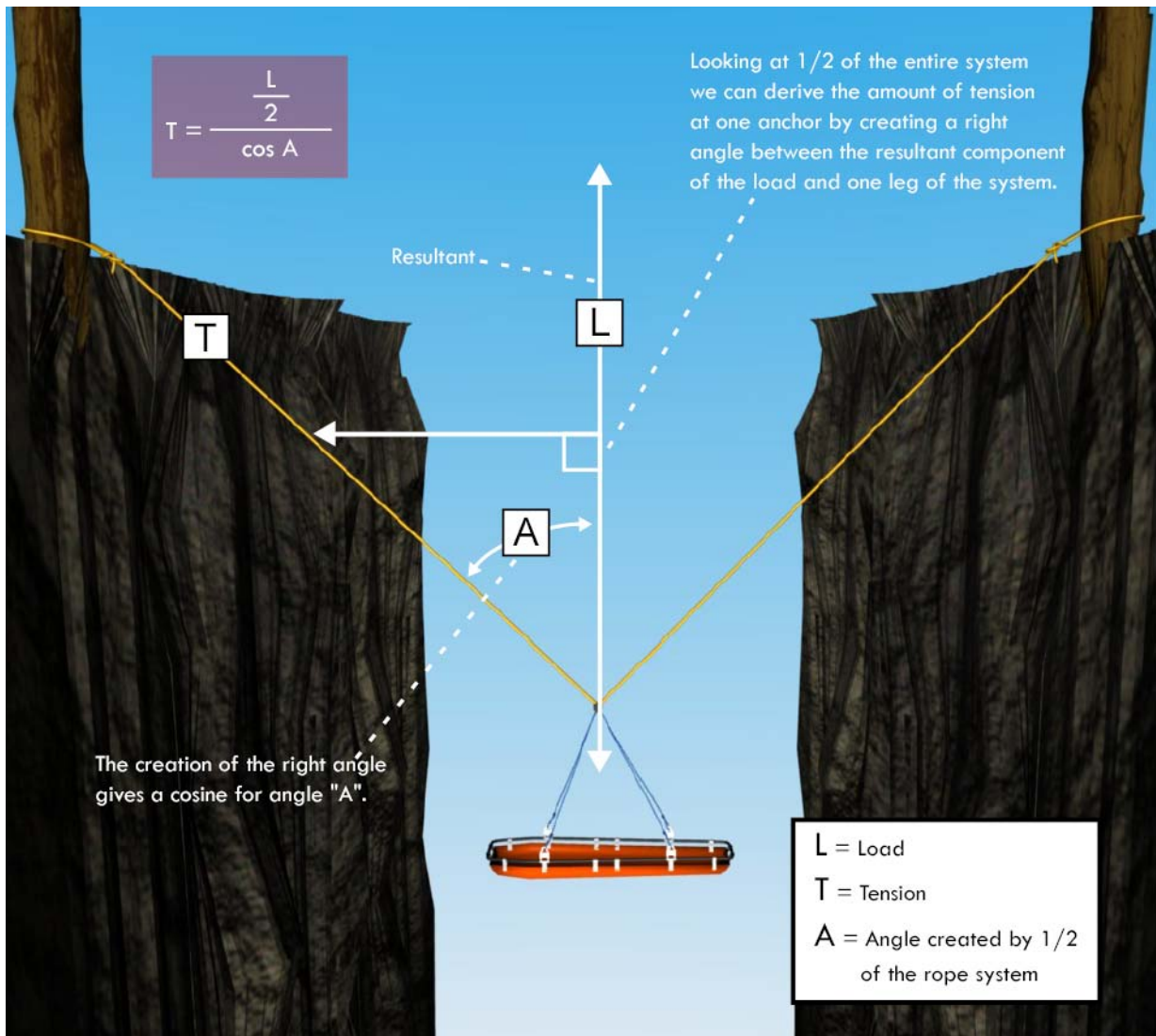


**High Directional Vector Force:  
Degree of Angle % of Weight of Load At  
High Directional**

0.....	200%
5.....	199.9%
10.....	199%
15.....	198%
20.....	197%
25.....	195%
30.....	193%
35.....	191%
40.....	188%
45.....	185%
50.....	181%
60.....	173%
65.....	169%
70.....	164%
75.....	159%
80.....	153%
85.....	147%
90.....	141%
95.....	135%
100.....	129%

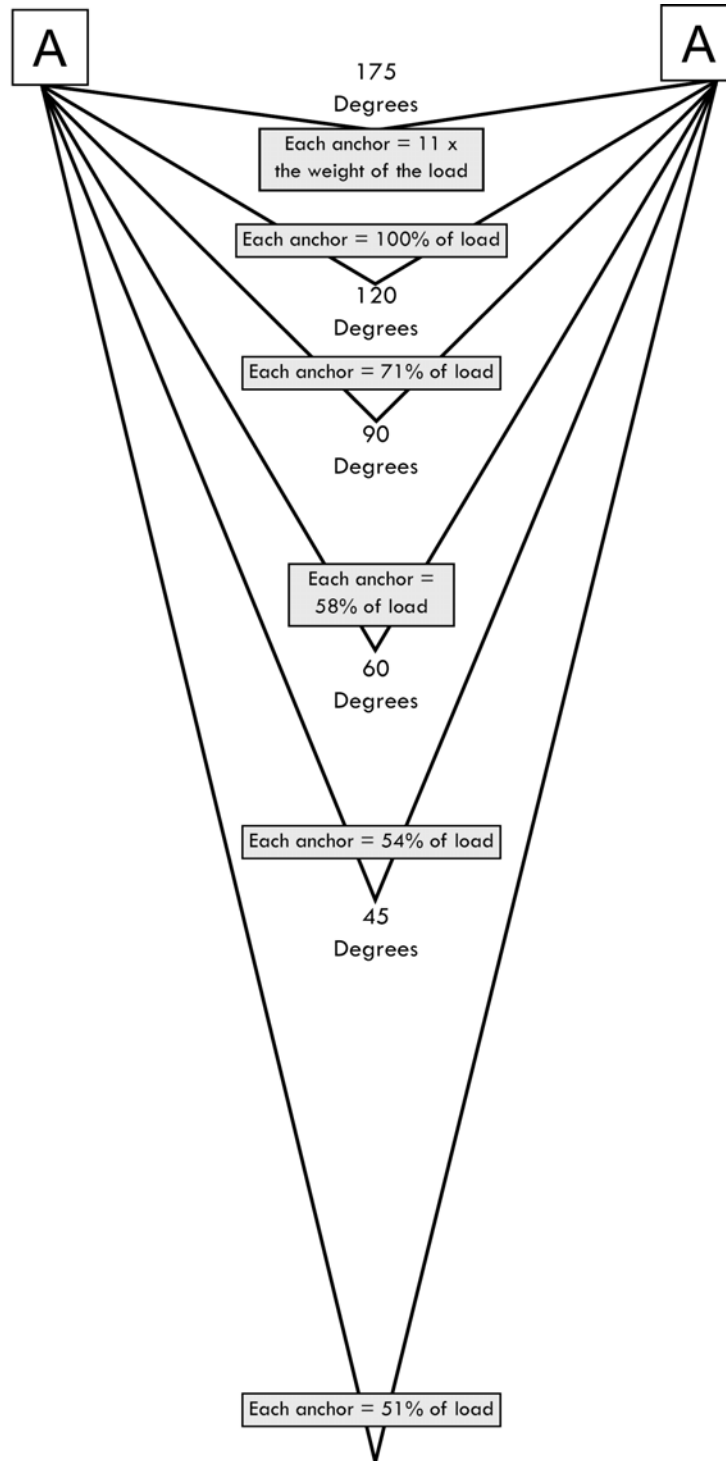
105	.122%
110	.115%
115	.107%
120	.100%
125	.92%
130	.85%
135	.77%
140	.68%
145	.60%
150	.52%
155	.43%
160	.35%
165	.26%
170	.17%
175	.8%
180	.0%

**Vector Formula for Multipoint Anchors**



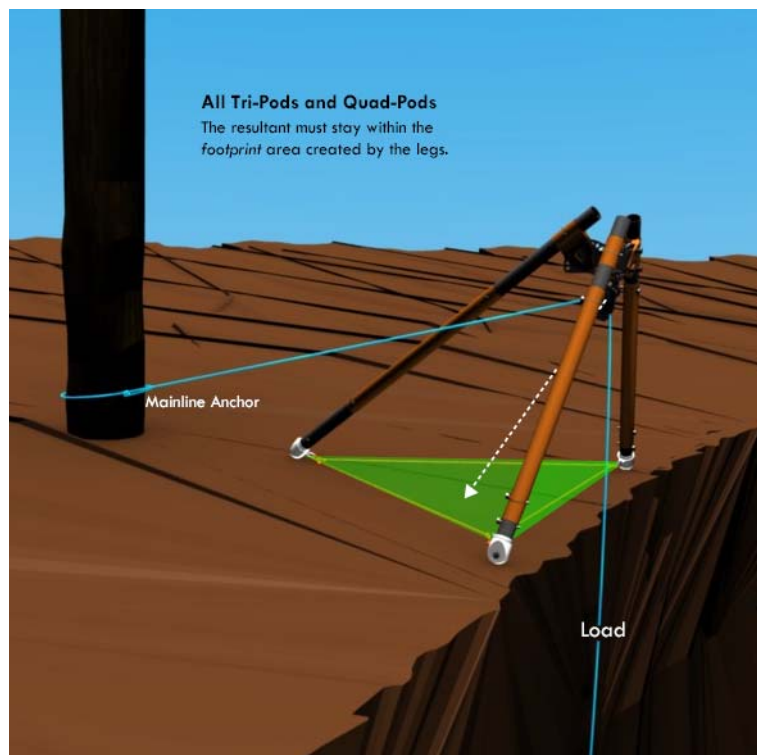
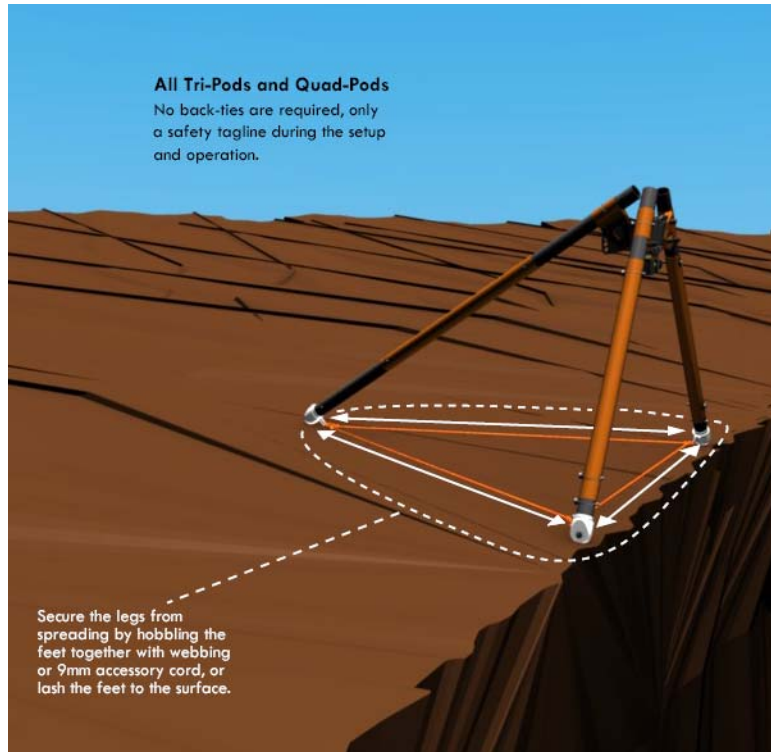
**Lesson 5: Resultant Forces Applied to Tripods and Quad-pods (Cont.)**

Anchor Vector Forces	
Degree	% of Mass
0	50%
5	50.05%
10	50.2%
15	50.4%
20	50.8%
25	51.2%
30	51.8%
35	52.4%
40	53.2%
45	54.1%
50	55.2%
55	56.4%
60	57.7%
65	59.3%
70	61.1%
75	63.1%
80	65.3%
85	67.8%
90	70.7%
95	74%
100	77.8%
105	82.1%
110	87.1%
115	93.1%
120	100%
125	108%
130	118%
135	131%
140	146%
1045	166%
150	193%
155	231%
160	287%
165	382%
170	575%
175	1136%



## Lesson 5: Resultant Forces Applied to Tripods and Quad-pods (Cont.)

### Schematics for Elevated Anchor Back-ties and Resultant Placement





## Lesson 6: Edge Safety Considerations

By the end of this lesson, you should expect to understand:

- Overall edge safety procedures through the use of taglines
- The importance of tripod safety lines when working near an edge
- Travel restraint/fall arrest systems near an edge

### Edge Management Protocol

When approaching an unprotected edge, such as in a mountainous location or an industrial site that is void of hand railings or other reliable fall protection systems, the elevated anchor system needs to be belayed into place using a single tagline.

Once in place, leave the tagline connected to the system and tied off at a suitable anchor as a precaution against a dynamic event. A dynamic event could include any number of things, like the surface of a mountain edge falling off, or even a mainline failure. Although the system belay would arrest the load, the mainline could possibly jam the high directional pulley and radically alter the resultant causing the tripod to topple over the edge onto the rescuers and subject.

When the feet have been adequately secured to a suitable anchor, a tagline connected to the head of the tripod or quad-pod is not needed during the actual rescue operation.

All other Multipod configurations are typically held in place by their back-tie system, *this however, does not negate the need to belay the components during the set up and tear down process near a dangerous edge.*

Avoid rigging the system belay through the top of any marginal elevated anchor system. As good as today's modern manufactured elevated anchor systems are, they are still dependent on the integrity of the surface they rest upon and the abilities of the riggers. As a general rule, belay lines should be rigged independent of the tripod or quad-pod.

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**Lesson 6: Edge Safety Considerations (Cont.)**

Belay lines may be connected to elevated anchors that are deemed bombproof, such as a structural “I” beam, providing that the belay has a connection point on the bombproof anchor that is independent of the mainline connection.

Any personnel assigned to the rigging of an elevated anchor system must be attached to a adequate travel resistant/fall arrest system while working near the edge.



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## Lesson 7: Fall Factors

By the end of this lesson, you should expect to understand:

- What a Fall Factor is
- How to calculate a Fall Factor
- How Fall Factors impact the rigging of an elevated anchor system

### Fall Factors

The severity of a fall can be determined by an equation called the *Fall Factor*. The higher the Fall Factor equation, the greater the severity of the fall.

The Fall Factor is determined by dividing the distance of the fall by the length of the fall arrest material (i.e. rope, webbing, lanyards) in service between the load and the fall arrest anchor.

*Theoretical Fall Factor (TFF)*: (as we already know with other aspects of rope rigging) friction plays a major role in the efficiency of a rope system. So too, any and all carabiners that the belay rope bends through will create more friction, and subtract from the efficiency of the belay. This is the coefficient of friction for the belay. The coefficient of friction for the belay rope going over the surface will come into play and will in essence, shorten the belay rope and render a higher Fall Factor. Added friction, in effect, subtracts from the length of the belay rope in service giving a higher Fall Factor. This may be referred to as the *Actual Fall Factor (AFF)*.

The higher the climber is from the belayer, and the longer the amount of belay rope is in service, the lower the risk of serious injury or death from a fall.

As a rule of thumb, try to keep the ideal Fall Factor less than 0.5 with dynamic rope and less than 0.25 with static rope. Serious injury may occur from a TFF of “1”, and death may occur from a TFF of “2”.



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## Lesson 8: Command and Communication

By the end of this lesson, you should expect to understand:

- Why a pre-rescue team meeting is important
- The functions and duties of all rescue personnel
- Basic communication techniques between the litter attendant and the top

### Pre-Rescue Team Meeting:

- This meeting is the time that command allows input from team members, most notably senior members and/or seasoned riggers
- Once suggestions have been submitted to command, command will decide a course of action
- Task assignments are made by command
- The final course of action must be followed, without any freelancing of roles or tasks
- Any deviation from the original rescue plan must first be brought to the attention of command; the deviation from the plan will only take place through the authority of command

### Assignment of Tasks

- Command will assign tasks based on the skills of the members on hand
- Members that have been assigned a task will follow the course of action needed to complete that task in a safe and timely manner
- When an assigned task has been completed, the team member will notify command and await further assignment
- At no time shall an assigned member deviate from the assigned task without authority of command

### Command

- Command is the person in charge of the rescue operation

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## Lesson 8: Command and Communication (Cont.)

- Command is usually a senior member who has the respect of the team
- Command is typically one of the better riggers on the team
- Command must be visible to the team at all times
- Command should avoid getting involved at the task level
- Command must keep an eye on the big picture overlooking the complete operation from the beginning of the rigging to the end of the dismantling of the scene

### Control Officer

- The control officer is the member assigned by command to maintain rescue package movement control and communication of movement with the whole team
- Many times, usually depending on available manpower, the position of command and control officer may be handled by the same person
- The control officer must maintain a very simple and direct form of communication congruent to team procedures, and immediately recognizable to the entire team
- **With the exception of a perceived safety issue that allows any team member to call for a “stop”, only the control officer is allowed to give verbal commands**
- All verbal commands from the control officer should be repeated by the task leader the command is addressed to. **All talking must be kept to a minimum!**

### Safety

- Although all members must keep their eyes open for safety issues, the Safety Officer is the person specifically in charge of overseeing all safety issues of the rescue operation
- The Safety Officer is usually a senior member who has the respect of the team

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## Lesson 8: Command and Communication (Cont.)

- The Safety Officer is typically one of the better riggers on the team
- The Safety Officer should avoid getting involved at the task level
- Safety must keep an eye on the big picture, overlooking the complete operation from the beginning of the rigging to the end of the dismantling of the scene

### Belay

- The team member charged with rigging the belay system must stay focused on completing the assigned task of belay anchor selection and rigging and operating the belay congruent to team procedures and the direction of command

### Mainline

- The team member charged with rigging the mainline system must stay focused on completing the assigned task of mainline anchor selection and rigging and operating the mainline congruent to team procedures and the direction of command

### Elevated Anchor Team

- The members assigned to rigging the elevated anchor system must stay focused on completing the assigned task of fall line selection and rigging of the elevated anchor system congruent to the direction of command
- When using a portable anchor system as an elevated point on or near an exposed edge, the elevated anchor team must assemble the portable anchor system at a safe distance from the edge, then advance the portable anchor system towards the edge in a highly controlled and calculated manner
- When advancing the portable anchor system towards an exposed edge, a tagline/belay line must first be affixed to the portable anchor and secured to an appropriate anchor for the duration of the rescue operation. The exception to this requirement of securing the tagline is when back-ties are a component of the portable anchor system; in this case, once the back-ties are in place, the tagline may be removed

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## Lesson 8: Command and Communication (Cont.)

### Attendant(s)

- The attendant is the team member assigned to control the victim/rescue adjunct (i.e. litter or pick-off system)
- The attendant is responsible for their own personal rigging and that of the victim/rescue adjunct
- The attendant must be physically and mentally capable of victim management
- The attendant, when possible, should possess the appropriate level of EMS skills required to meet the emergency medical needs of the victim
- The attendant must completely understand the rigging of the victim/rescue adjunct

### Command and Communication Skills

Communication skills are critical during any rescue event. Communication during technical rescue, especially those that require the movement and control of rope, must be kept as simple as possible with typically only the control officer giving orders as directed by the needs of the rescue package.

Language should be limited as much as possible to only directional movement of a rope system. “Stop”, “Down”, and “Up” are usually all that are required. “Down” and “Up” typically mean slow and controlled movement. In those cases of incremental movement requirements, a team rearranged determination of command terms should be agreed upon and practiced (i.e. “Down Half Speed” or “Up Half Speed”).

Pre-tensioning rope systems prior to putting the rescuer/attendant over the edge is a frequent practice with many teams. Pre-tensioning the system while using an elevated anchor system requires a variation that must be practiced. In this case the rescuer/attendant must be on the belay and under the elevated point to perform a very deliberate and gradual loading of the mainline rope.

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**Lesson 8: Command and Communication (Cont.)**

The following is an example of command and communication protocol for the control officer:

“EVERYONE TAKE YOUR POSITIONS; QUIET ON THE GROUNDS.”

“BELAY READY?” *(Belayer repeats)* “BELAY READY”

“MAINLINE READY?” *(Mainline control repeats)* “MAINLINE READY”

“EDGE READY?” *(Edge control repeats)* “EDGE READY”

“ATTENDANT READY?” *(Attendant repeats)* “ATTENDANT READY”

“SAFETY READY?” *(Safety repeats)* “SAFETY READY”

“ON BELAY?” *(Belayer repeats)* “ON BELAY”

“ATTENDANT, MOVE TO THE EDGE”

*(Attendant repeats and moves to the edge and under the elevated anchor point)*

“MAINLINE TAKE UP ALL SLACK, LOCK AND LOAD, ADVISE WHEN READY”

*(Mainline repeats the command and advises when ready)* “MAINLINE READY”

“ATTENDANT, LOAD THE SYSTEM” *(Attendant gently loads the mainline)*

“MAINLINE DOWN” *(Mainline control repeats)* “MAINLINE DOWN:”





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## Lesson 9: TerrAdaptor™ Inspection and Maintenance Guidelines

By the end of this lesson, you should expect to understand:

- How to conduct a basic pre-use inspection
- How to conduct an inspection after the TerrAdaptor™ has been set up
- How to maintain and store the TerrAdaptor™ after use
- When to remove the TerrAdaptor™ from service
- Usage logs and record keeping

### Before Use

The techniques employed in the proper and safe use of this equipment may only be learned through PERSONAL instruction received from an instructor who is well qualified in all phases of vertical rope work. Such instruction includes an evaluation of your comprehension, and ability to perform the tasks required to safely and efficiently use this equipment. Never attempt its use until you have received such instruction and are believed competent by your instructor. In addition, read and understand the attached User's Manual.

### Inspection for Use

Visually, and by touch, inspect each of the component parts of the TerrAdaptor™ Portable Anchor System for cracks, distortion, corrosion, scratches or gouges and sharp edges or rough areas. Compare these parts with new ones if necessary to determine their condition. Review the assembly section in the User's Manual for detailed descriptions of items to inspect. Remove each part from service if there is any doubt about its safety or serviceability.

### Set-Up for Use

This TerrAdaptor™ Portable Anchor System is a very versatile piece of equipment. This same versatility and sheer number of components in the system makes this an extremely complex set-up for proper and safe function. Users must get professional instruction as well as read and understand the attached user instructional manual.

---

## Lesson 9: TerrAdaptor™ Inspection and Maintenance Guidelines (Cont.)

### Maintenance After Use

Carefully clean and dry all component parts of this device to remove all dirt or foreign material and moisture. Minor sharp edges may be smoothed with a fine abrasive cloth before cleaning; store in a clean, dry place.

### Removal from Service

This TerrAdaptor™ Portable Anchor System and/or component pieces should be removed from service if distortion of any part is apparent, if any cracks are apparent, if exposed to heat sufficient to alter its surface appearance or if it has scratches or gouges of more than a superficial nature. Review the assembly section of the User's Manual for detailed descriptions of potential problems with component parts.

### Additional Information

Additional information regarding this type of equipment can be found in the following publications:

NFPA 1500, *Standard on Fire Department Occupational Safety and Health Program*  
NFPA 1983, *Standard on Life Safety Rope and Equipment for Emergency Services*  
TerrAdaptor™ User's Manual (see Appendix)

### Records

It is suggested that the user of this portable anchor system keep a permanent record listing the date and results of each usage inspection. Such record should show, at a minimum, inspection for all of the following conditions for each component of the system. Refer to the User's Manual for detailed explanations of each component:

- Cleanliness
- Dryness
- Corrosion

---

**Lesson 9: TerrAdaptor™ Inspection and Maintenance Guidelines (Cont.)**

- Distortion
- Excessive wear
- Scratches
- Gouges
- Sharp edges
- Presence of User's Information Sheet and User's Manual



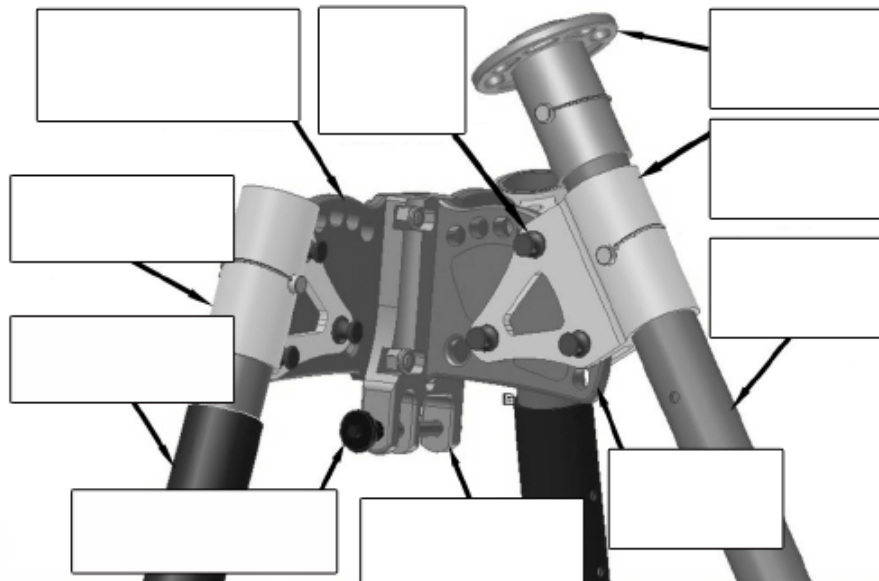
## Appendix



**TerrAdaptor™ Module 1 - Written Exam (30 points total)**

Please circle the correct answer

1. NFPA has the authority to enforce or regulate the standards it has published. (1 pt)
  - a. True
  - b. False
2. NFPA does not independently test, evaluate or verify the accuracy of any information or the soundness of any judgments contained in its codes and standards. (1 pt)
  - a. True
  - b. False
3. To meet the requirements of NFPA 1670 for rope rescue at the Technician Level, technicians must be proficient in the following skill sets: (1 pt)
  - a. Understanding of the basic physics involved in constructing rope rescue systems, including system safety factors, critical angles and the causes and effects of force multipliers within rope rescue systems.
  - b. Ability to construct an elevated point to facilitate safe transition of rescuers or victims over difficult edges
  - c. Ability to construct horizontal systems, offsets and highlines
  - d. All of the above
4. Using the photo below, identify the correct name of each part. (10pts)



**TerrAdaptor™ Module 1 - Written Exam (30 points total) (Cont.)**

5. How many approved points of attachment are there on the tripod head of the TerrAdaptor™? (1 pt)
  - a. 1
  - b. 2
  - c. 3
  - d. 4
  - e. 5
6. Care and maintenance of the TerrAdaptor™ includes which of the following?
  - a. Clean parts only with SMC TD09 cleaning oil.
  - b. Check that release buttons move freely.
  - c. Check that pins are not bent or dented by installing them into yoke.
  - d. All of the above.
  - e. Only b and c.
7. When using the TerrAdaptor™, do not clip into the head angle adjustment holes as these are not designed as load bearing connection points. (1 pt)
  - a. True
  - b. False
8. When using the TerrAdaptor™, the symmetric tripod has an NFPA “G” rating up to: (1 pt)
  - a. 5 feet
  - b. 7 feet
  - c. 9 feet
  - d. 11 feet
9. The resultant of a pulley is the: (1 pt)
  - a. Size of the sheave.
  - b. Manufacturers rating.
  - c. Absolute indicator of where the force of that pulley is directed.
  - d. UL labeling that assures the product meets NFPA 1983.
10. What is the percentage of the load on a high directional pulley with a vector angle of 90 degrees? (1 pt)
  - a. 50%
  - b. 45%
  - c. 71%
  - d. 200%
  - e. 141%



**TerrAdaptor™ Module 1 - Written Exam (30 points total) (Cont.)**

11. What is the percentage of the load on a high directional pulley with a vector angle of 120 degrees? (1 pt)
  - a. 100%
  - b. 50%
  - c. 71%
  - d. 145%
  - e. 200%
12. When using a tripod for the lifting of a victim out of a hole, the victim must stay within the footprint of the legs of the tripod. (1 pt)
  - a. True
  - b. False
13. A Fall Factor is: (1 pt)
  - a. The equation that determines the severity of a fall.
  - b. Determined by dividing the distance of a fall by the length of the fall arrest material in service between the load and the fall arrest anchor.
  - c. Affected by added friction on the belay rope.
  - d. All of the above.
14. During the pre-rescue team meeting: (1 pt)
  - a. It is important that a high carbohydrate snack be given to each member.
  - b. It is important the command allow input from the team members.
  - c. The rescue plan is put into place.
  - d. All of the above.
  - e. Only b and c.
15. The control officer is always command. (1 pt)
  - a. True
  - b. False
16. When using a portable anchor system as an elevated point on or near an exposed edge: (1 pt)
  - a. The elevated anchor team must assemble the portable anchor system at a safe distance from the edge.
  - b. Advance the portable anchor system towards the edge in a highly controlled and calculated manner.
  - c. A tagline/belay line must be affixed to the portable anchor and secured to an appropriate anchor for the duration of the rescue operation.
  - d. When back-ties are a component of the portable anchor system, once the back-ties are in place, the tagline may be removed.
  - e. All of the above.

---

**TerrAdaptor™ Module 1 - Written Exam (30 points total) (Cont.)**

17. Attendant's tasks include: (1 pt)
- a. Control of the victim/rescue adjunct (i.e. litter or pick-off system).
  - b. Responsibility for the rigging the mainline.
  - c. Possession of the appropriate level of EMS skills required to meet the emergency medical needs of the victim.
  - d. A minimal understanding of the rigging of the victim/rescue adjunct
  - e. All of the above.
  - f. Only a and c.
18. The techniques employed in the proper and safe use of the TerrAdaptor™ may be learned solely through the personal use of this text. (1 pt)
- a. True
  - b. False
19. The TerrAdaptor™ Portable Anchor System and/or a component piece should be removed from service if: (1 pt)
- a. Distortion of any part is apparent.
  - b. Any cracks are apparent.
  - c. Exposed to heat sufficient to alter its surface appearance.
  - d. It has scratches or gouges of more than a superficial nature.
  - e. All of the above.
20. When rigging the TerrAdaptor™ as a tripod: (1 pt)
- a. Be sure to secure the legs from spreading by hobbling the feet together with webbing or 9mm accessory cord, or lash the feet to the surface.
  - b. No back-ties are required, only a safety tagline during the set-up and operation.
  - c. The resultant must stay within the *footprint* area created by the legs.
  - d. All of the above.
  - e. Only a and c.

**VERTICAL RESCUE SOLUTIONS  
BY PMI  
WAIVER OF LIABILITY/CONSENT FOR PARTICIPATION**

**WARNING!**

---

All activities pertaining and relating to climbing, mountaineering, work at height, and rescue may be potentially dangerous. Injury or death could occur while engaged in these activities.

This VRS by PMI Course is designed to inform and familiarize you with the best use of PMI manufactured and/or distributed equipment. These operations will be run with full attention to safety. However, due to the nature of on-rope activities, VRS, PMI, our consultants or instructors, nor anyone else can guarantee your safety. Your participation, either as observer or as participant, must be undertaken at your own risk. You are welcome to observe the demonstrations and operations, or you may participate in these activities upon the invitation of those in charge of the course, at your own risk.

---

**ACKNOWLEDGEMENT AND ASSUMPTION OF RISKS:**

- I understand and am aware that there (are) may be certain risks involved in activities related to any instruction of work at height, rescue, and related activities, including the risk of physical injury and death.
  
- I hereby recognize, acknowledge, accept and assume such risks. I do not need to be warned as to any potential dangers as I am fully aware of such potentially dangerous conditions.
  
- I hereby verify that, to the best of my knowledge, I am free from any physical/medical condition(s) which would interfere with my ability to work at height in a safe and satisfactory manner, or put myself or others at risk, including but not limited to:
  - Pregnancy
  - High blood pressure
  - Influence of Drugs or Alcohol
  - Diabetes
  - Dizziness or Difficulty With Balance
  - Epilepsy, Fits, Blackouts
  - Fear of Heights or Vertigo
  - Heart Disease
  - Impaired Limb Function
  - Psychiatric Illness
  
- VRS by PMI Pigeon Mountain Industries endeavor to provide quality service to our customers. However, VRS by PMI and Pigeon Mountain Industries do not guarantee the accuracy or completeness of any information in, or provided in connection with, services provided. VRS by PMI and Pigeon Mountain Industries are not responsible for any errors or omissions, or for the results obtained from the use of such information. I am aware and have been advised that VRS by PMI and Pigeon Mountain Industries do not guarantee the safety of myself and those participating in the program.

**RELEASE IN FULL**

I hereby on my own behalf and on behalf of my heirs and assigns do forever release and discharge VRS by PMI and Pigeon Mountain Industries, as well as any of their agents, employees, representatives, instructors or volunteers (hereinafter referred to as the Released Parties) from any and all claims of any type for injuries, damages or even death whether caused by the negligence or other wrongful conduct of any of the Release Parties. I agree to fully indemnify and hold harmless the Released Parties for any and all claims of any type which may be presented against the Released Parties for any claim or lawsuit for injuries or damages arising out of my voluntary participation in the activities conducted by VRS by PMI and Pigeon Mountain Industries.

I understand that I am releasing any right that I, my estate, heirs, or assigns might have to sue any of the Released Parties and I do this of my own free will in consideration for being allowed to participate in those activities conducted by the Release Parties on the \_\_\_\_\_ day of \_\_\_\_\_, 200\_\_ at \_\_\_\_\_.

I authorize and release to VRS by PMI and Pigeon Mountain Industries the use of my image and any photographic or video recording taken by VRS by PMI or Pigeon Mountain Industries, of any activities in which I participate.

I agree to indemnify and hold harmless VRS by PMI and Pigeon Mountain Industries, their employees, agents, volunteers from all claims, damages, losses, injuries and expenses arising out of or resulting from my participation in these activities. In short, I cannot sue VRS by PMI or Pigeon Mountain Industries Inc, and if I do, I cannot collect any money.

I authorize and release to VRS by PMI and Pigeon Mountain Industries the use of my image in any photograph or video recording taken by VRS by PMI or Pigeon Mountain Industries.

***I have read the above statements and understand them. I understand this is a legal document and that by signing it I am giving up my right to sue or otherwise make any claim against Vertical Rescue Solutions by PMI or Pigeon Mountain Industries Inc. or any of its volunteers, employees, agents, leaders, instructors, guides, officers, directors or representatives which may arise during my participation in any activities of VRS by PMI or Pigeon Mountain Industries, Inc.***

\_\_\_\_\_  
Signed

\_\_\_\_\_  
Employer

\_\_\_\_\_  
Printed Name

\_\_\_\_\_  
City, State

\_\_\_\_\_  
Date

Witness: VRS by PMI representative or employee:

\_\_\_\_\_  
Address

\_\_\_\_\_  
Signed

\_\_\_\_\_  
Telephone

\_\_\_\_\_  
Printed Name







# TERRADAPTOR

PORTABLE ANCHOR SYSTEM



USER MANUAL



# **!!!!WARNING!!!**

You Must Thoroughly Read and Understand all instructions provided in this manual before use.

You could be killed or seriously injured if you do not read and understand the user information before using this piece of equipment.

Special Training and knowledge are required to use this equipment.

Use and inspect this equipment only in accordance with these instructions.

# **!!!!WARNING!!!**



# TERRADAPTOR

## PORTABLE ANCHOR SYSTEM

(PATENT PENDING)

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# Section 1

## Introduction

### Product Overview

Congratulations on your purchase of the TerrAdaptor Portable Anchor System. The TerrAdaptor is the most versatile portable anchor system available for use in rescue, industrial, and wilderness environments. This innovative high directional system is the result of the combined years of experience in the design, use and manufacturing of equipment by Pigeon Mountain Industries (PMI), Skedco, and Seattle Manufacturing Corporation (SMC).

The TerrAdaptor system is unique in that it configures as a gin pole/monopod, an A-Frame/Bipod, a Quadpod and, of course, the most adjustable Tripod in the market today. Due to the extreme adjustability of the TerrAdaptor, countless non-standard configurations are available utilizing shallow angles and horizontals that are not available with other tripod systems in the market. With independently variable head angles and interchangeable components, the TerrAdaptor will adjust to your rescue environment whether it is rural, urban, industrial, or confined space.

### Layout of this Manual

This manual is designed to aid in the assembly and configuration of the TerrAdaptor Portable Anchor System. It is not designed to provide the user with the theory and practice of using portable anchor systems, as this comes only from extensive training from qualified trainers on such systems. **Do not attempt to use the TerrAdaptor without this specialized training as you could be killed or seriously injured.**

Section 2, Assembly Instruction, includes a detailed description of each of the major components of the TerrAdaptor System. This section explains how the individual pieces are used as well as how they are assembled together. Within each component description there is a “best practice” element, care and maintenance, as well as specific warnings for that element. Please refer to this section during routine inspection of the TerrAdaptor system as well as during your initial assembly process.

Section 3, Configurations, includes information regarding various standard configurations the TerrAdaptor system has been designed for. This section summarizes the various settings needed to achieve the configuration as well as the breaking strength achieved for the configuration. The NFPA and ASTM standard achieved at each configuration is also indicated, if applicable.

Section 4, Warranty and Replacement Parts, describes the warranty policy on your TerrAdaptor System and component parts. In addition, this section provides the listing of the component parts and their part numbers included in each kit



available for purchase. Please refer to this section upon receiving your kit to assure all of your parts are properly included in the kits, as well as for a list of replacement parts that are available from your dealer.

## **The TerrAdaptor System**

Multiple configurations of the TerrAdaptor Portable Anchor System can be built from various standard system components. The primary system revolves around the TerrAdaptor Tripod System (Part number NFPA230100). This system includes all of the necessary parts to assemble a standard symmetric tripod that provides the ability to reach a height of approximately 10-feet. The system comes packaged in three compact packable bags to make it easy to “grab your bags and go” as well as store the System together in an organized manner. The individual component pieces included in the TerrAdaptor Tripod System are listed in Section 4 of this manual.

To transition your Tripod to a Quadpod System, you can purchase the TerrAdaptor Quadpod Attachment Kit (Part Number 230105). This kit provides the fourth leg and attachment pieces necessary to transition your tripod into a quadpod. The individual component pieces included in the TerrAdaptor Quadpod are listed in Section 4 of this manual.

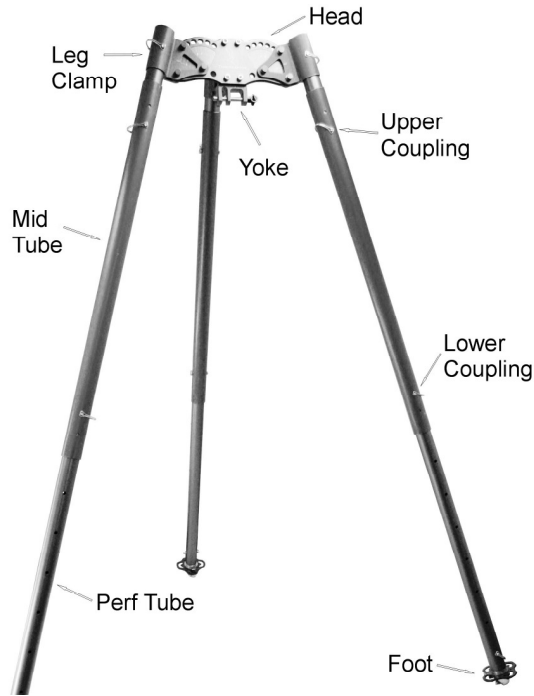
If your needs are fairly simple and a single gin pole is the best solution for your situation, you can purchase the TerrAdaptor Gin Pole Kit (Part number 230106). This kit includes a full leg kit to reach approximately 10 feet in height adjustability. The individual component pieces for this kit are listed in Section 4.

For those who typically encounter environments that require more than 10 feet of height, additional leg extension pieces (appropriately 4 feet in length) can be individually purchased for this use. This piece can also be used to provide one extra long leg if a tall “lazy leg” configuration is desired.

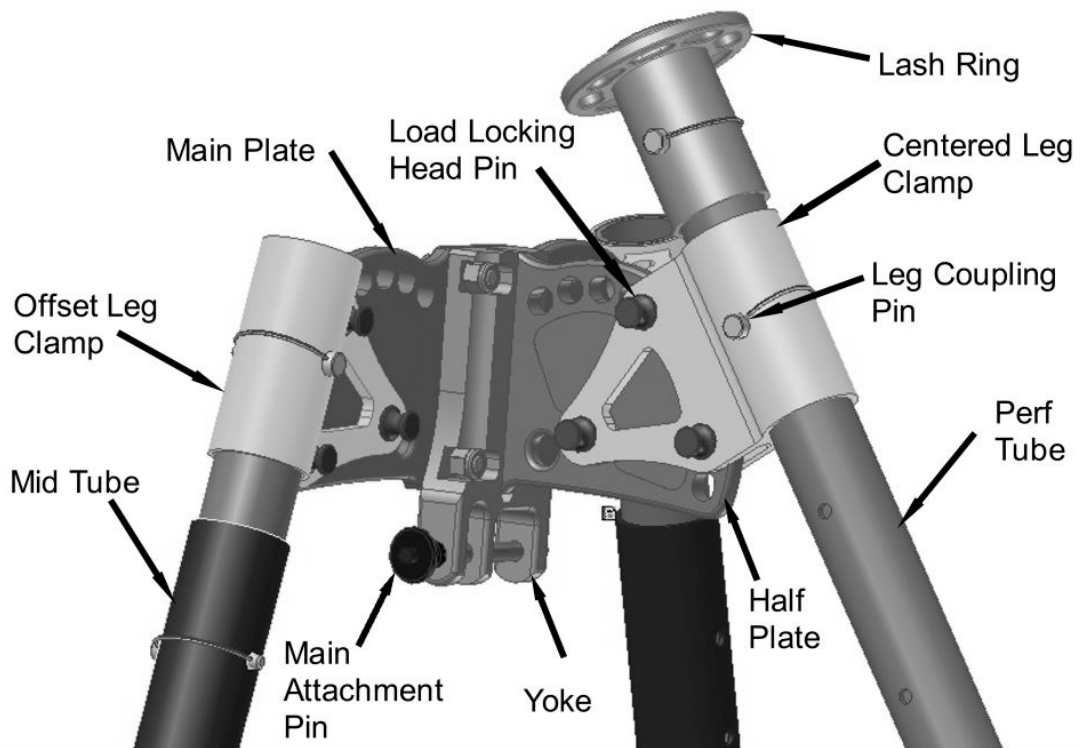
Other replacement parts and options are available for the TerrAdaptor system and are listed in Section 4 of this manual.

## Major component Overview

The images below are an overview of a tripod set-up.



An overview of the head section along with the correct names of each component is presented below. Please refer to this image while learning how to assemble the TerrAdaptor as outline in Section 2.



## **Testing Applied to the TerrAdaptor**

The TerrAdaptor system has been tested extensively in both lab and field environments. As a result, the TerrAdaptor Portable Anchor system in the standard symmetric tripod and quadpod configurations are the only systems of their kind to be certified by UL to NFPA 1983 (2006 ed.) Other useful configurations were also tested and have been included in this manual (Section 3) for reference purposes.

Each rescue situation is unique and the ultimate safety of the TerrAdaptor system rests in the knowledge and training of those setting up the system.

## **Warnings**

**Technical work and rescue, mountaineering and other rope assess activities are inherently dangerous. Any person or team using a portable anchor system must obtain qualified instruction prior to using such equipment in any manner. If you are not extremely versed in the understanding of resultant forces, high directional concepts and other basic issues regarding portable anchor systems theory, you are not qualified to use this device until adequately trained. Any person or team using the TerrAdaptor Portable Anchor System is responsible for their own decisions and actions. Failure to heed this warning can cause serious Injury or Death.**

Breaking Strengths listed in the configuration section are the maximum load sustained prior to system collapse. During testing, the typical system failure mode was the failure to sustain a load. This was due primarily to flexing and yielding of components, rather than the components themselves fracturing and releasing the load, as is typical in other rescue systems.

Bent or warped components are the symptom of a system that has been overloaded. Continuing to use bent or warped components will unpredictably alter the system strength, possibly resulting in injury or death. If bent or distorted components of any kind are discovered, immediately discontinue use of the TerrAdaptor system until components are replaced, a safety analysis of the system has been performed, and corrective action implemented.

Hardware item such as nuts, bolts, pins, etc, are specified by the manufacturer for strength and other characteristics which make them suitable for use in the TerrAdaptor system. Substituting with commonly available hardware store items may result in injury or death.

**As mentioned above, the breaking strengths presented represent the load prior to system collapse, not the working load of the system. The user is responsible for determining the proper working load required given the specific situation and the safety margins required to provide a safe environment for the circumstance.**

Please see our website [www.TerrAdaptor.com](http://www.TerrAdaptor.com) for a listing of trainers that have extensive training experience with portable anchor systems. These trainers have experience with the TerrAdaptor.

 **WARNING**

- **YOU COULD BE KILLED OR SERIOUSLY INJURED IF YOU DO NOT READ AND UNDERSTAND THE USER INFORMATION BEFORE USING THIS PIECE OF EQUIPMENT**
- **SPECIAL TRAINING AND KNOWLEDGE ARE REQUIRED TO USE THIS EQUIPMENT**
- **YOU MUST THOROUGHLY READ AND UNDERSTAND ALL MANUFACTURER'S INSTRUCTIONS BEFORE USE**



**Model NFPA230100**  
**TerrAdaptor Portable Anchor System**  
Manufactured by Seattle Manufacturing Corporation (SMC)  
Made in USA

**USER INFORMATION**

CLASSIFIED BY UNDERWRITERS LABORATORIES EMERGENCY SERVICES  
AUXILIARY EQUIPMENT IN ACCORDANCE WITH THE NATIONAL FIRE  
PROTECTION ASSOCIATION STANDARD ON LIFE SAFETY ROPE AND  
EQUIPMENT FOR EMERGENCY SERVICES NFPA 1983 (2006 edition)  
20JF

THIS PORTABLE ANCHOR SYSTEM MEETS THE AUXILIARY EQUIPMENT  
REQUIREMENTS OF NFPA 1983, STANDARD ON  
LIFE SAFETY ROPE AND EQUIPMENT FOR EMERGENCY SERVICES, 2006  
EDITION. MINIMUM BREAKING STRENGTH AND RATING ARE DETERMINED  
AT THE CONFIGURATION OF LOWEST STRENGTH PER MANUFACTURER'S  
INSTRUCTIONS

The TerrAdaptor Portable Anchor System is G Rated in the standard configuration for the Tripod and Quadpod configuration at a height of 9 feet or less with an MBS of 36kN.

**BEFORE USE**

The techniques employed in the proper and safe use of this equipment may only be learned through PERSONAL instruction received from an instructor who is well qualified in all phases of vertical rope work. Such instruction will include an evaluation of your comprehension of, and ability to perform, the tasks required to safely and efficiently use this equipment. Never attempt its use until you have received such instruction and are believed competent by your instructor. In addition, read and understand the attached user instruction manual.

**INSPECTION FOR USE**

Visually and by touch, inspect each of the component parts of the TerrAdaptor Portable Anchor System for cracks, distortion, corrosion, scratches or gouges, sharp edges or rough areas. Compare these parts with new ones if necessary to determine their condition. Review the assembly instruction manual section for detail descriptions of items to inspect. Remove each part from service if there is any doubt about its safety or serviceability

**SET UP FOR USE**

The TerrAdaptor Portable Anchor System is a very versatile piece of equipment. The versatility and the sheer number of components in the system make this an extremely complex set-up for proper and safe function. User must get professional instruction as well as read and understand the attached user instructional manual.

**MAINTENANCE AFTER USE**

Carefully clean and dry all component parts of this device to remove all dirt or foreign material and moisture. Minor sharp edges may be smoothed with a fine abrasive cloth, before cleaning. Store in a clean, dry place.

## **REMOVAL FROM SERVICE**

This TerrAdaptor Portable Anchor System and/or a component piece should be removed from service if distortion of any part is apparent, if any cracks are apparent, if exposed to heat sufficient to alter its surface appearance or if it has scratches or gouges of more than a superficial nature. Review the assembly instruction manual for detail descriptions of potential problems with component parts.

## **ADDITIONAL INFORMATION**

Additional information regarding this type of equipment can be found in the following publications:

NFPA 1500, *Standard on Fire Department Occupational Safety and Health Program*  
NFPA 1983, *Standard on Life Safety Rope and Equipment for Emergency Services*

## **RECORDS**

It is suggested that the user of this portable anchor system keep a permanent record listing the date and results of each usage inspection. Such record should show, as a minimum, inspection for all of the following conditions for each component of the system. Refer to the user manual for explanation detail for each component piece:

- Cleanliness
- Dryness
- Corrosion
- Distortion
- Excessive wear
- Scratches
- Gouges
- Sharp edges
- Presence of User Information sheet and User Instruction Manual.

## **USE OF THIS USER INFORMATION SHEET**

It is suggested that this User Information sheet be retained in a permanent record after it is separated from the TerrAdaptor Portable Anchor System and that a copy of it be kept with the device. It is suggested that the user refer to this User Instructions before and after each use of this device.

## **WARNING**

- **YOU COULD BE KILLED OR SERIOUSLY INJURED IF YOU DO NOT READ AND UNDERSTAND THE USER INFORMATION BEFORE USING THIS PIECE OF EQUIPMENT**
- **SPECIAL TRAINING AND KNOWLEDGE ARE REQUIRED TO USE THIS EQUIPMENT**
- **YOU MUST THOROUGHLY READ AND UNDERSTAND ALL MANUFACTURER'S INSTRUCTIONS BEFORE USE**
- **USE AND INSPECT THIS EQUIPMENT ONLY IN ACCORDANCE WITH THESE INSTRUCTIONS**

Manufactured by  
**SEATTLE MANUFACTURING CORPORATION**  
6930 SALASHAN PARKWAY- FERNDAL, WA. 98248 (800) 426-6251  
WWW.SMCGEAR.NET

This sheet has been prepared in accordance with the requirements of NFPA

## Section 2

### Assembly instructions

The TerrAdaptor is the most versatile and configurable portable anchor system on the market. This section will provide detailed information about each component in the system and how these components are assembled with one another. See Section 3 for instructions on setting up various configurations.

#### Leg Tube Connections

The height of the TerrAdaptor is easily adjusted by means of telescoping leg sections. Adjustment holes in small diameter leg sections (referred to as **Perf Tubes**) are labeled 1 through 9 and adjustment holes for the larger diameter mid section tubes (**Mid Tubes**) are labeled X and Y (fig1). Configuration charts assume legs are oriented with 1 at the bottom and 9 at top. A setting of X7 would indicate that the pin is to be used at the mid tube X hole and go through hole 7 on the perf tube. (Please note that the 7 will be covered up by the mid tube in this process).



Fig 1 Leg Markings

Leg connections and connections to various accessories are made by sliding the small diameter perf tube into the large diameter mid tube or other components and securing the connection with a **Leg Coupling Pin**. Leg coupling pins provide a secure connection when the pin is fully inserted and the bail is properly secured (fig 2).

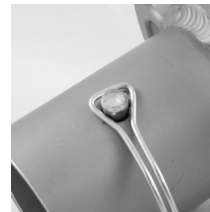


Fig 2 Properly Secured Leg Coupling Pin



Fig 3 Improperly Secured Leg Coupling Pin

#### Height Adjustability – Leg Assembly Configurations

The TerrAdaptor can be used with as few as one leg section and is extendable up to a total of 4 sections per leg. The shortest leg configuration consists of just one perf tube attached to the head. Longer legs are assembled by alternating mid and perf tubes to reach the desired height as follows:

1. The perf tube is the initial starting point (this tube section will always be used to attach to the head)
2. Position and connect any lash rings where they might be needed
3. Orient and attach leg clamps, either offset or centered
4. Attach a mid tube as close to the leg clamp as possible. This connection is referred to as the **Upper Leg Coupling** in configuration charts
5. A second perf tube can be added by connecting it to the bottom of the mid tube at whatever setting achieves your desired leg length. This

connection is referred to as the **Lower Leg Coupling** in configuration charts

6. For maximum length legs, an optional mid tube section (the 4<sup>th</sup> section) can be connected to the bottom of the perf tube. This connection is referred to as the **Optional Leg Coupling** in configuration charts
7. Any variety of foot options can be attached to the last leg section
8. No additional sections can be attached beyond the four mentioned above

### **Best Practice:**

When raising the height of a tripod, fully extend the lower leg section before extending the upper leg section. The legs are strongest when the most amount of tube overlap is near the head section. All configurations used should follow this practice.

### **Care & Maintenance:**

File small dents and burrs from surface of leg sections. Clean parts with a water rinse and wipe dry. Clean parts last longer and assemble easier.

Legs can be bent under severe loading. Retire leg sections that won't fully slide into or over another leg section. Due to the potential causes of bent legs, they are not automatically replaceable. See the warranty section to determine the process of replacing bent legs.

Leg coupling pins (Part number 230301) should be replaced when worn or bent.

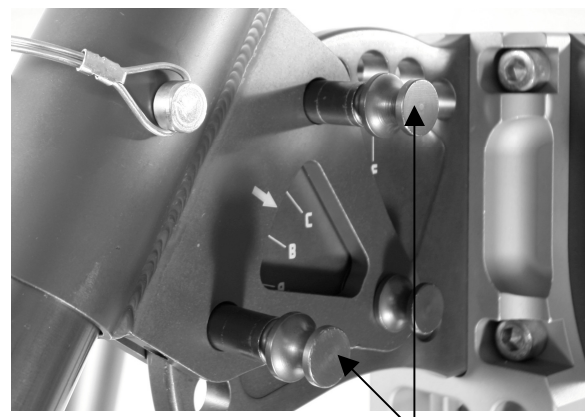
### **Warnings:**

- Do not tie into the leg coupling pin bail for any reason and avoid snagging with ropes and other rigging
- **Do not** substitute leg coupling pins (or other hardware) with "like-kind" from your local hardware store as they may not meet the necessary strength requirements. Replacement leg coupling pins can be purchased from your dealer.

## **Head Angle Adjustments**

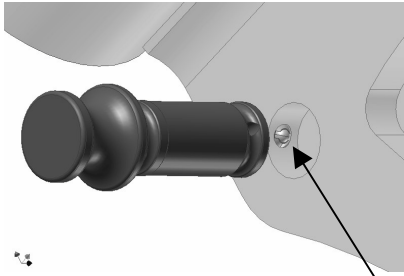
Entirely unique to the TerrAdaptor is the ability to adjust the head angle in multiple directions. This allows the head to remain level even when the terrain is not. A level head means that rigging attached is clean, safe, and organized.

The main head and the half plate each have 10 oval shaped holes on the outside curve which serve as adjustment holes. The inner 6 holes are marked A through F for angle reference purposes. Head angle adjustments are achieved by pivoting leg clamps to desired angles A through F and locking in place by using three **Load Locking Head Pins**.



**Fig 4 Load Locking Head Pins (Parked position)**





**Fig 5 Detent Pin used to “lock” the Load Locking Pin in place. Insert this way**

The Load locking head pins are designed to “lock” in place with the inclusion of a detent pin (fig 5) inserted into the leg clamp. Please note that the detent pin is only included on one side of each of the leg clamp assembly. The load locking pin must be inserted from the side which includes the detent pin. The load locking head pin can be locked in either the “parked” position as shown in figure 4 or the fully inserted position as shown in figure 6.

As the load locking head pins are designed to resist movement under loads, the head must be unloaded to adjust the leg angle. To adjust the angle, pull the two outer pins to the parked position, leaving the inner pin for the leg to pivot on (as configured in fig 4). Adjust to the desired or recommended angle and return the 2 parked pins to their fully installed positions (fig 6). Cotter pins are supplied for the load locking head pin if additional security is desired or if the pins could be subjected to inadvertent force which may push them out of position.



**Fig 6 Fully inserted pins properly protruding from leg clamp**

### **Best Practice:**

Head angle adjustments are easiest to make when the TerrAdaptor is unloaded and laying flat on ground prior to final installation. Use Configuration Tables in section 3 for recommended angles.

### **Care & Maintenance:**

Clean parts with water rinse and wipe dry. Clean parts last longer and adjust easier.

Check for excessive wear on the load locking head pin as indicated by wearing through of the hardcoat anodizing. Load locking head pins can be re-ordered as replacement parts (Part number 230260) when worn or lost.

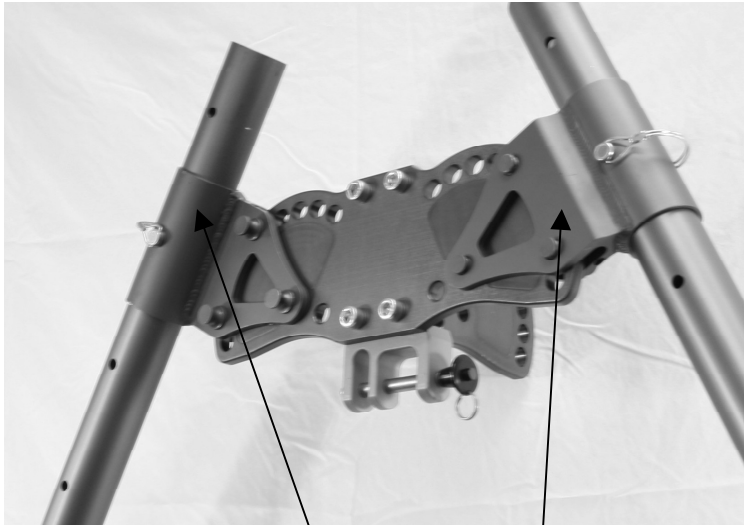
### **Warnings:**

- Do not use the device if the load locking head pins cannot be fully inserted. This may be an indication that the device is not properly configured or excessive loads have caused some distortion beyond safe use
- Check configuration tables for proper and safe angles (see section 3)
- Retire load locking head pins when wear through of the hardcoat anodizing is evident

## **Leg Clamps**

**Leg Clamps** are the means of attaching leg sections to the main head of the TerrAdaptor. Two types of clamps, **Centered** and **Offset**, are used in the tripod configuration.

Although the different style leg clamps are safe to use in any position, the centered clamp is most commonly used on the rear leg (fig 8), while the offset clamps are used in the side legs. For the typical tripod setup the offset clamps



**Fig 7** Offset Leg Clamps (left-facing forward; right-facing backwards) for illustrative purposes. Best practices has both offset leg clamps facing forward in a typical tripod configuration set up



**Fig 8** Rear leg with centered leg clamp. Legs are able to by-pass each other due to offset leg clamp orientation

are oriented with the offset leg tubes facing forward (away from the rear leg) providing the most stable and symmetric configuration.

In some setups, for space or rigging considerations, it may be desirable for both side legs to extend through the head. In this case, set one side leg clamp facing forward and the other backwards so that leg tubes may bypass each other without interference (fig 8). This alternating forward and backward leg clamp arrangement is also ideal for rigging sideways A-Frames with greater stability and a greater working area under the head.

The perf leg tubes slide through the leg clamps and are secured in position by using the leg coupling pin. Leg clamps are attached to the head by means of 3 load locking head pins as shown in figure 6.

### **Best Practice:**

Use centered leg clamp on the rear leg and set both offset leg clamps facing forward when configuring as a standard tripod.

For symmetric or edge-A tripods use centered leg clamp on the rear leg and set both offset leg clamps facing forward on the side legs.

For sideways A-frames use alternating forward and backward facing leg clamps.

### Care & Maintenance:

Clean parts with water rinse and wipe dry. Clean parts last longer and assemble easier. Check for excessive wear of load locking head pin.

Check leg clamps for warping. If leg clamps have been warped, the entire system may be at risk. Refer to warranty section for information on replacing the leg clamps.

### Warnings:

- Do not use device if any of the load locking head pins cannot be fully inserted
- Check configurations tables for proper and safe angles to be used
- Retire pins when worn or bent
- Do not use the system if leg clamps are warped or damaged such that they do not move freely with mating parts

### Feet

The TerrAdaptor comes standard with aluminum half round **Ball Feet** that are suitable for most leg angles and surfaces from hardpack dirt to most industrial surfaces. Wide leg angles and slick surfaces are a dangerous combination and in this situation the standard ball foot can be rotated so that its hardened steel spike will bite into the surface (fig 9).



Fig 9 Ball Foot with hobble ring, basket and quick link (left –spike rotated into ground, right – round surface on ground)

The standard ball feet are designed to accept a ring for attaching leg hobbles and **Baskets** whose large surfaces resist penetration of the legs into snow, sand, mud and other soft surfaces.

The optional **Articulating Foot Assembly** (Part number 230400) is available for the TerrAdaptor. Articulating feet swivel on a stainless ball and have a rubber pad for use on hard surfaces such as concrete or other flooring surfaces. Additionally, there are holes for attaching the foot by means of screws, bolts, or driven spikes. Three large holes are also available for clipping and lashing the foot to other objects. For extreme wide leg angles or other special circumstances the articulating foot can rotate 90 degrees to the flat position.



Fig 10 Articulating Foot with Hobble Plate and Quick link

All feet are easily attached to either the large or small diameter leg tubes by means of a leg coupling pin. Generous clearances between the feet and leg tubes allow mud, rocks and debris to not interfere with foot attachment.

### Best Practice:

Select the feet option (use of ball foot, spike or optional articulating foot) and feet position before setting up tripod. Feet are not easily exchanged when the TerrAdaptor is loaded or hobble is tight.

### Care & Maintenance:

Standard ball foot, articulating foot, hobble plate and quick link can be cleaned with a water rinse and simple wipe dry.

On all types of feet, check for bent or loose components before use. Ball foot replacement kits are available (Part number 230217) when retirement is needed.

If the spike becomes dull and rounded from use, the point can be lightly filed with a common file until sharpened.

### Warnings:

- Using the TerrAdaptor without feet is not advisable. Contact of leg ends on hard surfaces will permanently damage the legs
- Carabiners clipped into articulating feet should be properly positioned to avoid cross or side loading of the carabiners
- Do not clip into the basket

## Leg Hobble

**Leg Hobbles** are an important structural element for the TerrAdaptor. It is important to understand that the ultimate strength of any configuration depends on the ability to secure the feet against movement by either hobbling the legs together or direct attachment of the feet (or legs) through bolts, lashing, or other means of eliminating the possibility of movement of the legs.

The **Rope Hobble** provided with each TerrAdaptor is light, versatile, and much easier to use than a standard chain hobble. The rope and prussic cord used in the hobble is specially designed for low stretch and high strength. (If chain is used, the chain is attached to the hobble plate in a similar manner as the rope hobble (fig 11)).

After positioning and adjusting other elements of the TerrAdaptor, attach the rope hobble with a quick link on each rotating **Hobble Ring**. When attaching the rope hobble, clip the small sewn loop into the quick link on one foot. Slip the prussic to create a large loop of rope as seen in figure 12 and attach this loop to the quick link at the foot of the second leg. Grasp prussic and pull



Fig 11 Rope Hobble attachment by Quick Link



Fig 12 Rope Hobble Loop with Prussic. Sewn loop connected to quick link; large loop connected to 2<sup>nd</sup> leg quick link.

on tail of rope to take most of the slack out of loop. Repeat this with all three of the rope hobbles and fully close the quick links. To do final adjustments, tighten the rope hobble, one at a time, until each leg flexes in slightly, or in the case of an NFPA configuration, until the correct hobble length is reached. Tables included in Section 3 of this manual include the ideal hobble adjustment for the various configurations.

**Best Practice:**

Adjust the head angle, leg length and leg heights before the hobble is attached and tightened. Even a lightly tightened hobble can make other adjustments difficult to accomplish.

**Care & Maintenance:**

Check the rope hobble for cuts and worn areas and replace as necessary (Part number 230307).

Check the prussics for proper operation.

Make sure quick links are able to close completely and are free from burrs and sharp edges that may harm rope. File or sand if needed.

Check lashing holes in articulating feet for sharp edges or burrs and file or sand to remove as needed.

**Warnings:**

- Do not use the TerrAdaptor without feet hobbled, lashed or somehow secured into position
- Rope hobbles may deteriorate with prolonged exposure to the elements
- Sharp edges may cut ropes and webbing. Do not tie directly into holes and quick links which have sharp edges
- Use chain rather than rope when hobbling in an environment where chemicals are present that may damage or harm the rope

**Main attachment point**

The main load bearing attachment point on the TerrAdaptor is a two position yoke located at the bottom of the main head. Items are attached to the head with the use of the **Main Attachment Pin**, which is a quick release ball lock pin (fig 13). Insert the main attachment pin into the yoke while holding the release button in. Once the main attachment pin is in place, the release button will “pop” back out (fig 15) and the ball lock detent pins will engage and prevent the pin from being pulled back through the yoke.

- The narrow portion of the yoke is designed for an auxiliary sheave but is also suitable for a rescue carabiner or other gear (fig 14).
- The wide portion of the yoke is designed for bulky gear



**Fig 13 Main Attachment Yoke**



**Figure 14**

such as swivels or multi-sheave pulleys, but again, is suitable for all types of rescue gear. The wide yoke is also preferred for use with pulleys when shifting loads may side load a pulley restricted by the narrow yoke (fig 14).

### Best Practice:

When changing out gear there is no need to fully remove the main attachment pin from the yoke as it can be temporarily parked in the last attachment hole. This facilitates the ease of using both hands to maneuver the gear into the yoke and then sliding the pin back through the entire yoke area.



Fig 15 Release Button



Fig 16 Left pin – retired due to wear and detent pins not properly working;  
Right pin – in good working condition

### Care & Maintenance:

Clean parts with water rinse and wipe dry. Clean parts last longer and assemble easier.

Check that release button moves freely (fig 15) and that locking detent pins move in and out with release button (fig 16).

Check proper pin engagement in yoke by attempting to pull the main attachment pin out of the yoke without depressing the release button; if removable without depressing button, **do not use** and retire pin immediately (Part number 230311)

Check that pin is not bent or dented by installing pin into yoke; it should move freely in and out when release button is depressed.

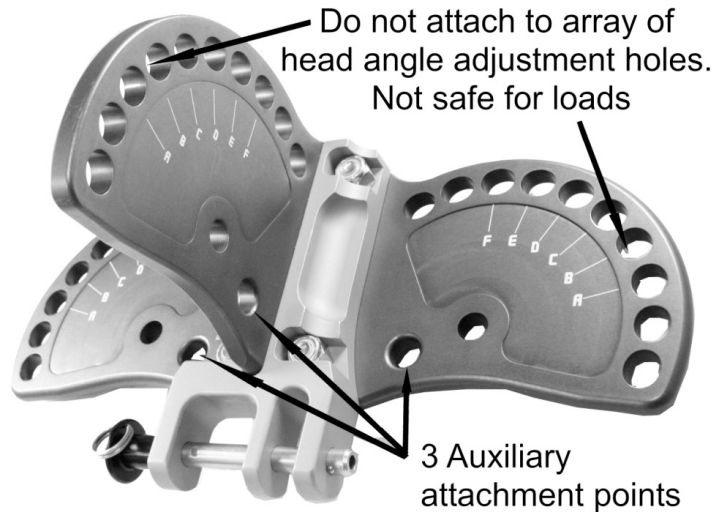
### Warnings:

- Do not run a moving rope directly over the main attachment pin. This may cause excessive wear on the pin and/or cause the pin to roll and potentially cause wear damage in the yoke attachment holes
- Retire main attachment pin if button or ball detents do not return to “popped” out position once released
- Do not use load attachment pin that is bent or does not function properly



## Auxiliary Attachment Points

There are three **Auxiliary Attachment Points** on a tripod head that are suitable for clipping carabiners and other rigging gear into (fig 17). Do not clip into the head angle adjustment holes as these are not designed as load bearing connection points.



**Fig 17 Head Auxiliary attachment points**

### **Care & Maintenance:**

Clean parts with water rinse and wipe dry. Clean parts last longer and assemble easier.

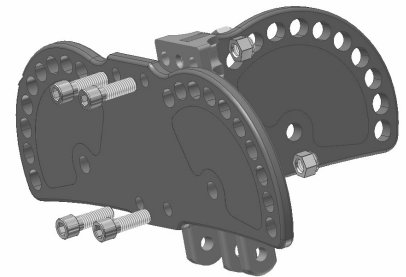
### **Warnings:**

- Do not clip into head angle adjustment holes

## Head Assembly – Tripod, Quadpod, A-Frame/Bi-Pod

The TerrAdaptor Tripod head consists of a **Main Plate** with a single attached **Half Plate**. A Quadpod head consists of a main plate with two half plates. Half plates can remain attached to the main plate even if they are not used in the configuration.

Half plates are attached to the main plate with the **Yoke** facing down. Attach the half plate to the main plate with 4 socket head bolts (1-1/4" long for tripod configuration and 1-3/4" long for a quadpod configuration). To remove half plates, loosen and remove all 4 bolts, then separate half plates from main plate.



**Fig 18 Half Plate attachment to Main Plate**

To attach half plates, clean all parts (including nuts and bolts) then select bolts (long for quadpod or short for tripod) and insert all 4 bolts and hand tighten into nylon locking nuts. Then tighten all 4 bolts to 450 in/lbs and check that assembly is tightly mated and that the bolt protrudes beyond flush on all four bolts.



**Fig 19 Bolt protrudes just beyond flush**

**Best Practice:**

Leaving the half plate on while using as an A-Frame allows for quicker setup times and more available lash and load points.

**Care & Maintenance:**

Check attachment holes for sharp edges and burrs. File or sand to remove sharp edges.

Check main and half plates for bends and/or warping.

This could indicate over loading of the head. See the warranty section for the replacement policy on these component parts.

Check to make sure all 4 bolts are tight before each use. Any small gap between the head plates and half plates may cause significant instability when the system is loaded.



**Fig 20 Do not remove these screws**

**Warnings:**

- The three screws attaching the half plate to yoke plate as shown in figure 20 are not user serviceable. **Do not remove**
- Do not lash or attach other gear to the array of holes intended for the load locking head pins. Damage in this area will disrupt normal adjustment of head angle (fig 17)
- **Do not** substitute nuts or bolts (or other hardware) with “like-kind” from your local hardware store as they may not meet the necessary strength requirements. Replacement bolt kits can be purchased from your dealer (Part number 230326)

**Lash Ring**

The TerrAdaptor **Lash Ring** is designed to provide multiple attach points for stabilizing the tripod. Each TerrAdaptor tripod comes with 2 lash rings and additional accessory lash rings are available for purchase, if desired. Lash rings can be installed in any position, in any quantity and in any orientation along the perf tubes (small diameter leg). For lighter loads, especially in a MonoPod configuration, the lash ring may serve as an auxiliary main attachment point.



**Fig 21 Lash ring on tripod**

**Best Practice:**

When a tieback could be subjected to a load over 5,000 lbs (22 kN), consider clipping directly into the stronger holes on the head plate rather than the lash ring.



### Care & Maintenance:

Check for bending and warping which could indicate overloading.

Because the lash ring is both tied into and clipped into, pay careful attention to sharp edges or burrs that may have developed. Lightly file or sand off burrs before use. Additional lash rings may be purchased (Part number 230230)



Fig 22 Lash Ring used near foot section for increased stability

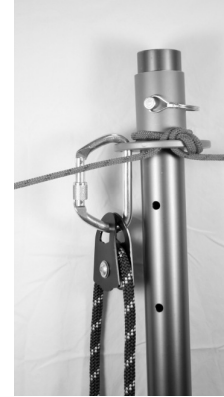


Fig 23 Lash Ring atop of gin pole as main attachment

### Warning:

- Carabiners clipped into lash rings should be positioned to avoid cross or side loading.

## Final Assembly – How to put it all together

The fastest and safest way to set up any configuration of the TerrAdaptor system is to start with it lying on the ground, if possible. **Each situation is different and users are responsible for ensuring their own safety while erecting and using this product.** Erecting a typical Tripod configuration can be done by laying it out on the ground as follows:

1. First set all legs to target height
2. Attach leg clamps and feet to the legs
3. Attach front legs to the main plate, setting leg angles at this time
4. Still leaving the TerrAdaptor flat on the ground, attach the rear leg to the half plate pivot point, and lock in angle, if desired
5. Rig safety ropes, lines or webbing; also installing rigging in the yoke at this time may be desirable especially when the yoke may be out of reach once tripod is standing
6. Raise the TerrAdaptor upright by lifting front legs and tilting towards the rear leg
7. Recheck all connections before continuing to rig tripod
8. Carefully and with all necessary safety measures, move unit into position before attaching hobbles or securing feet

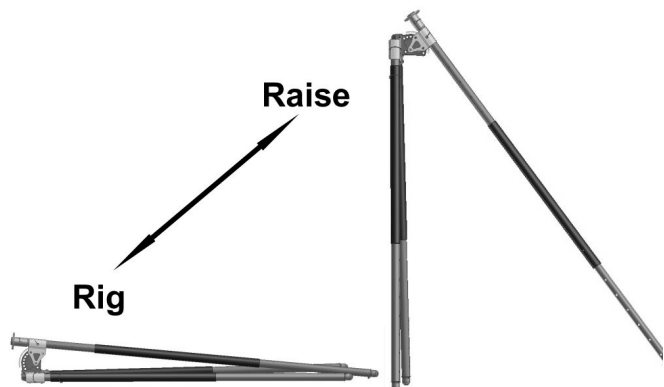


Fig 24 Final Assembly Steps

## Section 3

# Configurations and Set-up Tables

### Standard Configurations

The TerrAdaptor is both very modular and highly adjustable, lending itself to an almost unimaginable number of configurations. We have identified and tested a core group of configurations that we feel addresses a broad range of rope rescue applications. By providing this information we hope that users will find configurations that fit their needs as well as provide a basis for developing new configurations. **As with any piece of rope rescue gear, the user is ultimately responsible for ensuring that it meets their safety and performance requirements.**

The following section outlines the core group of configurations and provides the TerrAdaptor settings used to achieve the configurations. Each table includes the required setting for head angles, leg height adjustment references, and hobble lengths to achieve various heights. The table also identifies the manufacturers tested breaking strength of the system at the acquired height.

The height indicated on the table is the height from the ground to the main attachment point and is expressed in feet. If there is "N/A" in the leg section, then the third or fourth leg is not needed to achieve the designated height. For example, to achieve the 5-foot height, only the first two legs are needed and they are joined at Y4. If a 7-foot height were desired three tubes would be required.

Also note that the main plate head angle settings are expressed with 2 listings for both the left and right hand side of the head. In all of the examples listed below, the angles are the same on both sides of the head, but this may not always be the case in the field.

### **I. Symmetric Tripod (includes NFPA configuration)**

Symmetric Tripods are typically used for straight vertical access such as above manholes or access hatches. When straddling a manhole or access hatch, a symmetric tripod's feet are equal distance from the center of the manhole or hatch. All three legs are equally loaded. This is most often the strongest tripod configuration.

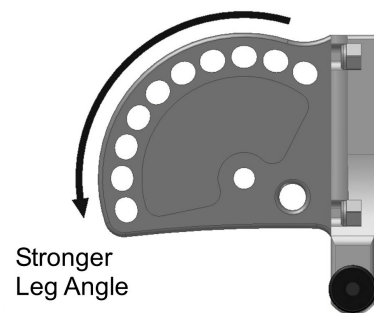


**Table 1**

<b>Symmetric Tripod</b>			Main Plate Head Angle Settings - <b>A/A</b>			
			Half Plate Head Angle Settings - <b>B</b>			
Height	Upper Section Coupling	Lower Section Coupling	Optional Section Coupling	Hobble Length	Breaking Strength	Applicable Standards
4	X7	n/a	n/a	42"	12,200	NFPA, ASTM
5	Y4	n/a	n/a	54"	12,000	NFPA, ASTM
6	X2	n/a	n/a	60"	9,300	NFPA, ASTM
7	Y7	X9	n/a	69"	12,100	NFPA, ASTM
8	X5	X9	n/a	77"	9,400	NFPA, ASTM
9	Y2	X9	n/a	78"	9,300	NFPA, ASTM
10	X1	X9	n/a	70"	7,800	ASTM
11	X6	X9	X1	78"	8,200	ASTM
12	Y3	X9	X1	78"	5,600	ASTM
13	X1	X9	X1	78"	4,600	

### How Head angles affect tripod strength

There are many factors that go into the proper set-up and stability of a tripod system, which is why intensive personal training is required with the TerrAdaptor. Two of the main factors affecting the total strength and safety of a placement are the head angle used and the overall height of the system. As a guideline, for a given height, the wider the head angles the lower the strength. For example, the following table shows how a 7-foot tripod breaking strength declines from 12,100 lbf. to 7,700 lbf. just by slightly increasing the head angle.



**Table 2**

<b>Symmetric Tripod setup angle comparison</b>							
Height	Main Plate Head Angle setting	Half Plate Head Angle setting	Upper Section Coupling	Lower Section Coupling	Hobble Length	Breaking Strength	Applicable Standards
7'	A/A	B	Y7	X9	Tight	12,100	NFPA, ASTM
7'	B/B	C	Front – X5 Rear – Y6	Front – X9 Rear – X9	Tight	10,100	ASTM
7'	C/C	D	Front – Y2 Rear – X6	Front – X9 Rear – X9	Tight	7,700	ASTM

### **Wide Tripod Configurations**

In many cases a wide and more stable configuration is desirable even at the expense of breaking strength. Wide configurations also offer a larger work area under the tripod. The following table shows strength of a few wide stable configurations which have very large work areas.

**Table 3**

<b>Symmetric Tripod – Wide setup</b>							
Height	Main Plate Head Angle setting	Half Plate Head Angle setting	Upper Section Coupling	Upper Section Coupling	Hobble Length	Breaking Strength	Applicable Standards
7'	B/B	C	Front – X5 Rear – Y6	Front – X9 Rear – X9	Tight	10,100	ASTM
8'	B/B	C	Front – Y2 Rear – Y4	Front – X9 Rear – X9	Tight	9,600	ASTM
8 ½'	B/B	C	Front – X1 Rear – X3	Front – X9 Rear – X9	Tight	8,300	ASTM

## II. Symmetric Quadpod (includes NFPA configuration)

Symmetric Quadpods fill the same role as symmetric tripods, but with added strength and stability of a fourth leg.



**Table 4**

<b>Symmetric Quadpod</b>				Main Plate Head Angle Settings - <b>A/A</b>		
				Half Plate Head Angle Settings - <b>A/A</b>		
Height	Upper Section Coupling	Lower Section Coupling	Optional Section Coupling	Hobble Length	Breaking Strength	Applicable Standards
4	Y7	n/a	n/a	29"	13,000	NFPA, ASTM
5	X5	n/a	n/a	33"	12,100	NFPA, ASTM
6	Y2	n/a	n/a	36"	12,100	NFPA, ASTM
7	Y7	X9	n/a	38"	12,200	NFPA, ASTM
8	Y5	X9	n/a	40"	12,600	NFPA, ASTM
9	Y3	X9	n/a	42"	11,500	NFPA, ASTM
10	X1	X9	n/a	46"	8,500	ASTM
11	Y7	X9	X1	46"	8,100	ASTM
12	Y4	X9	X1	46"	7,100	ASTM
13	X1	X9	X1	46"	5,100	ASTM

### III. Edge-A Tripod

Probably the most popular configuration for an over the edge rescue, the Edge-A Tripod is essentially an A-Frame with the added stability of a third leg. Edge A configurations are popular for their large work areas, high strength and the ability to configure the A leaning either over or away from the edge. The TerrAdaptor's rear leg can be left to hinge (unsecured) or can be pinned in place for added stability.



**Table 5**

<b>Edge A Tripod</b>			Main Plate Head Angle Settings - <b>B/B</b>			
Height	Half Plate Head Angle	Upper Section Coupling	Lower Section Coupling	Hobble Length	Breaking Strength	Applicable Standards
6'	D	Front - Y7 Rear - X1	Front - X9 Rear - X9	Front - 112" Side - 136"	9,100	ASTM
7'	C	Front - X5 Rear - X1	Front - X9 Rear - X9	Front - 116" Side - 122"	9,600	ASTM

## IV. A-Frame/Bi-Pod

The TerrAdaptor is easily configured as a standard A-Frame or a Sideways A-Frame often used in narrow areas like catwalks. The half plate can be removed to eliminate weight and opportunities for it to be in the way, or it may remain attached.



**Table 6**

<b>A-Frame</b>			<b>Main Plate Head Angle Settings - B/B</b>		
Height	Upper Leg	Lower Leg	Hobble Length	Breaking Strength	Applicable Standards
7'	X5	X9	120"	5,600	ASTM

## V. Gin Pole/Monopod

The Gin Pole or Monopod is the TerrAdaptor's lightest high anchor configuration. A properly rigged gin pole/monopod can support several thousand pounds while remaining a lightweight, single leg assembly. The Gin Pole is also ideal for close quarters where there is not enough room for multi-leg configurations.



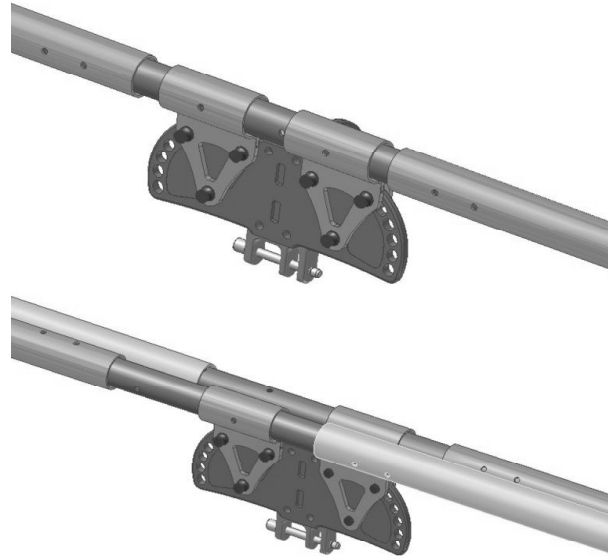
**Table 7**

<b>Monopod</b>					
Height	Upper Leg	Lower Leg	Hobble Length	Breaking Strength	Applicable Standards
8'	Y6	Y9	n/a	4,500	



## **VI. Horizontal Span**

Unlike other tripods, the TerrAdaptor can be configured to span horizontal voids such as trenches, catwalks, pits or small streams. As shown in this figure a void can be spanned by using either 1 or 2-leg assembly depending on the span length and strength required.



### **Warning**

**The horizontal span can be one of the weakest configurations and should be used with great caution.**

**Table 8**

<b>Horizontal Beam</b>		
Span	Leg Tubes	Breaking Strength
4'	Single	5,600
4'	Double	8,200
6'	Single	3,500
6'	Double	5,900
8'	Double	4,000

## **Field Use Charts**

The following blank charts are provided as a tool to document the settings that are used by your team. Consider copying and placing laminated sheets in your kit to aid in fast set-ups once you have established the ideal settings for your applications.

<b>Tripod</b>			Main Plate Head Angle Settings - /		
			Half Plate Head Angle Settings - /		
Height	Upper Section coupling	Lower Section coupling	Optional Section Coupling	Hobble Length	Notes

<b>Edge A Tripod</b>			Main Plate Head Angle Settings - /			
Height	Half Plate Head Angle	Upper Section coupling	Lower Section coupling	Hobble Length	Notes	
		Front - ___ Rear - ___	Front - ___ Rear - ___	Front - ___ Rear - ___		
		Front - ___ Rear - ___	Front - ___ Rear - ___	Front - ___ Rear - ___		

<b>A-Frame</b>			Main Plate Head Angle Settings - /	
Height	Upper Leg	Lower Leg	Hobble Length	Notes



## Section 4

# Warranty and Replacement Parts

### Warranty

Standard SMC warranty policy applies to the TerrAdaptor System and its component parts:

**LIMITED WARRANTY:** SMC products are warranted to the original purchaser in accordance with the full Statement of Limited Warranty printed on our web site, [www.smcgear.net/warranty](http://www.smcgear.net/warranty). Service under this warranty is available by contacting us by mail, email or phone. All items that are claimed to be defective must be returned under a pre-assigned CC Number and should include a detailed description of the conditions existing during use of the item as well as the place and date of the original purchase and a copy of the original invoice or receipt. Include contact information.

Due to the complexity of the TerrAdaptor system, if one of the main components of the system has been damaged whereby it is warped, twisted, or bent, the entire system is suspect and must be inspected by the manufacturer. As a result, replacement parts for these components are not available without first sending them to SMC for inspection.

If during inspection the parts are determined to be damaged as a result of a manufacturer defect, the necessary part(s) will be replaced at no cost to the end user. If the manufacturer determines that the damage is due to miss-use, overloaded, unsafe configurations or neglect, the replacement part(s) will be made available to the user at user's cost. Any parts deemed unsafe will not be returned to the user.

### **Replacement Parts and Kit components:**

NFPA230100 **TERRADAPTOR™** Tripod System  
TerrAdaptor™ Tripod Head  
2 Offset Leg Clamps with 3 Load Locking Pins each  
Center Leg Clamp with 3 Load Locking Pins  
Main Attachment Pin  
3 Legs Kits complete with Feet, Hobble Plates & Baskets  
3 Rope Hobble Sections  
Cotter Pin Kit  
1 Extra Leg Coupling Pin and Load Locking Pin  
2 Lash Rings with 1 Coupling Pin each  
TerrAdaptor™ Head/ Accessory Bag  
2 TerrAdaptor™ Leg Bags  
TerrAdaptor™ User Guide

- 230105      **TERRADAPTOR™** Quadpod Attachment Kit  
 Quadpod Head Attachment  
 Leg kit complete with Foot, Hobble Plate & Basket  
 Center Leg Clamp with 3 Load Locking Pins each  
 Main Attachment Pin  
 Rope Hobble Section
- 230106      **TERRADAPTOR™** Gin Pole Kit  
 2 Lash Rings with 1 Coupling Pin each  
 Leg kit complete with Foot, Hobble Plate & Basket  
 TerrAdaptor™ User Guide
- 230217      Foot Replacement Kit  
 Ball Foot  
 Hobble Plate with Quick Link  
 Basket  
 Leg Coupling Pin
- 230230      Lash Ring Assembly  
 1 Lash Ring  
 1 Leg Coupling Pin
- 230326      Bolt Replacement Kit  
 4 SHCS Alloy Bolts  
 4 Nylok Nuts
- 230107      Leg Extension Kit  
 1 Mid-Tube  
 1 Leg Coupling Pin
- 230260      Load Locking Head Pin  
 230311      Main Attachment Pin  
 230301      Leg Coupling Pin  
 230307      Rope Hobble Section  
 230314      **TERRADAPTOR™** Leg Bag  
 230315      **TERRADAPTOR™** Head Bag  
 230400      Articulating Foot

## MANUFACTURED BY:

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6930 Salashan Parkway  
Ferndale, WA 98248  
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Fax: 360.366.5723  
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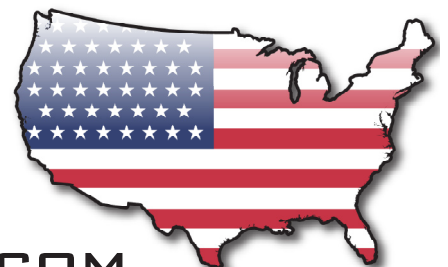


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**PMI**<sup>®</sup>  
INDUSTRIES

Make sure you register your TerrAdaptor so that you are always up to date at [www.TerrAdaptor.com/Registration](http://www.TerrAdaptor.com/Registration). Product registration is required to establish manufactures warranty.

Registered Users will receive:  
Product Updates  
Establish Warranty  
Downloadable User Manuals  
FAQ's  
List of Training Professionals  
Instructional Videos

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**WWW.TERRADAPTOR.COM**



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