



**Reliance Industries, LLC**

**Installation, Operation, Inspection and Maintenance  
Instructions for the Big Blue™  
Mobile Anchorage System**

**Model 1801000**



**Reliance Industries, LLC**

**Ph. (888) 362-2826**

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## User Instructions

### 1801000 Big Blue™ Mobile Anchorage System



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## Important Instructions!

These instructions must be kept on file and available for the users reference at **all** times. The users must read and full understand these instructions or have the instructions explained in detail before using this equipment.

**Failure to observe these instructions could result in serious injury or death.**

Prior to use, all workers must be trained in the proper use of all systems and equipment.

A Training and Instruction review should be repeated at regular intervals.

A rescue plan must be prepared; the workers must be trained in its use, and rescue equipment must be on hand prior to any use of this horizontal lifeline system.

Any questions regarding these instructions should be directed to:

Reliance Industries, LLC

Deer Park, TX 77571

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### 1801000 Big Blue™ Mobile Anchorage System



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## Important OSHA Regulations Covering the Use of Personal Fall Arrest Anchorages

### OSHA 1926.502 (d)(15):

Anchorage used for attachment of personal fall arrest equipment shall be independent of any anchorage being used to support or suspend platforms and capable of supporting at least 5,000-lb (22 kN) per employee attached, or shall be designed, installed, and used as follows:

#### (d)(15)(i):

as part of a complete personal fall arrest system which maintains a safety factor of at least two; and

#### (d)(15)(ii):

under the supervision of a qualified person.

### OSHA 1926.502 (d)(16)(iii):

Personal fall arrest systems shall be rigged such that an employee can neither free-fall more than 6-ft. nor contact any lower surface.

### OSHA 1926.502 (d)(21):

Personal fall arrest systems shall be inspected prior to each use for wear, damage and other deterioration, and defective components shall be removed from service.

### OSHA 1926.502 (d)(19):

Personal fall arrest systems and components subjected to impact loading shall be immediately removed from service and shall not be used again for employee protection until inspected and determined by a competent person to be undamaged and suitable for reuse.

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## System Description

The Big Blue™ Mobile Anchorage System is designed to create a portable, overhead anchorage for use adjacent to fall hazards where overhead structures may not be available to create an effective fall arrest anchorage connection. When used with a properly rated Class 'A' Self-Retracting Lanyard, arrest distances are less than 24-in.

## Big Blue™ Mobile Anchorage System Specifications

Material: Base and Mast: carbon steel, powder coated

Trolley: forged stainless steel

Capacity: 1 worker, 310-lb using a 900-lb MAF Self-retracting lanyard

Height: Typical configuration: 24-ft.

Mast Reach: from boom end to center of mast: 8-ft.

Weight: 1,700-lb, empty weight, approx.

## Personal Fall Arrest Equipment Used with the System

Care should be used in selecting harnesses for use with this Personal Fall Arrest System. Harnesses with sewn down back pads can limit as much as 1 ft. of back pad slippage during fall arrest, giving additional clearance for safety. If the system will be used where a worker could encounter a head first free-fall, a non-secured back pad can slide down the webbing to the small of the back, allowing the worker to fall out of the harness through the top by allowing the harness straps to slip over the shoulders. For this reason, we recommend the use of harnesses with Reliance Industries style high friction back pads.

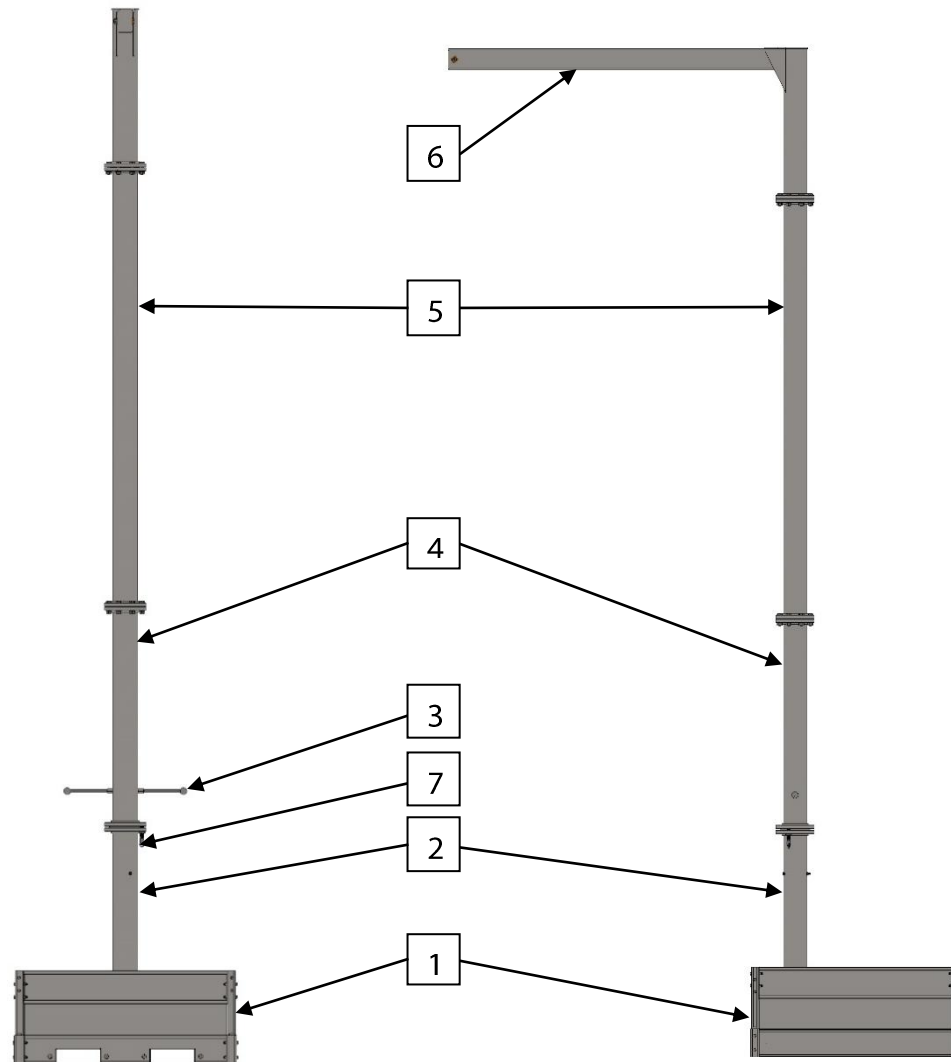
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## Part Identification of the Big Blue™ Mobile Anchorage System



**Figure 1 – Mobile Anchor,  
Front View**

1. Base Unit, 1 ea.
2. Mast Bottom Section, 1 ea.
3. Pivot Arms, 2 ea.
4. Mast Pivot Section, 1 ea.

**Figure 2 – Mobile Anchor,  
Side View**

5. Intermediate Section, 1 ea.
6. Mast Top Section, 1 ea.
7. Rotation Lock Pin, 1 ea.

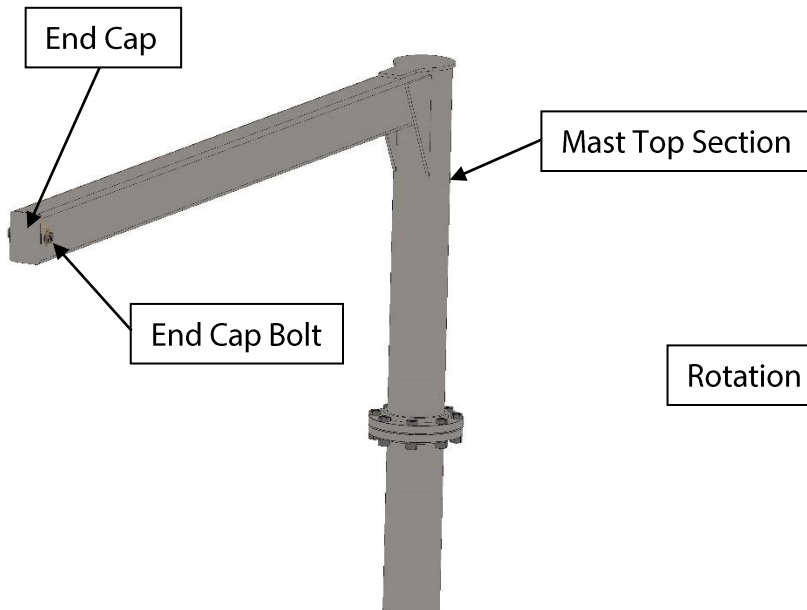
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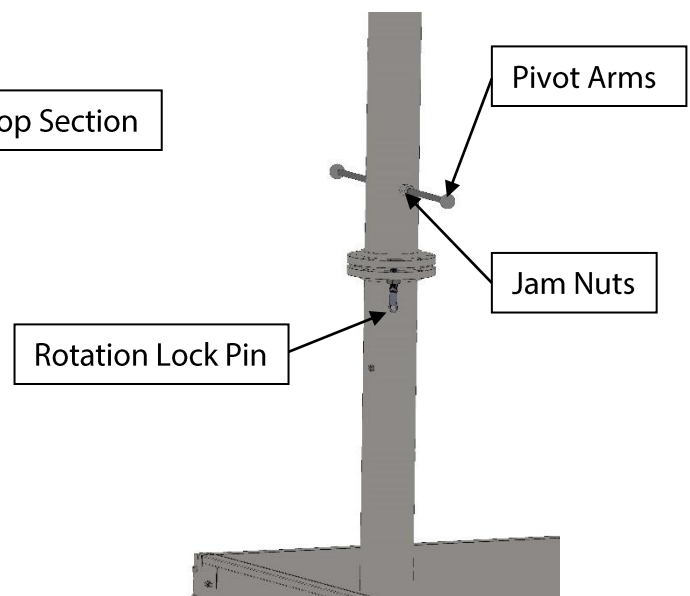


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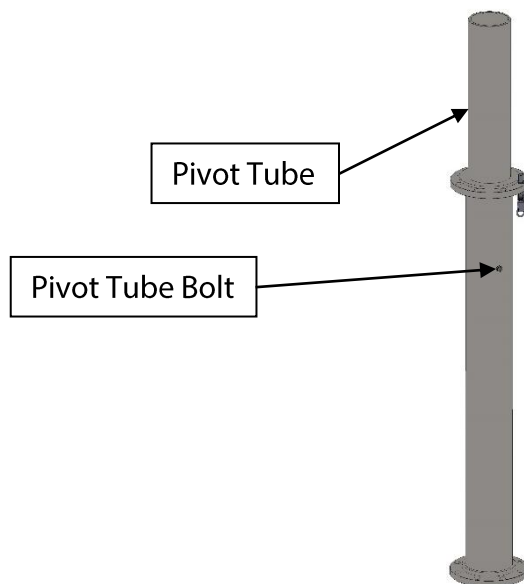
## Detail Identification of the Big Blue™ Mobile Anchorage System



**Figure 3 – Mast Top Detail**



**Figure 4 – Mast Bottom Detail**



**Figure 5 – Mast Bottom and Pivot Tube Detail**



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## Installation and Assembly Layout Considerations

The Big Blue™ Mobile Anchorage System may only be set up in locations where the site is generally level. In selecting a site for the placement and use of the Mobile Anchorage System, verify that there are no overhead obstacles or electrical wire that could interfere or touch either the upright mast, or the rotating Boom Arm; all overhead obstacles should be a minimum of 20-ft away from the end of the rotating Boom Arm at its' closest approach.

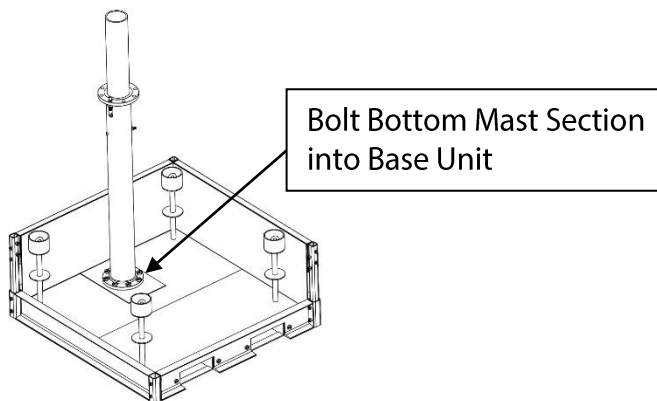
## Installation

Installation of the Mobile Anchorage system should be done under the supervision of a Qualified Person trained in its' function and use. Use only parts that have been qualified as compatible components by Reliance Industries. Always install this system where the worksite is generally level and stable. Do not install, place or use the Mobile Anchor System on a worksite pad that could unexpectedly shift or erode causing a loss of stability for the Anchor.

## Mobile Anchorage System Assembly Procedures

NOTE: Do not use the Mobile Anchorage System or its anchorages as a personal fall protection anchorage until the system has been completely assembled, installed, inspected, and approved for use by a Qualified Person.

1. Remove the Base Unit (see Figures 1 and 2 for Parts Identification) from the crate and place on a level surface with sufficient overhead clearance for the assembly of the mast (at least 26-ft. plus extra clearance for an overhead crane or forklift to help lift the completed mast upright after assembly).
2. Remove the Bottom Mast section from the crate. The Bottom Mast section can be identified as the section that is shipped with the Pivot Tube bolted inside.



**Figure 6 – Placement of Bottom Mast into Base**

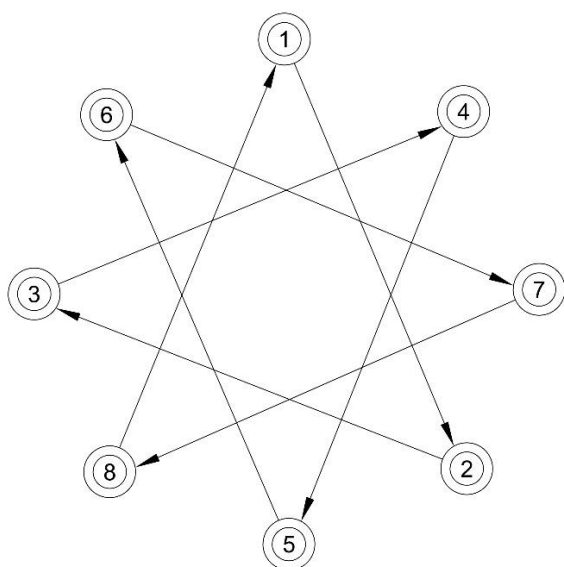
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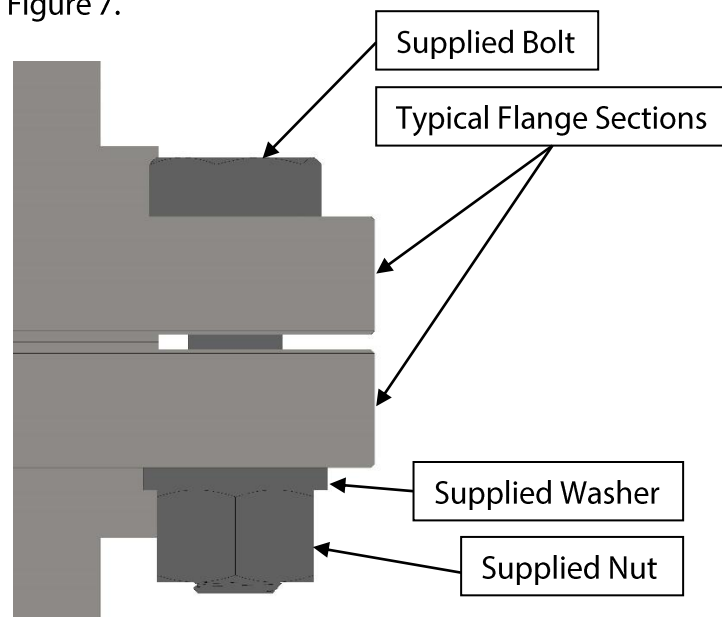


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3. Remove the Pivot Tube from the Bottom Mast Section and reverse the orientation of the Pivot Tube and bolt back in place with the same bolt.
4. Place the bottom section into the base aligning the holes in the flange with the holes in the base (see Figure 6).
5. Bolt the Bottom Mast section in place with the eight 3/4 x 3-in long bolts (included). Hand tighten all of the bolts to ensure that the flange stays square, then tighten bolts to 200-ft x lb of torque following the torque pattern show in Figure 7.



**Figure 7 – Bolt Tightening Pattern**



**Figure 8 – Typical Flange Section/Fasteners Detail**

6. Place the round plastic thrust bearing over the Pivot Tube and seat against the flange.
7. Fill the Base Unit assembly with concrete (approximately 5,300-lb) to within 1/2 inch of the top. Alternatively, the Base Unit may also be filled with sand ballast equal to 5,300-lb.
8. Remove the Pivot Mast section from the crate. The Pivot Mast section can be identified by the two nuts welded to the lower side.
9. Remove the Intermediate Section from the crate. NOTE: Some Mobile Anchorage Systems are designed to have more than one Intermediate Section. If your assembly crate contains only one Intermediate Section, then complete Step 10 below, then skip to Step 12 to complete the assembly of the single Intermediate Section Anchorage System.
10. Bolt the Intermediate Section to the Pivot Section with eight 3/4 x 3-in long bolts (included)(See Figure 8 above). Hand tighten all of the bolts to ensure that the flange stays square, then tighten bolts to 200-ft x lb of torque following the torque pattern as show in Figure 7. The washer should go on the nut side of the flanges on the assembly. Ensure that the welded nuts of the Pivot Mast section are furthest away from the Intermediate Section.
11. Remove the second Intermediate Section (if your Mobile Anchorage System contains more than one Intermediate Section; if not, proceed to Step 12) and bolt to the first Intermediate Section with eight 3/4 x 3-in long bolts (included)(See Figure 8 above). Hand tighten all of the

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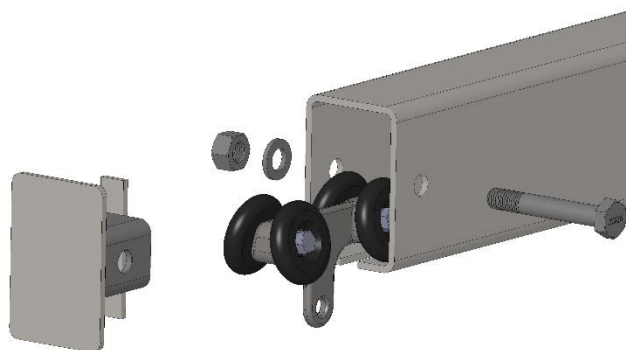
### 1801000 Big Blue™ Mobile Anchorage System



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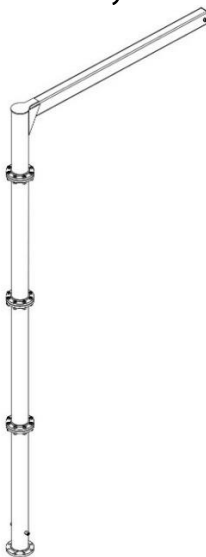
bolts to ensure that the flange stays square, then tighten bolts to 200-ft x lb of torque following the torque pattern as show in Figure 7.

12. Remove the Mast Top section from the crate.
13. Remove the End Cap from the main rail and install the trolley into the rail. Replace the End Cap and secure with the bolt (see Figure 9 below).



**Figure 9 – End Cap Removal**

14. Bolt the Mast Top Section onto the Intermediate Section with eight  $\frac{3}{4}$ " x 3" bolts (included) (See Figure 8 above for hardware order). First, hand tighten bolts to ensure that the flange stays square then tighten bolts to 200-ft x lb of torque following the torque pattern as show in Figure 7. The final assembled mast will look like the image below in Figure 10. Note: The completed Mobile Anchorage System shown in Figure 8 contains a second Intermediate Mast Section which may or may not be present in your mast.



**Figure 10 – Completed Mobile Anchorage**

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15. Attach a Self-Retracting Lifeline (SRL) to the eye on the trolley using an approved bow shackle (a certified carabiner may also be used). The SRL must be a model meeting the Class 'A' requirements of the ANSI/ASSE Z359.14 standard. To help facilitate pulling the snaphook down to the worker once the system is set upright, a tagline should be connected to the snaphook of the SRL. NOTE: Do not use either the SRL or the trolley as a connection point in raising the mast; this could damage these components and make them unsafe to use.
16. Raise the mast vertical with a forklift or overhead hoist/crane to pull it into a vertical position.
17. Lift the mast onto the Pivot Tube portion of the Base Unit/Mast assembly.
18. Attach the Pivot Arms (2 ea.) to the Pivot section by screwing them into the welded-on nut assembly. Lock into place by tightening supplied jam nuts (see Figure 4).
19. The Mobile Anchorage System is now assembled. Verify that all fasteners are present and tight, that the SRL and trolley are able to move freely down the mast arm, and that at least 5,300-lb. of ballast is present in the Base Unit before certifying system for use.

## Using the Mobile Anchorage System

### Connecting/Disconnecting the SRL

Once the Mobile Anchor System has been properly placed and inspected, it may be used by one worker wearing a full-body harness to connect to its' SRL. To connect to the SRL, pull down the snaphook to the worker's height using either a tagline attached to the snaphook, or a pole and hook to retrieve the snaphook. The snaphook may then be connected to the worker's dorsal d-ring.

### Rotating the Mast Top Section

When using the Mobile Anchor System, the top Mast Arm should be rotated and positioned as close as possible to be directly above the work area. This will prevent the potential of a swing fall should an accident occur. To rotate the Mast Arm, pull down on the Rotation Lock Pin (as shown in Figure 4) until it releases, then, using the two Pivot Arms, rotate the Pivot tube until the Mast arm is as close to directly over the work area as possible. As the pivot section rotates it may be necessary to again pull down on the Rotation Lock Pin if it tries to engage with one of the other lock holes before reaching its' final stopping location.

Once in position, rotate the tube slightly one way or the other until the Rotation Lock Pin once again re-engages in the nearest pivot section hole to lock the pivot section from further rotation. The Mobile Anchor System must only be used when the Rotation Lock Pin is engaged to prevent the Pivot Section from rotating.

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## Travel Range and Tipping of the Mobile Anchor

When connected to the SRL of the Big Blue™ Mobile anchor System the best practice is to always try and work as close to directly below the SRL to prevent swing falls and to help minimize required clearance distance during a fall arrest, both of which could result in the falling worker striking the ground.

### Fall Clearance

There must be sufficient clearance below a worker to allow for fall arrest before the worker contacts a lower object or the ground. The calculation of appropriate fall clearance distance must take into account the following items:

- SRL deceleration distance
- Free-fall distance
- Worker height
- Elevation of the overhead anchorage
- Movement of the harness connection point
- Overall length of the connecting fall arrest system

See the corresponding manufacturer's SRL instruction manual for the specific fall arrest device for specific details on calculating the minimum required fall clearance.

### Swing Falls

Swing falls occur when a worker falls when not directly below his overhead anchorage point. The pendulum force of a worker swinging into and striking an object during a swing fall can result in serious injury or death. Swing falls must be limited by minimizing the horizontal distance between the worker and the anchorage point. In any swing fall, the total vertical distance the worker will travel is greater than if the worker had fallen while directly below his anchorage. Because of this, additional clearance **MUST** be added to the fall clearance height determined above to ensure the worker does not strike the ground or any other object. See the corresponding manufacturer's SRL instruction manual for the specific fall arrest device for specific details on calculating the minimum required fall clearance allowing for swing fall effects.

But, there is also the additional danger in tipping the Mobile Anchor over should a fall occur while the worker is too far off to the side of his overhead anchor. If the worker limits his travel to a distance no more than 8-ft away from the central mast (the maximum distance the SRL Trolley can travel towards the tip of the Top Mast Section) while remaining directly below the Top Mast Section, then the Mobile Anchor System is protected against toppling during a fall arrest.

Shown below is the diagram (Figure 11) detailing the extent of furthest travel a worker may undertake that would not topple the Mobile Anchor should a fall occur while the worker has travelled away from the tip of the Top Mast Section; the distances listed reflecting the distance away from the center mast

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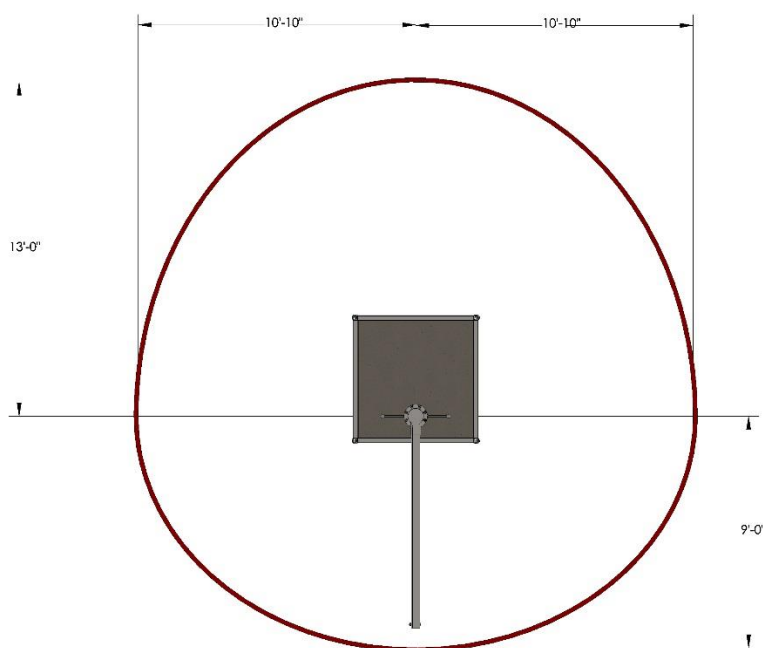
### 1801000 Big Blue™ Mobile Anchorage System



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at ground level. As a worker climbs above ground level, the acceptable travel distances away from the central mast decrease accordingly, until finally, the worker is within the 8-ft safety distance of the mast and is located directly below the tip of the Top Mast Section. To calculate the safe travel limit for a specific position of the mast top, determine the full ground level travel distance as shown in Figure 11 below. Subtract 8-ft from the full ground level travel distance. It is this 'offset' distance number which must be reduced to prevent the Mast from toppling as the worker elevates above ground level; if the worker is positioned 12-ft above the ground, one-half the height of the Mobile Anchor, then the 'offset' distance number should also be halved, then added back to the 8-ft safe travel number to determine the correct travel limit at that height.

By way of example, if the Mast Top of Figure 11 were instead pointed upward (rotated 180° from the position shown in the figure) where the ground level travel limit is shown to be 13-ft., then the offset travel distance would be calculated as 5-ft. (13-ft. ground level travel limit – 8-ft. safe limit = 5-ft. offset travel distance). At a level 12-ft. above ground, one half the height of the mast, the offset travel distance would be likewise scaled to one-half its' ground level value and then added back to the 8-ft safe number to yield a worker travel limit of 10.5-ft away from the central mast when the worker is elevated 12-ft. above the ground.



**Figure 11 – Maximum Travel Range at Ground Level to prevent Tipping**

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## Environmental Limitations on the Usage of the Mobile Anchor

Care must be taken of the surrounding area when using the Mobile Anchor System to guard against conditions which could affect its' safe operation. The Mobile Anchor must never be used in areas with overhead electrical connections; the rotation of the mast or movement of the SRL could come into contact with live wires causing the worker serious injury or death.

Extra care should also be taken if it would be possible for the wire rope of the SRL to come into contact with a sharp edge while arresting a fall. To do so could cause the lifeline to be severed. If such a possibility exists, the sharp edge should be covered with rubber sheeting or other heavy construction padding to help soften the edge. The SRL should also be replaced with an SRL designed to be used in 'leading-edge' applications; such SRLs are constructed with a heavier wire rope, as well as a secondary shock pack to help reduce loading on both the SRL and worker.

The placement of the Mobile Anchorage System should only occur at locations where it may be placed on pavement/concrete, hard-compacted soils, or other solid surfaces where no shifting soils or sands are present. The maximum slope of the placement surface should be 1° (2-in. rise : 120-in.)

If there are other worksite factors that cause concern, contact Reliance Industries at (888) 362-2826 prior to use to establish safety procedures for such situations.

## Moving the Mobile Anchorage System

The Big Blue™ Mobile Anchorage System may be moved using a forklift. Slide the forklift forks fully into the lifting pockets present in the Base Unit before attempting to raise unit. Do not attempt to raise or move System while a worker is connected to the SRL. Due to the height of the fully assembled Mast, care must be taken while moving to avoid any overhead obstacles or wires that it might catch on. The ballast present in the Base Unit may be removed and set aside to make moving the System easier; however it must be replaced in the Base Unit prior to using. Use only a forklift or pallet jack capable of lifting 7000-lb. The Mobile Anchorage System must only be moved by forklift or pallet jack using the lifting pockets built in to the System; do not place or use the system onto a wooden pallet.

## Training

It is the responsibility of the employer to train all workers prior to using this system (per OSHA 1926.503 (a)(1)). The employer shall provide a training program for each employee who might be exposed to fall hazards. The program shall enable each employee to recognize the hazards of falling and shall train each employee in the procedures to be followed in order to minimize these hazards.

The employer shall assure that, as necessary, each employee has been trained by a competent person qualified in the following areas:



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- a) OSHA regulations governing the use of personal fall arrest system anchorages.
- b) Ability to recognize potential fall and workplace hazards.
- c) Method of inspection of safety equipment.
- d) Rescue procedures.
- e) Installation and removal techniques.

## Planning for Rescue

Prior to system use, a rescue plan must be prepared, the workers must be trained in its use, and the rescue equipment must be on hand to implement it in case of a fall.

Typical rescue plans include (but are not limited to) the following items:

1. List of equipment that must be readily accessible in the event of an emergency and the names of those workers certified to use or operate that equipment.
2. Emergency contact phone numbers (ambulance, hospital, fire department...) and a means to contact them (cell phone, emergency radio).
3. List of employees on the site, and the specific tasks they will perform to effect the rescue.

The equipment that will be used to aid in the rescue of any worker must be attached to structural anchorages independent of those used for the travel restriction lifeline system. During installation of fall arrest lifeline anchorages, tie-off and equipment attachment hardpoints should be attached, and also clearly marked in such a manner as to provide a means to rescue a worker in any position along the lifeline system.

## Inspection

Prior to each use, the worker must inspect the system for any physical damage, wear, corrosion, or malfunctioning parts. The Mast should be visually examined to verify it remains straight and unbent or distorted. The Mast should rotate when the lock pin is disengaged and stop rotation when re-engaged. Verify that all bolts are present and tight at the various joints between the sections of the Mast.

## Servicing

A qualified person trained in the inspection and servicing of system components must carry out servicing of this system. The company's safety officer should maintain a record log of all servicing and inspection dates. The system and all components must be withdrawn from service if subjected to fall arrest forces. Those components may be returned to service only after being certified by a qualified person. Only original Reliance Industries equipment and replacement parts are approved for use in this system. Contact Reliance Engineering with questions and when in need of assistance.



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## Warnings and Limitations

Proper care should always be taken to visually scan the work area prior to use. Remove any obstruction, debris, and other materials from, and beneath the work area that could cause injuries or interfere with the operation of this system. Be cautious of swing fall hazards if working horizontally to the side of the anchorage.

Users should be familiar with pertinent regulations governing the use of this system and its components. Only trained and competent personnel should install and supervise the use of this system.

Use only Reliance supplied or qualified compatible components.

**If you have any questions regarding the correct installation or use of this product DO NOT USE. Call Reliance Engineering at  
Ph. (303) 424-8650 or  
Fax (303) 424-8670.**

# Inspection Log for Anchorage Systems

Company: \_\_\_\_\_ Location: \_\_\_\_\_ Date: \_\_\_\_\_  
 Job Site: \_\_\_\_\_ System No.: \_\_\_\_\_

Describe non-conforming conditions in the boxes below:

Inspection Criteria	Missing Parts	Labels Readable	Corrosion	Deformed Parts	Cracked Parts/ Broken wires	Excessive Loading
Base Unit sides intact?						
Ballast Present/proper amount?						
Mast Bottom Section secured to base?						
Pivot section secured to Bottom section?						
All bolts between sections present?						
No mast sections bent or deformed?						
Pivot Arms present? (2 ea)						
Rotation Lock Pin present?						
Pivot section rotates freely when lock disengaged?						
Trolley slides freely?						
End Cap and End Cap bolt present in top Mast arm?						

Has a Rescue Plan been prepared? \_\_\_\_\_

Is Rescue Equipment on hand? \_\_\_\_\_

Have workers been trained in the Rescue Procedures and been given a copy of the Rescue Plan? \_\_\_\_\_

