SAFE TENTING

Ground Testing Tool
User Manual

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Definitions

ANSI: American National Standards Institute
ARA: American Rental Association
ARA GT Tool or **GT Tool:** The ground testing tool described herein
ASTM: American Society for Testing and Materials
OSHA: Occupational Safety and Health Administration
PPE: Personal protective equipment
User or **You:** The person using the GT Tool

1. Introduction

Purpose of the Tool

The ARA GT Tool has been developed by ARA to help address the challenge of determining the holding capacity of tent stakes in different soil types. This knowledge is important for ensuring the safety, stability, and proper anchoring of a tent. The GT Tool is designed to be utilized by industry professionals and enthusiasts alike, enabling them to estimate the approximate holding power of a standard 40-inch long by 1-inch diameter tent stake being driven fully and straight into the ground and anchored to the top of the tent stake with a guy line coming off at a 45 degree angle in a specific location.

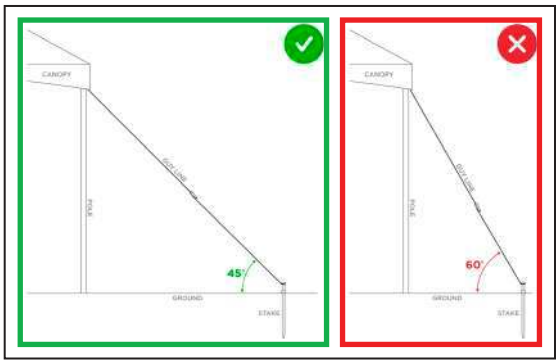


Fig. 1: **Proper** and **improper** guy line angle.

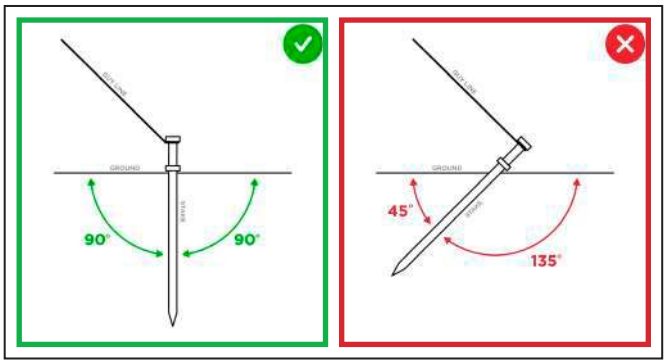


Fig. 2: **Proper** and **improper** stake angle.

Intended Use

The GT Tool has been designed to assist the user in estimating how many tent stakes to utilize while installing and erecting a tent by approximating the holding capacity of a standard 40-inch long by 1-inch diameter tent stake in a given location. This will give the user an additional data point while making a determination on what staking method(s), and components they will need to utilize during installation (e.g. number of stakes, stake bars, etc.). The GT Tool was NOT designed to give an exact measurement of the holding capacity of a given stake at a given location. The GT Tool was designed to be simplistic in use and allow for repeatable results. The GT Tool uses a constant weight and, if used properly, delivers a consistent amount of energy each time.

The GT Tool is meant only as a supplement, and is not intended to replace, any instructions or warnings that are provided by the manufacturer of the applicable tent, tent stake, or other components, and does not take into account the specific features of a particular tent installation, nor is it intended as a substitute for the experience and judgment of properly trained installers.

You should use your own independent judgment, experience, and discretion in successfully implementing the output of the GT Tool to best fit the unique needs and circumstances of each tent installation. In addition, it is your responsibility to understand and comply with any standards, codes and legal requirements applicable to the specific tent installation and site. You are solely responsible for managing all risks for your own and others' health and/or safety when installing tents. ARA assumes no liability for risks to installers, occupants or other third parties.

If you are seeking additional education on tent staking, ARA encourages you to download the Tent Stake Study Guidance Document, which can be found at www.ARArental.org.

2. Safety

Generally

Eye Protection: Always wear safety glasses or goggles that are compliant to the ANSI Z87 requirements to protect your eyes from any potential flying debris while operating the GT Tool.

Hearing Protection: Always wear approved hearing protection devices (e.g. ear plugs, earmuffs, etc.) while operating the GT Tool.

Hand Protection: Avoid placing hands in pinch point areas and wear appropriate work gloves when operating the GT Tool to protect your hands.

Foot Protection: Always wear protective footwear that is complaint with the ASTM and OSHA standard located at 29 CRF 1910.136.

Pinch Points

Be mindful of pinch points—There are areas in which pinch points exist such as where the slide weight meets the anvil, where the handle attaches to the slide shaft , and where the slide weight meets the T-handle. Keep fingers clear of the slide weight and anvil, and any other moving parts.

Crush Hazards

There is a crush hazard that exists at the point where the slide weight contacts the anvil. Due to the potential force with which the slide weight can impact the anvil, it is imperative to always keep all body parts clear of the slide weight's path.

Additional caution shall be taken whenever carrying the GT Tool as it is important to have control over the slide weight to ensure it does not shift or slide, which could result in a pinching or crushing injury.

Proper Tool Handling

Inspect the GT Tool before each use to ensure that there are no signs of damage, cracks, or corrosion. Damage to the GT Tool could cause false readings or result in injuries.

While walking with the GT Tool in hand, it is recommended to carry the GT Tool in a vertical fashion to eliminate the slide weight from moving unexpectedly. Always maintain a two hand hold on the GT Tool, one above the slide weight that is resting firmly on the anvil and one below the anvil.

Hold the GT Tool firmly and maintain a stable footing when working or maneuvering to ensure maximum control.

When lifting or moving the GT Tool, use proper lifting techniques to avoid muscle strain or back injuries. Bend at the knees and lift with your legs, not your back (Approximate assembled tool weight is 40 pounds).

Conduct a Worksite Hazard Assessment

Before starting any task, inspect the entire worksite to identify any potential hazards including but not limited to uneven terrain, underground utilities, power lines, and environmental risks.

Look for visible obstacles such as rocks, debris, or vegetation that may interfere with your ability to safely utilize the GT Tool.

Assess the stability of the ground, especially if working near slopes, trenches, or excavations, as unstable ground can lead to slips, trips, and fall hazards.

Identify and Mark Underground Utilities

The GT Tool is made of electrically conductive material and is not insulated to protect against energization. Never use the GT Tool near overhead electrical lines. Always use a minimum approach distance chart when working near above ground energized electrical conductors.

The GT Tool is made of electrically conductive material and is not insulated to protect against energization. Prior to penetrating the ground, always contact your local utility marking service (e.g., "Call 811 Before You Dig" or similar service) to ensure that underground utilities such as gas lines, water pipes, electrical cables, and communication lines are properly identified and marked.

Wait for confirmation from utility locators before proceeding. Marked lines should be clearly visible, and you should stay the appropriate distance from them when using the GT Tool.

Ensure all private unmarked utilities (e.g., utility lines for pools, spas, and outbuildings) are located and clearly marked. Ensure that you maintain the appropriate distance from them when using the GT Tool.

Review Site Plans and Permits

Consult site plans or blueprints to confirm the presence of underground structures or utilities that may not be visible on the surface.

If required, ensure all permits for ground penetration have been obtained and confirm with project supervisors or site managers that it is safe to proceed.

Verify Environmental Conditions

Check the weather forecast and current conditions before starting work. Wet or frozen ground can be more difficult to test and could lead to inaccurate results if the installation is at a later date and ground/soil conditions have changed.

Be aware of soil conditions. Soil that contains subsurface debris such as large rocks, brick or dirt, or fill containing construction debris, can create false readings. This adds to the importance of performing several tests at a potential installation site.

Establish Safe Work Zones

Keep all unnecessary personnel and bystanders at a safe distance from the immediate work area.

Ensure proper PPE is worn, including safety glasses, gloves, hearing protection, and safety-toed boots, to help prevent injury. It is also important to abide by any additional site-specific requirements.

Communicate with the Team

Before beginning work, communicate with your team about the location of marked utilities, potential hazards, and safety protocols. Ensure everyone is aware of the work area boundaries and the hazards associated with penetrating the ground.

Maintain clear communication during work to ensure everyone is aware of the progress and any unexpected issues that arise.

Ensure all personnel are properly trained on your companies Stop Work Authority program and that they understand the importance of exercising this right.

Monitor and Reassess the Area

Continuously monitor the site for any new hazards or changes in conditions that may arise as testing progresses.

If any underground utilities or obstructions are encountered or discovered during testing, stop immediately and reassess the situation to prevent damage, injury, or fatality.

3. Components, Assembly, & Disassembly

Components

(A) T-Handle

To assist the user in handling the GT Tool during use. Also acts as the stop for the slide weight to ensure the weight is dropped from the same height each time to deliver consistent force to the anvil.

(B) Slide Weight Shaft

Stainless steel shaft that the slide weight travels on. ***NOTE:*** *this area contains the 3/4" tool relief to aid in attachment/removal of the T-Handle.*

(C) Slide Weight

Stainless steel piece that is used to deliver consistent repeatable force required to drive the GT Tool into the ground.

(D) Anvil

Stainless steel area that the slide weight strikes, driving the GT Tool into the ground.

(E) Penetration Rod & Scale

Stainless steel shaft with a pointed tip that is driven into the ground and contains the zero mark and scale.

(F) Scale

Area of the Penetration Rod that contains the scale. This scale is read after the delivery of four (4) drops of the slide weight. The "A, B, C" zones correlate to values. (See section 4 "Use" for further details)

(G) Zero Line

The line on the scale below the "A" zone, from which testing begins. The user will need to tap the GT Tool into the ground utilizing the slide weight until the GT Tool has penetrated the ground to this mark. (zero line is flush with the ground surface)

(H) Tool Relief Area

Area below the T-handle to fit a 3/4" wrench to assist with the attachment of the T-handle.

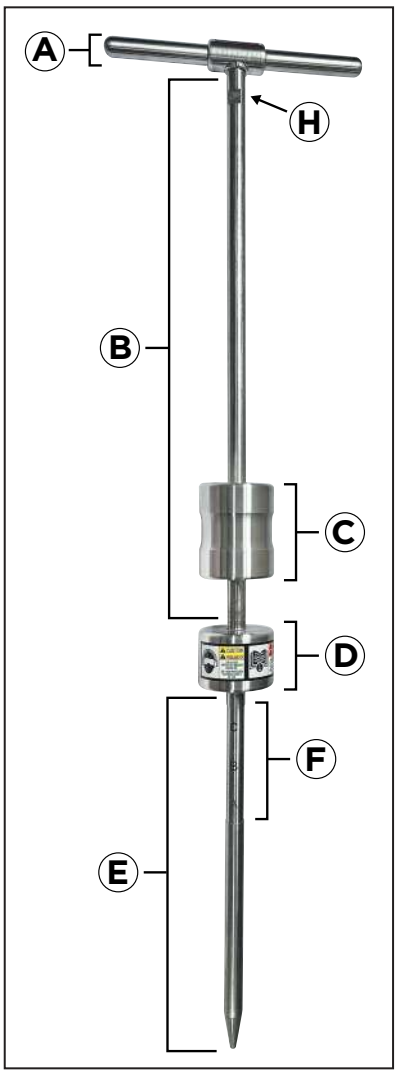


Fig. 3: Full Ground Testing Tool

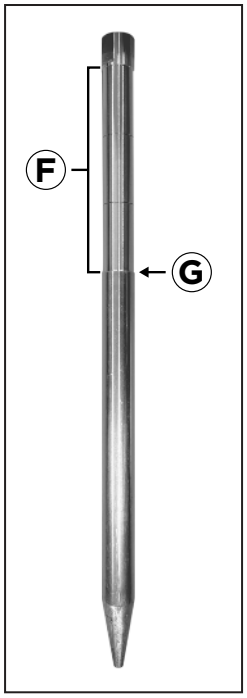


Fig. 4: Closeup of Penetration Rod & Scale (E)

Step-by-Step Assembly Instructions

1. Remove the GT Tool Shaft assembly out of the case and rest it on the ground in a vertical fashion. (Tip of tool resting on the ground and the threaded slide weight shaft up)
2. Inspect and maintain each piece in accordance with section 6 “Inspection and Maintenance” before assembly.
3. Slide the slide weight onto the slide weight shaft.
4. Slide the slide weight carefully down to rest on the anvil. Do not drop or lose control of the slide weight. Keeping the GT Tool in this vertical position resting on the ground should ensure no unexpected movement of the side weight.
5. Assemble the T-handle to the top of the threaded portion of the slide weight shaft. This can be started by hand and then utilize a 3/4” wrench on the GT Tool relief area to snug the T-handle against the lock washer.
6. Care and caution shall always be taken when handling and using the GT Tool to ensure control of the slide weight. Unexpected movement of the slide weight could result in injuries.

Step-by-Step Disassembly Instructions

1. Ensure control of the slide weight while handling the GT Tool to prevent unexpected movement that could result in injuries.
2. Use a 3/4” wrench to loosen the T-handle from the threaded portion of the slide weight shaft. Once loose, remove the T-handle by hand, ensuring the lock washer is also disengaged.
3. Carefully lift the slide weight off the anvil and slide it upward along the slide weight shaft.
4. Remove the slide weight completely from the slide weight shaft, keeping a firm grip to avoid dropping or losing control.
5. Inspect and maintain each component in accordance with section 6, “Inspection and Maintenance,” before and during disassembly.
6. Place the GT Tool components back into the case, ensuring it is positioned securely, weight evenly distributed, and properly stored for future use. See fig. 5.

Fig. 5: Placement of GT Tool components in the case to ensure even weight distribution.

4. Use

Identify Underground Utilities

Prior to or upon arrival at the site, it is crucial to be informed about all underground utilities. No digging, driving of stakes, or penetration of the earth should occur until all underground utilities have been identified and marked. This process is typically done by contacting the local 811 program or utility providers. Additional considerations include sprinkler and irrigation piping, drain lines, and other underground piping. It should be noted that some privately installed lines or piping may not be recorded with 811 or local utility providers. Communicate with the property owner and request that they provide information on any other such underground utilities or lines.

Mark Utilities and Prepare for Soil Testing

Once the tent installation site has been identified and all utilities are clearly marked, proceed with testing the soil to determine the approximate holding power of the tent stakes.

Inspect GT Tool

Inspect the GT Tool and its components in accordance with Section 6 “Inspection and Maintenance” and ensure that it is properly assembled in accordance with Section 3 “Components, Assembly, and Disassembly” prior to use.

Safety

Always comply with Section 2 “Safety”, including wearing appropriate PPE. Care must be taken to keep fingers and hands away from pinch and crush points.

Determine the First Testing Location

Identify the first testing location on the site. Label this as #1 in the sketch area of the testing form and record the corresponding reading on line #1 on the right-hand side of the form.

Insert the GT Tool

Clear any grass or vegetation in the area to expose the ground surface to ensure an accurate reading. See fig. 6. Use the slide weight to drive the GT Tool into the ground until the zero line is flush with the ground surface. The GT Tool should be driven into the ground to the zero line on the scale, which is the first line below “Zone A”. The tool must remain plumb with the earth, with no more than a 3° tilt, to ensure proper readings. See fig. 7.

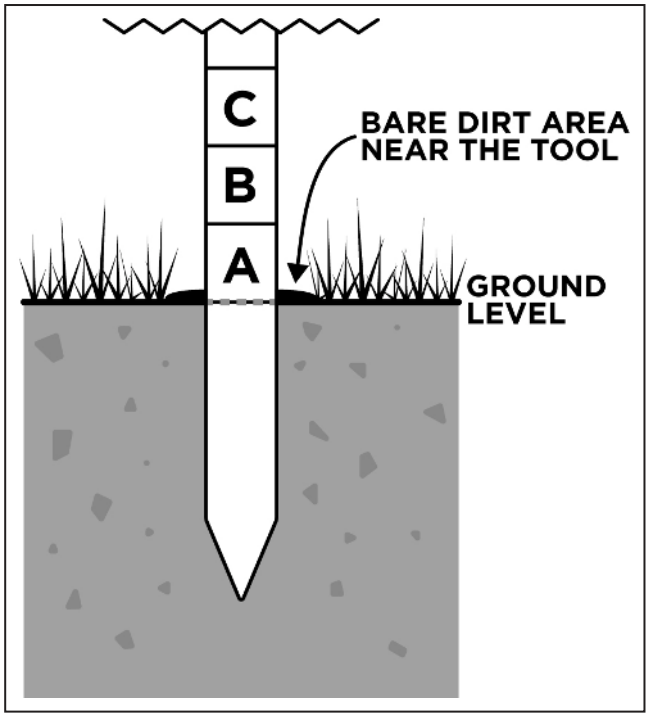


Fig. 6

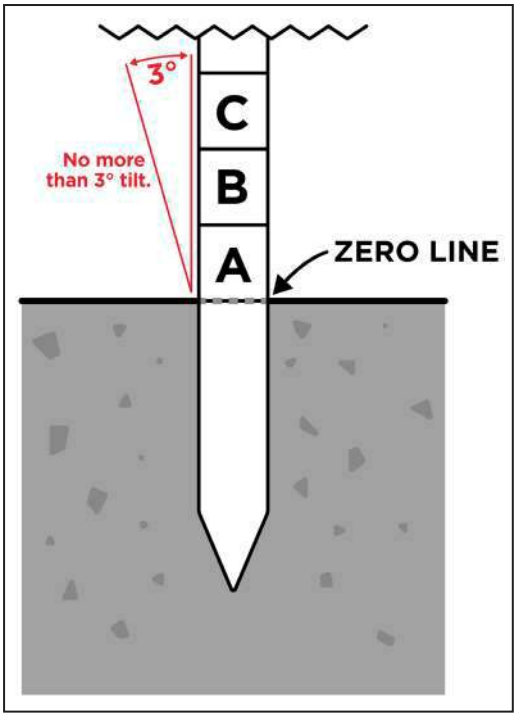


Fig. 7

Perform the Slide Weight Test

Deliver four drops of the slide weight. Each drop must be performed by lifting the weight to the T-handle, holding it there, and then quickly letting go of the weight and allowing it to free-fall and strike the anvil. The operator must not throw the weight down or release it from a lower height, as this will result in inaccurate readings.

To view an instructional video, scan the QR code.

Observe and Record Results

After four drops, observe the ground surface relative to the scale on the GT Tool.

Refer to the following chart for corresponding values:

Zone A: <≅ 1,500 pounds
Zone B: <≅ 750 pounds
Zone C: <≅ 500 pounds or less

Key
<≅ Less than, or approximately, but not equal to

Users should interpret values conservatively. For instance, if a reading is just below the Zone B line but still in Zone A, the estimated holding power would be closer to 750 pounds. See fig. 8.

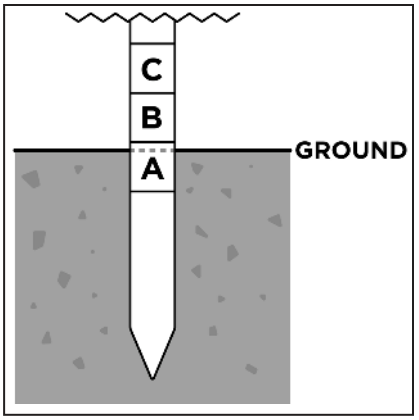


Fig. 8

Verify for Anomalies

To ensure no anomalies (e.g., rock, iron beam, concrete) were encountered, the user shall drop the slide weight two additional times. Verify that the GT Tool continues to drive into the soil by inspecting the scale visually or re-reading the scale. If the GT Tool does not penetrate further, a false reading may have occurred. See fig. 9.

If there is a high amount of subsurface debris (e.g. concrete, brick, rock, wood, etc.) you may have multiple false readings at the respective testing site(s). This may require multiple tests to be performed at each testing location until a valid reading can be recorded.

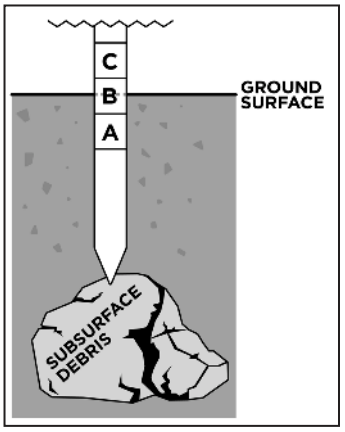


Fig. 9: GT Tool impacting subsurface debris

Address Testing Disparities

If testing results vary significantly across the site, additional testing is recommended for the affected area. Tests should be conducted on each side of the planned tent install site at intervals of approximately every 20 feet, or a minimum of four tests per site, whichever results in more tests. For tents with lengths exceeding 20 feet and odd-numbered dimensions (e.g., 30 feet, 50 feet), two additional tests should be performed for each odd-length side.

In the examples below (fig. 10-12), each "x" represents a test performed on the installation site.

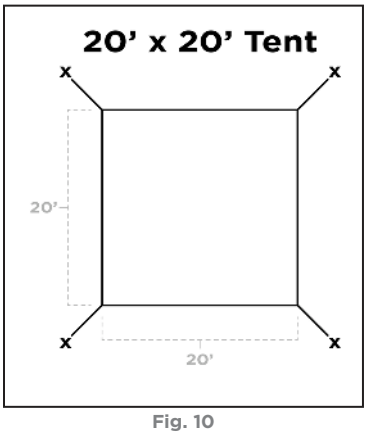


Fig. 10

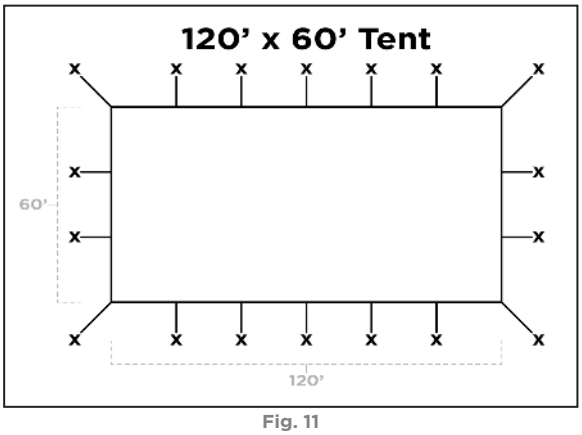


Fig. 11

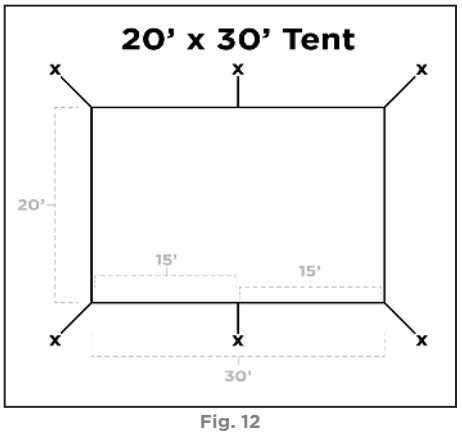


Fig. 12

Complete Testing and Move the Tool

After completing the tests, remove the GT Tool from the ground. If the GT Tool is difficult to extract, gently rock it back and forth to loosen it. Avoid forceful rocking or prying, as this could bend or damage the GT Tool and affect its accuracy in future tests. Use the T-handle to assist with removal. Clean the GT Tool if it becomes covered with excessive dirt or debris before conducting the next test. It is important to keep the slide weight shaft clean and free of dirt or debris as this could affect the testing results by reducing the impact force of the weight on the anvil.

Once testing is complete, ensure the GT Tool and its components are inspected and maintained in accordance with Section 6 “Inspection and Maintenance” and is properly disassembled in accordance with Section 3 “Components, Assembly, and Disassembly” prior to storage. Store the GT Tool in accordance with Section 5 “Storage”.

Note that the GT Tool is intended to give you an additional data point while making a determination on what staking method(s), and components you will need to utilize during installation (e.g. number of stakes, stake bars, etc.), but you should use your own independent judgment, experience, and discretion in successfully implementing the output of the GT Tool to best fit the unique needs and circumstances of each tent installation.

5. Storage

Store Tools in Their Original Case

The GT tool and this manual shall always be stored in their original case when not in use. The case is designed to fit and protect the GT Tool, reducing the risk of damage during transportation or storage.

Storing the GT Tool and this manual in a case helps preserve all decals and markings (such as brand labels, safety warnings, and measurement scales), and additional information that may be critical for proper tool use, safety, and maintenance.

Keep Tools Clean and Dry

Before storing, always ensure the GT Tool is clean and dry to prevent rust, corrosion, and other forms of deterioration. Wipe down the GT Tool to remove dirt, dust, and moisture.

Tools shall be kept in a clean, dry environment. Avoid storing tools in damp or humid areas where rust or corrosion could develop over time.

Protect Operations and Safety Manual

This Operations and Safety Manual is an integral part of this tool. Always keep this Operations and Safety Manual with the GT Tool, stored in the GT Tool case. This Operations and Safety Manual provides critical information on the proper use, care, and maintenance of the GT Tool, as well as essential safety guidelines.

Having the Operations and Safety Manual readily available ensures that users can refer to them for troubleshooting, operational guidelines, and safety protocols at any time.

Inspect the Case Regularly

Check the condition of the GT Tool case periodically to ensure it remains intact and functional. A damaged case can expose the GT Tool to wear, reduce its lifespan, and risk loss of critical parts.

Ensure all applicable latches, hinges, and handles of the case are secure and functioning properly to provide optimal protection during transport and storage.

By adhering to these storage guidelines, you can extend the life of your tools, ensure they are always in good working order, and protect their original condition for future use.

6. Inspection & Maintenance

Cleaning After Use

After each use, wipe down the GT Tool with a clean cloth to remove dirt, dust, and moisture. If heavily soiled, use a mild soap and water mixture to clean with a cloth, rinse thoroughly and then dry with a cloth.

Visual Inspection

Examine the GT Tool for any visible signs of damage, wear, or corrosion. Look for cracks, chips, bends, or other deformations in both the GT Tool's body and any moving parts.

Corrosion can weaken the GT Tool and lead to failure during use. Corrosion could also create inaccuracies in the testing results.

Verify that measuring scales and markings are clear and legible.

Inspect Handles and Grips

Ensure the GT Tool's handle is properly assembled in accordance with section 3 "Components, Assembly, and Disassembly" and in good condition. Look for signs of splitting, cracking, or loose parts.

Check Moving Parts

Test the movement of the slide weight to ensure smooth operation.

Ensure all threaded parts (e.g., the handle) are secure and not loose or missing. If found to be loose, then the application of a thread locker product can be applied to the threads prior to snugging up the component with a wrench. Do not overtighten.

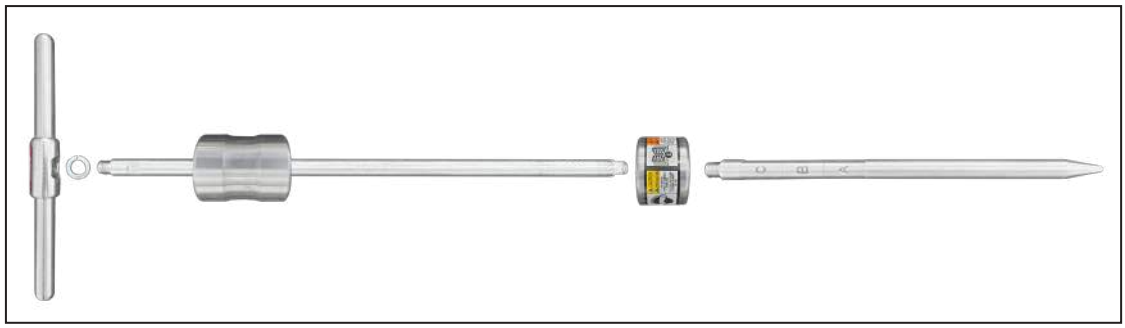


Fig. 13: Disassembled view of the GT Tool

Safety Features

Ensure all decals are present and legible. Replace any missing or illegible decals. Can be ordered from ARArental.org/shop.

Ensure the operation and safety manual is present and legible. Replace as needed. Can be ordered or downloaded for free from ARArental.org/shop.

By conducting a thorough inspection of your tools before each use, you can identify potential hazards, prevent accidents, and extend the GT Tool's life. Never use a damaged or faulty tool—repair or replace it before proceeding with your work.

7. Warranty & Service

Warranty Coverage

ARA warrants the GT Tool to be free from defects in materials and workmanship under normal use for a period of one year from the date of shipment. ARA disclaims all other warranties, express and implied, with respect to the GT Tool, including without limitation, any implied warranties of merchantability, non-infringement and fitness for a particular purpose.

Remedy

If the GT Tool is found to be defective in materials and workmanship under normal use within one year from the date of shipment, ARA, as purchaser's sole remedy, will, at its option, repair or replace the GT Tool.

Exclusions

This warranty does not cover:

- Normal wear and tear;
- Damage caused by misuse, abuse, modification, or improper maintenance;
- Rust, corrosion, or cosmetic defects that do not affect performance; and
- Tools used for applications beyond the manufacturers engineered, designed, and intended use.

How to Make a Warranty Claim

To make a claim, the original purchaser must:

- Provide proof of purchase (receipt or invoice);
- Provide photographs of the damaged tool and/or defective parts; and
- If required, ship the defective tool or part(s) to the designated location.

NOTE: This warranty does not cover the cost of shipping the defective GT Tool back to ARA. Please contact ARA for additional instructions.

Limitation of Liability

ARA's liability is limited to the repair or replacement, at ARA's option, of the GT Tool. ARA is not responsible for incidental or consequential damages, injuries, or fatalities arising from the use or improper use of the GT Tool.

Governing Law

This warranty is governed by the laws of the state of Texas.

8. Contact Information

For questions regarding the GT Tool:

- Email: **SafeTenting@ARArental.org**
- Phone: **1(800)-334-2177**

To order new tools, replacement parts, manuals, and decals, visit ARArental.org/shop.

9. Appendix A

The following form is the ARA GT Tool Site Testing Form. It is designed to aid in the recording of test results collected while utilizing the GT Tool at a tent installation site.

ARA highly recommends that this form is used each time that the GT Tool is utilized for testing at a tent installation site.

Recording testing results on this form will assist in substantiating that the GT Tool was used and the results thereof.

To use the form, follow these instructions:

1. Fill out the “User Information” section of the form.
2. Ensure that the “Site Information” is filled out and is accurate.
3. Use the “Sketch Field” box to sketch a birds eye view of the site layout and indicate where the tests were conducted. Include site reference points like roads, parking lots, buildings, location of utilities, and mark test locations with their respective numbers.
4. As each test is performed, enter the results (A, B, C) for each test in the table to the right of the “Sketch Field” box. Ensure that you are only recording valid test results.
5. Once all tests are completed, sign and date the “Testing Conducted By” signature line at the bottom of the form.
6. Retain the form in accordance with your company’s policy.

Copies of the form can be made from the example on the following page, or you can download the form on RentalU.

GT Tool Site Testing Form

SAFE TENTING

User Information

Company Name: _____ Phone Number: _____

Company Address: _____

Test Conducted By: _____

Site Information

Site Contact (Name): _____ Phone Number: _____

Site Address: _____

Sketch Field (Bird's Eye View)

Use this space to sketch the site layout and indicate where the tests were conducted. Include roads, parking lots, buildings, location of utilities, and mark test locations with their respective numbers.

Test #	Result
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	

Zone A: <≅ 1,500 pounds
Zone B: <≅ 750 pounds
Zone C: <≅ 500 pounds

Key
<≅ Less than, or approximately, but not equal to

Testing Conducted By (Signature): _____ Date: _____

Contact "811 Call Before You Dig" prior to breaking ground!

GT Tool Site Testing Form

SAFE TENTING

User Information

Company Name: XYZ Rental Phone Number: 800-334-2177

Company Address: 1900 19th St., Moline, IL 61265

Test Conducted By: Jay Baroney

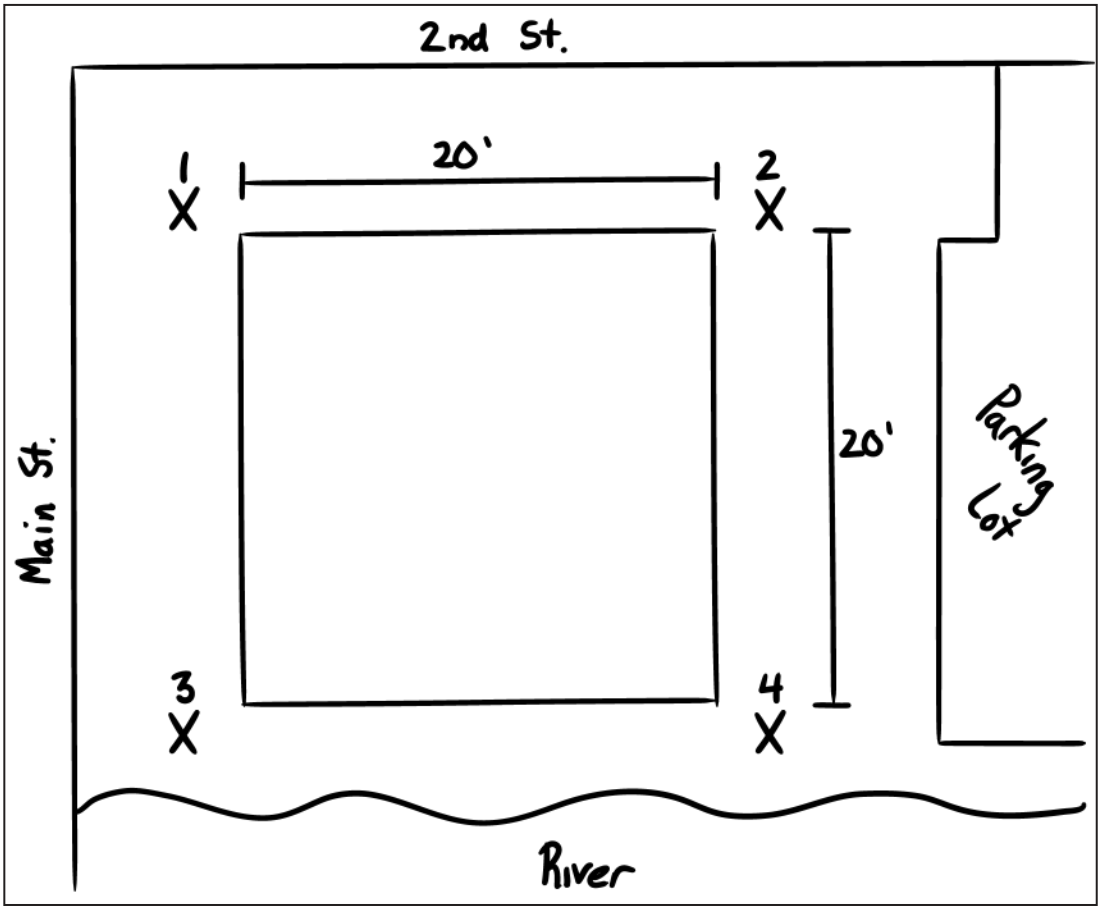
Site Information

Site Contact (Name): Bob Smith Phone Number: 123-456-7890

Site Address: 123 Main St., Yourtown, IL 60565

Sketch Field (Bird's Eye View)

Use this space to sketch the site layout and indicate where the tests were conducted. Include roads, parking lots, buildings, location of utilities, and mark test locations with their respective numbers.



Test #	Result
1	A
2	A
3	B
4	A
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	

Zone A: ≤≠ 1,500 pounds
Zone B: ≤≠ 750 pounds
Zone C: ≤≠ 500 pounds

Key
≤≠ Less than, or approximately, but not equal to

Testing Conducted By (Signature): _____ Date: 4-18-2025

Contact "811 Call Before You Dig" prior to breaking ground!

SAFE TENTING

v.12.18.2025

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