New ANSI/ISEA 121 safety standards for design, testing and performance criteria for systems to prevent dropped objects in the workplace.

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New “Dropped Objects Standards” establishes design, testing and performance safety criteria to guide manufacturers and safety engineers in the production and selection of tethering and lanyard systems.

Being struck by falling objects kills hundreds of individuals each year and injures tens of thousands more. According to the most recent statistics, there were 247 deaths in 2015 attributed to impacts from dropped tools and other objects. Liberty Mutual reported that "struck by" incidents were up 8.6 percent that year and that Liberty Mutual spent $5.3 billion on workers' comp claims due to "struck by" incidents from 2013 to 2014.

An increasing numbers of technicians are finding themselves ascending to heights to accomplish their projects. Often they are directly over or adjacent to their colleagues, bystanders and other individuals at lower levels. Protective equipment, such as hard hats, has long been available with standards written to minimize the effects of “struck-by” incidents but this is only after an object has fallen.

Preventative measures such as netting and toe boards are also mitigating practices for this risk, however, regardless of these solutions, they do not entirely prevent incidents. This is particularly important with the use of hand tools and other objects like cell phones, hard hats and tablets. While at heights, active controls utilized to prevent falling tools and objects by tying them off or containing them with tethering systems is a rapidly growing proactive safety practice.

With such a high risk to workers’ safety, it’s unfortunate that until now there have been no standards in place to guide manufacturers and safety engineers on the proper safety criteria of tethering products. Over the past two years, my company, Hammerhead Industries, manufacturer of Gear Keeper tethering systems, along with several other
leading safety equipment manufacturers have been working with the International Safety Equipment Association (ISEA) to develop a standard for equipment tethering solutions that can prevent dropped tools and other objects.

By establishing manufacturing guidelines for tethering systems, the ANSI/ISEA 121-2018, is a significant first step in reducing dropped tool incidents. The new ANSI/ISEA standard establishes minimum design, performance, and labeling requirements that can mitigate this hazard. Safety engineers and users can feel confident that any ANSI/ISEA compatible tool tethering system they choose has met these guidelines.

*Why is this important?* This is very important because ANSI/ISEA 121 compliant tethering systems include many different components (i.e. tool attachments, lanyards, carabiners and anchor points) that will work safely together even when purchased from different ANSI/ISEA 121 compliant manufacturers. It is also important to note that currently ANSI/ISEA 121 does not tell you when and how to tether your tools although it does provide some information and recommendations in the appendix.

However the goal of supplying end-user groups and safety organizations with guidance is still continuing. In the very near future, ISEA, with the support of their manufacturers group and input from end users, is developing additional online resources about how to apply the standard to their work at heights program and policies. This may include FAQs, webinars and other resources.

**ANSI/ISEA – 121 compliant tether sample**

(ill 1 - Credit Hammerhead Industries Inc, all rights reserved.)
**Weight and length compatibility**

(ill 2 - Credit Hammerhead Industries Inc, all rights reserved.)

The tool tether’s length and the weight that it can carry safely, as required by the standard, are the critical limiting elements in safe tethering. The ratings and labeling requirements of the ANSI/ISEA standard will allow for a user to safely couple components. (See ill 2)

The ANSI/ISEA requirement is that the rated tool attachment is greater than or equal to the weight of the tool... and that the tether weight limit and the anchor weight limit must be equal to or greater than the weight allowance of the tool attachment.

Furthermore, the tool attachments and anchor points have a maximum lanyard length based on the length of their lanyard test. Also the tethers have a maximum length. Therefore, in addition to the tool weights, one must ensure that the tool attachment and anchor points have a maximum tether length that is less than or equal to the tether which they are being used with.

This may sound complicated but it is not. In illustration 2 we have a 4-foot tether (weight limit 10 lbs), a tool (weight 5 lbs) and an anchor point (weight limit 15 lbs). Three different weights but they are compatible for safe tethering.

1. The 10 lb tether is the critical element in this scenario… this is the maximum weight limit of this system.
2. The tool that is attached to the tether weighs 5 lbs (which is less than the tether’s 10 lb weight rating) so the tool (and tool attachment) is compatible with the tether.

3. The 10 lb tether is attached to the tool belt anchor point which has a weight rating of 15 lbs (which is more than the tether’s weight rating of 10 lbs) so the anchor point is compatible with the tether’s weight rating. Again, even though the anchor point is rated at 15 lbs., the maximum weight limit of the system is 10 lbs.

4. Since the tool’s 5 lb weight is within the tether’s tool weight limit and the tether’s weight limit is less than the weight limit of the work belt’s anchor point… we have a safe tethering solution.

One additional situation that users might occur is when they wish to use a tether with a higher weight rating than the anchor point. This can be allowed as long as the user understands that the max weight rating of the entire system is the lowest weight rating.

So for example, if the user had a 15 lb tool tether and a 10 lb anchor point, this would work for our example above as long as the user understood that the max tool weight they could use with the system was 10 lbs.

Since users may find themselves using various components with different ratings, to maintain a safe working situation, it is important that they understand the above.

Native Tool Tether Points

(iill 3 Credit Hammerhead Industries Inc, all rights reserved.)
When tethering tools and other small objects that have built-in attachment points or hang holes, it is also recommended that users contact the tool manufacturer to determine if the native attachment point is compliant with ANSI/ISEA 121 tool attachment testing requirements (ill 3).

**What Information does the ANSI/ISEA 121 require on product labels?** (Ill 4.)

![Image of product label](image4)

a) **Name, trademark or other means of identification of the manufacturer (for all solutions).** Example: Gear Keeper products have a woven label with the Gear Keeper name and website. (ill 4)

b) **Product identification (number, date code and/or serial number) (for all solutions).** Example: All Gear Keeper products have a printed label with model number, serial number and date of manufacture. The serial number or date of manufacture is to allow tracking of the products. Gear Keeper uses serial numbers which allow us to accurately track the product while the manufacturing date also allows the user to know when the product was manufactured if they track the product service life by period of use. (ill 4)

c) **Published capacity (ies), identified by weight (for all solutions).** Example: Gear Keeper’s printed label includes the weight limit in lbs (or ozs) and kgs (or grams). (ill 4)

d) **Number of this specific ANSI standard (ANSI/ISEA 121-201x).** (ill 4)

e) **Tether length (for tool tethers only).** Example: Gear Keeper’s printed label will include the tether length (ill 4).

f) **Max tether length (for anchor points, attachments and if applicable, containers).**
Overview of scope of “Dropped Object” Standard

The release of the new ANSI/ISEA “Dropped Object” standard was officially released on July 3rd 2018. Working with ISEA, this standard was developed in conjunction with companies who have had a long history in the manufacturing of tethering systems. With their combined knowledge based on decades of developing and testing safe tethering systems, they put their experience to work resulting in the criteria that became the foundation for ANSI/ISEA – 121.

Four main categories of products are referenced in the new standard: anchor points, attachment points, tool tethers, and anti-drop storage. This standard establishes design, testing and performance criteria for active systems used to prevent dropped objects in the workplace. Recognizing the benefit of these active prevention practices, it was the mission of the ANSI/ISEA and this group of manufacturers to create guidance for this equipment.

This standard establishes minimum design, performance, testing and labeling requirements for solutions that reduce dropped object incidents in industrial and occupational settings. Dropped objects include hand tools, instrumentation, small parts, structural components and other items that are used at heights. These objects have the potential of becoming “dropped objects” possibly resulting in struck-by injury or fatality or damage to equipment. The standard focuses on preventative solutions actively used by workers to mitigate these hazards.

*What the standard doesn’t cover.* The standard does not address passive preventative solutions such as netting, barricades and toe boards, nor does the standard address protective solutions for dropped objects that minimize damage from falling objects including head protection, foot protection, and eye protection. The standard also does not address hoisting or lifting requirements for material handling. These solutions are described in other standards if applicable.
What the standard does cover. The standard will require manufacturers to provide instructions on how to use tethers, attachments, anchors and containers. However, not all work environments can be addressed and therefore it will be the responsibility of the end user and safety professional to evaluate the environment and make sure the worker is not put into danger by preventing a dropped object incident. For example; attaching too much weight to a worker that could cause them to fall or using tethers around moving machinery or other situation that may cause causing entanglement issues.

I have briefly covered, in broad strokes, some of the main elements of the new ANSI/ISEA 121 standard. Gear Keeper has also created a short video with additional information. You can see it here https://youtu.be/WXXgykeleAc. I recommend that you contact the International Safety Equipment Association (ISEA) for more information to purchase a copy of the standard that they sell for $30. ISEA link: https://bit.ly/2LkwxQV

Captions
Ill. 1 – Sample of ANSI/ISEA – 121 compliant tether.
   Gear Keeper TL1-3044
   Fixed End Tool Tether with Aluminum
   Double Action Locking Carabiner with captive eye.
   15lb / 6.8kg
   48” / 122cm

Ill 2 - The tool tether’s length and the weight that it can carry safely, as required by the standard, are the critical limiting elements in safe tethering. The ratings and labeling requirements of the ANSI/ISEA - 121 standard will allow for a user to safely couple components.

Ill 3 - When tethering tools and other small objects that have built-in attachment points or hang holes, it is also recommended that users contact the tool manufacturer to determine if the native attachment point is ANSI/ISEA - 121 compliant.

Ill 4 – Mandatory ANSI/ISEA – 121 labeling information.
About Hammerhead Industries:
John Salentine is the co-founder and Vice President of Hammerhead Industries. Gear Keeper tool tethering systems are products of Hammerhead Industries, Inc, the world’s leading manufacturer of unique personal safety tethering equipment including retractable tethers and lanyards for tools, gear and instruments. Covered by numerous patents, Gear Keeper tethers are precision made systems that keep tools and instruments safe, secure and close at hand. With more than 3,000 configuration options and millions of systems in use, Gear Keeper tethers are found worldwide in a range of applications including industrial safety, construction, fire/rescue, law enforcement, military, wind power generation, trucking, oil and gas exploration, outdoors/hunting, SCUBA/fishing, communications and more. All of the company’s products are built in the USA.

About ANSI & ISEA:
ANSI is a century-old, private, not-for-profit organization that promotes “voluntary consensus standards.” The purpose of ANSI and the standards they and ISEA put forth is to set a level of quality and safety across an entire industry. The new standard is the first of its kind to address equipment used to tether and/or contain hand tools, components, and other objects from falling from at-heights applications.