

# TerranearPMC Safety Share

## Week of August 21, 2017 – Nail Gun Safety

Nail guns are popular tools. They are used in various construction sites as well as for home use. They are powerful, easy to use and can increase production. Yet, they are responsible for an estimated 37,000 injuries that require visits to the emergency room each year.

About two-thirds of these injuries occur in framing and sheathing work. Injuries also often occur in roofing and exterior siding and finishing. How likely are nail gun injuries? In the NIOSH publication, Nail Gun Safety, a study for apprentice carpenters found that:

- 2 out of 5 were injured using a nail gun during their 4 years of training.
- 1 out of 5 were injured twice.
- 1 out of 10 were injured three or more times.

More than half of reported nail gun injuries are to the hand and fingers. One-quarter of these hand injuries involve structural damage to tendons, joints, nerves, and bones. After hands, the next most often injured are the leg, knee, thigh, foot, and toes. Less common are injuries to the forearm or wrist, head and neck, and trunk. Serious nail gun injuries to the spinal cord, head, neck, eye, internal organs, and bones have been reported. Injuries have resulted in paralysis, blindness, brain damage, bone fractures, and death.

Nail gun safety starts with understanding the various trigger mechanisms. All nail guns rely on two basic controls: a finger trigger and a contact safety tip located on the nose of the gun. Trigger mechanisms can vary based on the order in which the controls are activated and whether the trigger can be held in the squeezed position to discharge multiple nails OR if it must be released and then squeezed again for each individual nail. Combining these variations gives four kinds of triggers. Some nail guns have a selective trigger switch which allows the user to choose among two or more trigger systems. Each trigger type is described below.

Full Sequential trigger: This is the safest type of nail gun trigger. This trigger will only fire a nail when the controls are activated in a certain order. First, the safety contact tip must be pushed into the work piece, then the user squeezes the trigger to discharge a nail. Both the safety contact tip and the trigger must be released and activated again to fire a second nail. Nails cannot be bump fired (where a nail is discharged through simple contact between the contact tip and an object).

Contact trigger: This mode of operations fires a nail when the safety contact and trigger are activated in any order. You can push the safety contact tip first and then squeeze the trigger, or you can squeeze the trigger first and then push the safety contact tip. If the trigger is kept squeezed, a nail will be driven each time the safety contact is pushed in. All nails can be bump fired.

Single Sequential trigger: Like the full sequential trigger, this trigger will only fire a nail when the controls are activated in a certain order. First, the safety contact tip must be pushed into the work piece. Then, the user squeezes the trigger to discharge a nail. To fire a second nail, only the trigger must be released. The safety contact tip can stay pressed into the work piece. Nails cannot be bump fired.

Single Actuation trigger: Like the contact trigger, this trigger will fire a single nail when the safety contact and trigger are activated in any order. A second nail can be fired by releasing the trigger, moving the tool and squeezing the trigger again without releasing the safety contact tip. Some manufacturers refer



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to these triggers as “single sequential triggers”, but this is NOT a Single Sequential trigger as the first nail can be bump fired with a single actuation trigger but not with a true single sequential trigger.

Double firing is a major risk factor that can lead to a nail gun injury. Double firing can happen faster than the user is able to react and release the trigger, and is a particular problem for new workers who may push hard on the tool to compensate for recoil. The recoil of the gun itself can even cause a non-nail injury in tight spaces if the nail gun hits the user’s head or face.

The Consumer Product Safety Commission (CPSC) found that contact trigger nailers are susceptible to double firing, especially when trying to accurately place the nailer against the work piece. They found that a second unintended firing can happen faster than the user is able to react and release the trigger and therefore, can cause injuries. This can occur when the user is working in an awkward position, such as in tight spaces where the gun doesn’t have enough space to recoil.

Nail guns with contact and single actuation triggers will fire if the trigger is being held squeezed and the safety contact tip gets knocked or pushed into an object or person by mistake. For example, a framer might knock his leg going down a ladder or bump into a co-worker passing through a doorway. Contact trigger nailers can release multiple nails and single actuation trigger nailers can release a single nail to cause injury.

Holding or carrying contact trigger or single actuation trigger nail guns with the trigger squeezed increases the risk of unintended nail discharge. Construction workers tend to keep a finger on the trigger because it is more natural to hold and carry an 8-pound nail gun using a full, four-finger grip. Tool manufacturers, however, do warn against it. Other risks include nail ricochet after striking a hard surface or metal feature, Missing the work piece, awkward position nailing and Bypassing safety mechanisms.

Some ways accidents can be reduced is to always use the full sequential trigger as it reduces the risk of unintentional nail discharge and double fires, including injuries from bumping into co-workers.

Safety training is a MUST for both new and experienced workers so users remain aware about the causes of nail gun injuries and specific steps to reduce them.

Every company should establish their own nail gun work rules and procedures to address risk factors and make the work as safe as possible. Providing Personal Protective Equipment (PPE) is a MUST and should include hard hats, High Impact eye protection safety glasses or goggles marked ANSI Z87.1, and Hearing protection – either earplugs or earmuffs.

Workers should always be encouraged to report and discuss injuries and close calls. Injuries resulting from use of nail guns hospitalize more construction workers than any other tool-related injury. Yet, when they do occur, these injuries are often not reported. First aid kits should always be close by for immediate use with at least two persons knowledgeable and trained to administer first aid as well as having a medical facility (clinic, hospital, urgent care center) nearby with all persons knowing its location.

**Safety Tip: Do the right thing....even if you think no one is watching!**

