

# Powder Actuated Tools Safety & Compliance Game Plan



## The 7 steps to take to prevent powder actuated tool injuries and OHS violations.

A powder actuated tool is literally a loaded gun. But instead of bullets, it fires nails, bolts, clips or pins at great speeds into a hard object or material, such as steel or concrete. And like a gun, powder actuated tools must be handled, used and stored with great care by properly trained operators who know what they're doing. Common hazards:

- **Flying particles**, especially when fasteners are fired too close to the corner of masonry or concrete or strike materials such as glazed tile, hollow tile or thin marble tile;
- **Ricochet**, which is likely to result when the tool isn't held at right angles to the base material, or the fastener hits a particularly hard material like stone or hardened steel;
- **Noise** due to the extreme pulse of sound powder actuated tools release when they're fired;
- **Blow-Through**, which occurs when the base material doesn't offer enough resistance, allowing the fastener to pass completely through and fly out the other side; and
- **Fire or explosion**, which becomes a risk when the tool is used in atmospheres containing high levels of flammable vapours, mists or dusts.

In addition to serious or even fatal injury, failure to comply with OHS powder actuated tools regulations can also lead to fines, stop-work orders and other enforcement actions. Here's a 7-step Game Plan to ensure this doesn't happen to you.

## Defining Our Terms

Powder actuated, sometimes referred to as explosive actuated tools, are hand tools that use an explosive force to propel a fastener for the purpose of getting it to impinge on or penetrate another object, surface or material. Such devices are actually a system consisting of 3 potentially dangerous components:

- The tool itself;
- Its power load; and

- The objects it fires.

While operating on similar principles, tools that use pneumatic or electrical force to hurl fasteners and other objects aren't powder actuated and thus not covered in this Game Plan.

## 7-Step Powder Actuated Tools Compliance Game Plan

There are 7 basic sets of measures you must take to minimize risk of powder actuated tool injuries and ensure compliance with OHS requirements.

### 1. Ensure Powder Actuated Tools Meet General Design & Construction Requirements

Employers that furnish powder actuated tools for workers to use must ensure that the equipment they select is properly designed and constructed for the work it's used for:

- **BC, NB, NL, NS, PEI and YK:** powder actuated tools must meet some version of ANSI Standard 3-1995, *American National Standard for Construction and Demolition Operations – Safety Requirements for Powder-Actuated Fastening Systems*;
- **FED:** powder actuated tools must meet CSA Standard Z166-1975, *Explosive Actuated Fastening Tools*; and
- **AB, MB, NT, NU, ON, QC and SK** don't specify the standard powder actuated tools must meet.

There are also 4 jurisdictions (BC, NL, QC, YK) where you're allowed to use only a low velocity powder actuated tool (speed rating of less than 100 m (330 ft.) per second) unless there's no low velocity tool capable of doing the job available on the market.

### 2. Ensure Powder Actuated Tools Have Required Safety Features

Powder actuated tools must be safely designed and include appropriate guards. Some jurisdictions ban use of powder actuated tools unless they have specific safety features:

- Tool must be designed so that it requires 2 separate and distinct operations to activate: depressing the tool into the firing position followed by the final firing movement (BC, NL, ON, YK);
- Tool must be designed so that positive means of varying the power level is available enabling the operator to select a power level appropriate for the work (BC, NL, YK); and
- Tool must have a mechanism to prevent firing while being loaded, positioned or if it's dropped (ON).

In addition, powder actuated tools and their accessories must be legibly and durably marked with the manufacturer's name or trademark, model number and serial number. Boxes containing explosive charges should also be marked with the manufacturer's name or trademark, the place where the explosives were manufactured and the explosives' strength.

### 3. Ensure Proper Inspection & Maintenance of Powder Actuated Tools

Powder actuated tools must be inspected, kept clean and maintained in accordance with manufacturer's instructions. Before each use, the operator should verify that:

- The tool is clean;
- All moving parts operate freely;
- The barrel is free from any obstruction; and
- The tool is adequately equipped for the intended use and not defective.

Equipment found to have potentially dangerous damage or defects must be immediately marked as unsafe, locked out, removed from service and reported to a supervisor. Equipment must also be turned off and locked out during servicing.

### 4. Implement Safe Work Procedures for Powder Actuated Tool Operators

Safe work policies and procedures are crucial to preventing incidents and injuries. While procedures may vary slightly depending on the manufacturer's instructions, at a minimum, they should require workers to:

- Not operate a powder actuated tool unless they've been properly trained and authorized by their employer to do so;
- Carefully follow manufacturer's instructions in operating the tool;
- Use only cartridges and fasteners designed for the tool;
- Ensure that the breech and barrel are free of foreign matter before loading the tool;
- Perform loading only immediately before firing;
- Unload the tool immediately if work is interrupted for any reason after loading has been performed;
- Never point the tool at any person, regardless of whether it's loaded or unloaded;
- Never leave loaded tools unattended;
- Not use defective or unsafe tools until they've been satisfactorily repaired;
- Keep their hands away from the barrel end;
- Ensure that the powder level of the tool is appropriate and will work without excessive force;
- Wear appropriate PPE, especially eye, face, head and hearing protection;
- Not repair or modify a powder-actuated tool unless they use parts and follow instructions supplied by the manufacturer;
- Not use a powder actuated tool in a confined space or other area with an explosive or flammable atmosphere unless proper ventilation is provided;
- Not fire a fastener into a surface unless they're sure it will contain the fastener;
- Not fire a fastener:
  - Through an existing hole unless the tool is specifically equipped by the manufacturer for accurate alignment of the barrel with the hole;
  - Into a 'spalled' or chipped surface, such as an uneven area where a previous fastening was unsatisfactory;
  - Into very hard or brittle materials, such as cast iron, glazed tile, hardened steel, glass block, natural rock, hollow tile and most brick;
- When a misfire occurs, hold the tool firmly against the work surface for at least 5-15 seconds and then follow the manufacturer's instructions for

misfires; and

- Return unused cartridges to a proper storage box.

## **5. Ensure Powder Actuated Tool Operators Use Required PPE**

Workers operating powder actuated tools must use proper PPE, including:

- Safety glasses, goggles or other protection shielding the worker's eyes and face from flying debris, ricocheting fasteners and other hazards;
- Hearing protection;
- A hard hat or other form of head protection; and
- Protective gloves or other suitable protection against hand hazards and vibration.

## **6. Provide Powder Actuated Tool Operators Proper Safety Instruction & Training**

Don't let workers operate a powder actuated tool unless and until they successfully complete training from a qualified person covering, at a minimum:

- Your safe work rules and procedures for operating the tool;
- The manufacturers' instructions for the tool;
- How to select the appropriate tool, accessories, fastener and power load for each job;
- The limitations of each type of tool, fastener and power load;
- Proper use of the PPE required when operating the tool; and
- Proper maintenance, repair, inspection and use of the tool.

**Note:** In NB, NL and QC, a worker must have a valid operating certificate from the manufacturer or a qualified instruction agency to operate a powder actuated tool. Regardless of where you are, verify that workers understand their training and keep written records listing the training and who provided it and the date and time it was delivered.

## **7. Ensure Proper Storage of Powder Actuated Tools**

When they're not in use, powder actuated tools must be unloaded and stored in a secure place that people not qualified to use the equipment can't access, such as a securely locked locker. Also be sure to keep power loads of different power levels and types must be kept in different compartments or containers so nobody confuses them.