

**PURPOSE/APPLICATION**

Tools come in a wide variety of types and sizes. They include hand tools, power tools, pneumatic tools and powder actuated tools. Special care must be taken to prevent personal injury when operating tools of any kind.

**PPE**

- Canadian Plains Energy Services (CPE) minimum requirements
- Specialty gloves
- Hearing protection

**TRAINING**

- Orientation
- Equipment Operator Training

**HAZARDS & CONCERNS**

- Injury (cuts, lacerations)
- Ignition source
- Flying debris
- Repetitive strain
- Noise
- Rotating equipment
- Explosive atmosphere
- Entanglement
- Gravity, slip and fall

**PRECAUTIONS**

***General***

- Visually inspect all tools prior to use. Do not use a tool that is defective or in need of repair.
- Before starting machinery, ensure that starting the machinery will not endanger yourself or another worker.
- Warning signs will be clearly visible at access points to machines that start automatically.
- Intrinsically safe equipment where required.
- If a safe guard is removed from a machine to permit maintenance testing, repair, or adjustment of the machine, the safe guard must be replaced before permitting use of the machine.
- A surface where the temperature exceeds or may exceed 80 degrees Celsius or a cooled surface.
- With all tools there is potential to have contact between moving parts of machinery, electrically energized equipment or part of the work process with the workers clothing, jewelry or hair may occur.
- Wear clothing that fits closely to the body.
- Do not wear bracelets, rings, dangling neckwear, a wristwatch or similar articles.
- Have head and facial hair that is short or confined and cannot be snagged or caught.

***Power Tool Use***

- Use the proper tool for the job.
- Power tools and hand tools are to be used and maintained in compliance with the manufacturer’s guidelines.
- Ensure you have an adequate supply of the proper type and size of tool for the job.
- Ensure the proper Personal Protective Equipment is worn or used.
- Electrical tools shall have a three-prong plug or be double insulated.

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- Grinder discs, buffers and stones are to be used for the designed application and at the rated speed.
- Stationary grinders must have properly adjusted tool rests and dressed stones.
- Angle grinders must have the factory-installed guards in place.
- On/off switches must be functional and provide easy access to the operator.
- Saw blades shall be used to cut only the material they were designed for, blades must not be operated at a speed that exceeds the manufacturers rating, guards must be in place.

***Air Actuated Tools***

- Supply air to be controlled to O.E.M specifications.
- Tools to be used for designed purpose only.
- Follow lubrication guide for proper lubrication of equipment.

***Explosive Actuated Tools***

- Operator must be trained and qualified.
- Tool to be used for designed purpose only and in the manner for which it was designed.
- Explosive cartridges to be stored and handled in accordance with the O.E.M guidelines.

***Hand Tools***

- Tools to be used for the designed purpose.
- Chisels, punches, wrenches and hammers etc. to have all burrs removed.
- Chisels, punches, screwdrivers etc. to be properly dressed.
- Cracked, splintered or damaged handles to be replaced.
- Never use a defective tool, and ensure tools are repaired and/or replaced.

***Cleaning and Storage***

- All damaged/worn/broken/malfunctioning tools must be removed from services and reported to supervisor, tag out of service as required.
- All tools shall be cleaned after use and repairs made before being put into storage.
- Repairs to tools should be by a qualified person.
- When repairing tools, be sure to maintain the manufacturer's specifications.

***Defective Tools***

- Defective tools can cause serious and painful injuries.
- If a tool is defective in some way, DO NOT USE IT.
- Beware of problems like:
  - Chisels and wedges with mushroomed heads.
  - Split or cracked handles.

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- Wrenches with worn out jaws.
- Tools, which are not complete, such as files without handles.

***Air, gasoline or electric power tools***, require skills and complete attention on the part of the user, even when they are in good condition. Don't use power tools when they are defective in any way. Watch for problems such as:

- Broken or inoperative guards.
- Insufficient or improper grounding due to damage on double insulated tools.
- No ground wire (on plug) or cords of standard tools.
- The on/off switch not in good working order.
- Tool blade is cracked.
- The wrong grinder wheel is being used.
- The guard has been wedged back on a power saw.

Specific pieces of equipment that have the potential to have contact with worker clothing, jewelry or hair between moving parts of machinery, electrically energized equipment or part of the work process include:

- Grinders (hand held and bench)
- Welders
- Circular Saws
- Chop Saws
- Chain Saws
- Drills / Drill press

### **REFERENCES / ADDITIONAL INFORMATION**

- COP 05
- Manufactures / Operators Manual.

### **REGULATIONS**

**Alberta OHS Code - Part 25 Tools, Equipment and Machinery**

***Contact by clothing, etc. 362***

- 1. If contact between moving parts of machinery, electrically energized equipment or part of the work process and a worker's clothing, jewelry or hair is likely, an employer must ensure that***
  - a. the worker's clothing fits closely to the body,***
  - b. the worker does not wear bracelets, rings, dangling neckwear, a wristwatch or similar articles, and***
  - c. the worker's head and facial hair is short or confined and cannot be snagged or caught.***

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2. *If contact between moving parts of machinery, electrically energized equipment or part of the work process and a worker's clothing, jewelry or hair is likely, a worker must*
  - a. *wear clothing that fits closely to the body,*
  - b. *not wear bracelets, rings, dangling neckwear, a wristwatch or similar articles, and*
  - c. *have head and facial hair that is short or confined and cannot be snagged or caught.*
3. *Despite subsections (1) and (2), a worker may wear a medical alert bracelet that has a breakaway or tear away band.*

**Machines close together 363**

*An employer must ensure that a worker is not in danger because the machines installed at a work site are close to each other or to a worker.*

**Moving workers 364**

*An employer must ensure that machinery or equipment used to move raise or lower workers is designed by the manufacturer or certified by a professional engineer as being appropriate for that purpose.*

**Starting machinery 365**

1. *An employer must ensure that an alarm system is installed if*
  - a. *a machine operator does not have a clear view of the machine or parts of it from the control panel or operator's station, and*
  - b. *moving machine parts may endanger workers.*
2. *The alarm system must effectively warn workers that the machine is about to start.*

**Preventing machine activation 366**

*An employer must install a positive means to prevent the activation of equipment if*

- a. *a worker is required, during the course of the work process, to feed material into the machine, or*
- b. *a part of the worker's body is within the danger zone of the machine.*

**Operator responsibilities 367**

1. *Before starting machinery, an operator must ensure that starting the machinery will not endanger the operator or another worker.*
2. *While operating machinery, an operator must ensure that its operation will not endanger the operator or another worker.*

**Controls 368**

*An employer must ensure that an operational control on equipment*

- a. *is designed, located or protected to prevent unintentional activation, and*
- b. *if appropriate, is suitably identified to indicate the nature or function of the control.*

**Immobilizing machinery 369**

*A worker must not leave a machine, or a part of or extension to a machine, unattended or in a suspended position unless the machine is immobilized and secured against accidental movement.*

**Actuated fastening tools 374**

*A worker must not permit the trigger of an actuated fastening tool to be mechanically held in the "ON" position unless the manufacturer's specifications permit the tool to be used that way.*

**Circular saw blades 377**

- 1. An employer must ensure that a circular saw blade with a crack of any size adjacent to the collar line, or with a crack elsewhere that exceeds the limits specified in Schedule 8, Table 1, is
  - a. removed from service, and
  - b. replaced or repaired.*
- 2. If a circular saw blade has a crack near the periphery that does not exceed the limits specified in Schedule 8, Table 1, an employer must ensure that
  - a. the blade is removed from service and replaced,
  - b. the crack in the blade is repaired, or
  - c. the crack is prevented from getting longer by slotting, centre punching, drilling or another effective means.*
- 3. An employer must ensure that a circular saw that is repaired under subsection (1) or (2) is retensioned as necessary by a competent worker.*

**Band saw blades 378**

- 1. An employer must ensure that a band saw blade with a crack that exceeds the limits specified in Schedule 8, Table 2, other than a shake band saw blade, is
  - a. removed from service and replaced, or
  - b. the crack in the blade is repaired.*
- 2. An employer must ensure that a band saw blade with a crack that does not exceed the limits specified in Schedule 8, Table 2, other than a shake band saw blade, is
  - a. removed from service until the crack is repaired, or
  - b. the crack is prevented from getting longer by centre punching or another means.*
- 3. An employer must ensure that a band saw that is repaired under subsection (1) or (2) is retensioned as necessary by a competent worker.*
- 4. A worker must not use a shake band saw blade that is cracked.*

**Band saw wheels 379**

- 1. Unless a manufacturer specifies, or a professional engineer certifies otherwise, an employer must ensure that a cast steel band saw wheel measured 25 millimetres inboard from the rim edge has a minimum rim thickness
  - a. of 14 millimetres for wheels up to and including 1.8 metres in diameter,
  - b. of 16 millimetres for wheels more than 1.8 metres in diameter and up to and including 2.75 metres in diameter, and
  - c. of 17.5 millimetres for wheels more than 2.75 metres in diameter.*
- 2. An employer must ensure that a band saw wheel that is more than 1.2 metres in diameter is tested for cracks at least once every 12 calendar months by a competent worker.*

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3. *An employer must ensure that a band saw wheel that has been exposed to excessive heat is removed from service until the wheel manufacturer or a professional engineer certifies it is safe for continued use.*

**Power-fed circular saws 380**

1. *An employer must ensure that a power fed circular rip saw with horizontal power-driven infeed rolls has a sectional non-kickback device located in front of the saw blade across the full width of the feed rolls.*
2. *An employer must ensure that a power fed circular resaw has*
  - a. *a splitter that is as high as the top of the saw, and*
  - b. *a cover.*

**Cut-off saws 381**

1. *An employer must ensure that a hand-operated cut-off saw, other than a radial arm saw, is equipped with a device that returns the saw automatically to the back of the table when the saw is released at any point in its travel.*
2. *An employer must ensure that a limit device is used to prevent a swing or sliding cut-off saw from travelling past the outside edge of the cutting table.*

**Saskatchewan OHS Regulation - PART X Machine Safety**

**Operation by workers 134**

1. *An employer or contractor shall ensure that:*
  - a. *machines are operated only by a competent worker; and*
  - b. *workers are informed of any risk associated with, and trained in the safe use of, the machines.*
2. *Before starting a machine, an operator shall ensure that neither the operator nor any other worker will be endangered by starting the machine.*
3. *Where a worker or a worker's clothing may contact a moving part of a machine, an employer or contractor shall ensure that the worker:*
  - a. *wears close-fitting clothing;*
  - b. *confines or cuts short any head and facial hair; and*
  - c. *does not wear dangling neckwear or jewelry, rings or other similar items.*

**Operating controls 135**

1. *Where reasonably practicable, an employer, contractor or supplier shall ensure that operating controls on machines:*
  - a. *are located within easy reach of the operator; and*
  - b. *cannot be activated by accidental contact.*
2. *Where reasonably practicable, an employer, contractor or supplier shall ensure that stopping devices on machines are:*
  - a. *located in the direct view and within easy reach of the operator; and*

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*b. readily identifiable.*

- 3.** *Where a worker is required to feed material into a material-forming press, punch, shear or similar machine, an employer, contractor or supplier shall:*
  - a. where practicable, install a positive means to prevent the activation of the machine while any part of the worker's body could be injured by moving parts of the machine; or*
  - b. where it is not practicable to comply with clause (a), install safeguards to prevent the worker from contacting a moving part of the machine.*

**Unattended and suspended machines 136**

- 1.** *An employer or contractor shall not require or permit a worker to leave unattended or in a suspended position any machine or any part of a machine unless the machine or part has been:*
  - a. immobilized and secured against accidental movement; or*
  - b. enclosed by a safeguard to prevent access by any other worker to the machine or part.*
- 2.** *A worker shall not leave unattended or in a suspended position any machine or any part of a machine unless the machine or part has been:*
  - a. immobilized and secured against accidental movement; or*
  - b. enclosed by a safeguard to prevent access by any other worker to the machine or part.*

**Safeguards 137**

- 1.** *Except where otherwise provided by these regulations, an employer or contractor shall provide an effective safeguard where a worker may contact:*
  - a. a dangerous moving part of a machine;*
  - b. a pinch point, cutting edge or point of a machine at which material is cut, shaped, bored or formed;*
  - c. an open flame;*
  - d. a steam pipe or other surface with a temperature that exceeds or may exceed 80° Celsius; or*
  - e. a cooled surface that is or may be less than minus 80° Celsius.*
- 2.** *An employer or contractor shall ensure that a safeguard required by subsection (1) remains in place at all times.*
- 3.** *Subsection (1) does not apply to:*
  - a. a machine that is equipped with an effective safety device that stops the machine automatically before any part of a worker's body comes into contact with a hazard mentioned in clause (1)(a) or (b); or*
  - b. a belt, rope or chain that is operated from a cathead or capstan.*
- 4.** *An employer or contractor shall ensure that a safeguard that is removed from a machine or made ineffective to permit maintenance, testing, repair or adjustment of a machine is replaced or made effective before a worker is required or permitted to use the machine.*
- 5.** *Where there is a possibility of machine failure and of injury to a worker resulting from the failure, an employer or contractor shall install safeguards that are strong enough to withstand the impact of debris from the machine failure and to contain any debris resulting from the failure.*

***Air-actuated fastening tools 142***

*An employer or contractor shall ensure that a worker does not hold the trigger of an air-actuated fastening tool mechanically in the operating position unless the tool is specifically designed to be used in that manner.*

***Explosive-actuated fastening tools 143***

- 1. In this section, "explosive-actuated fastening tool" means a machine that propels or discharges, by means of an explosive force, a fastening device to attach the fastening device on, affix the fastening device to or cause the fastening device to penetrate another object or material.*
- 2. An employer or contractor shall ensure that a worker who operates explosive actuated fastening tool systems is trained in and uses safe work procedures for any explosive-actuated fastening tool that the worker may operate, including:*
  - a. the selection of the appropriate tool, accessories, fastener and power load for each application;*
  - b. the limitations of each type of tool, fastener and power load; and*
  - c. the maintenance, inspection and use of the tool.*
- 3. An employer or contractor shall ensure that a worker who operates an explosive-actuated fastening tool:*
  - a. does not leave the tool or explosive charges unattended;*
  - b. stores the tool and explosive charges in a locked container when not in use; and*
  - c. uses an industrial eye or face protector that meets the requirements of Part VII.*

***Airless spray units 144***

*Where a worker is required or permitted to use an airless spray unit that is capable of operating at a pressure greater than seven megapascals, an employer or contractor shall ensure that:*

- a. the gun, the reservoir and the pump are bonded to ground with a single continuous approved bonding conductor; and*
- b. the gun is fitted with suitable tip and trigger guards.*

**British Columbia OHS Regulation - Part 4 General Conditions**

***4.3 Safe machinery and equipment***

- 1. The employer must ensure that each tool, machine and piece of equipment in the workplace is*
  - a. capable of safely performing the functions for which it is used, and*
  - b. selected, used and operated in accordance with*
    - I. the manufacturer's instructions, if available,*
    - II. safe work practices, and*
    - III. the requirements of this Regulation.*
- 2. Unless otherwise specified by this Regulation, the installation, inspection, testing, repair and maintenance of a tool, machine or piece of equipment must be carried out*



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- a. *in accordance with the manufacturer's instructions and any standard the tool, machine or piece of equipment is required to meet, or*
- b. *as specified by a professional engineer.*
3. *A tool, machine or piece of equipment determined to be unsafe for use must be identified in a manner which will ensure it is not inadvertently returned to service until it is made safe for use.*
4. *Unless otherwise specified by this Regulation, any modification of a tool, machine or piece of equipment must be carried out in accordance with*
  - a. *the manufacturer's instructions, if available,*
  - b. *safe work practices, and*
  - c. *the requirements of this Regulation.*

**British Columbia OHS Regulation** - Part 12 Tools, Machinery and Equipment

***Powder Actuated Tools***

**12.51 Standards**

*A powder actuated fastening system, consisting of the tool, power loads and fasteners must meet the requirements of ANSI Standard A10.3-1995, American National Standard for Construction and Demolition Operations -- Safety Requirements for Powder-Actuated Fastening Systems.*

**12.52 Tool selection**

*A low velocity powder actuated tool, with a fastener test speed rating of less than 100 m (330 ft) per second, must be used unless no low velocity tool available on the market is capable of doing the fastening task.*

**12.53 Tool design**

1. *Two separate and distinct operations must be required to activate a powder actuated tool and the final firing movement must be separate and subsequent to depressing the tool into the firing position.*
2. *The tool must be designed so that positive means of varying the power level is available, or can be made available, so that the operator may select a power level appropriate to perform the desired work.*

**12.54 Markings**

1. *A powder actuated tool must be marked with the manufacturer's name or trademark, model number and serial number.*
2. *A guard or accessory for use with a powder actuated tool must be marked with the manufacturer's name or trademark.*

**12.55 Storage**

1. *When not in use, a powder actuated tool must be unloaded and the tool and power loads must be securely stored and be accessible only to qualified and authorized persons.*
2. *Power loads of different power levels and types must be kept in different compartments or containers.*

**12.56 Tool use**

1. *Only a qualified person may handle or use a powder actuated tool or power loads.*
2. *The operator must have immediately available when using or servicing a powder actuated tool*
  - a. *a copy of the manufacturer's operating instructions for the tool,*
  - b. *a copy of the power load and fastener charts for the tool, and*
  - c. *any accessories or tools needed for use or field servicing of the tool, including personal protective equipment.*
4. *A powder actuated tool must not be used in an explosive or flammable atmosphere.*
5. *A powder actuated tool may only be loaded when it is being prepared for immediate use and must be unloaded at once if work is interrupted after loading.*
6. *A powder actuated tool must not be pointed at any person.*
7. *If a powder actuated tool misfires, the operator must hold the tool firmly against the work surface for at least 5 seconds, then follow the manufacturer's instructions for such occurrences, and until the cartridge has been ejected, keep the tool pointed in a direction which will not cause injury to any person.*

**12.57 Limitations on use**

1. *A powder actuated tool fastener must not be driven into very hard or brittle materials, such as cast iron, glazed tile, hardened steel, glass block, natural rock, hollow tile, and most brick.*
2. *A powder actuated tool fastener may only be driven into easily penetrated or thin materials or materials of unknown resistance if the receiving material is backed by a material that will prevent the fastener from passing completely through.*
3. *A powder actuated tool fastener must not be driven into steel within 13 mm (1/2 in) of an edge, or within 5 cm (2 in) of a weld except for special applications permitted by the tool manufacturer.*
4. *Except for special applications recommended by the manufacturer, a powder actuated tool fastener may not be driven into masonry materials*
  - a. *within 7.5 cm (3 in) of an unsupported edge with a low velocity tool, or*
  - b. *within 15 cm (6 in) of an unsupported edge with a medium or high velocity tool.*
5. *A powder actuated tool fastener must not be driven*
  - a. *into concrete unless material thickness is at least 3 times the fastener shank penetration,*
  - b. *into any spalled area, or*
  - c. *through existing holes unless a specific guide means, as recommended and supplied by the tool manufacturer, is used to assure positive alignment.*

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***Woodworking Tools and Equipment***

**12.58 Hand feeding**

*A template, jig, or pushstick must be used if there is a risk of injury to a worker's hands when feeding woodworking machinery.*

**12.59 Removing guards**

- 1. If the use of a guard on woodworking machinery is clearly impracticable for a specific operation, the guard may be removed, but an appropriate pushstick, jig, feather board or similar device must be used to prevent the operator encroaching into the cutting area, and upon completion of the operation the guard must be replaced.*
- 2. A guard may otherwise only be removed if the guard itself creates a hazard, or if its removal is necessary for maintenance.*

**12.60 Kickback fingers, splitters and spreaders**

- 1. Except as provided in subsection (2), a hand-fed circular saw with rip-type teeth must have kickback fingers and a splitter or spreader designed to prevent kickback.*
- 2. Kickback fingers, splitters or spreaders are not required when grooving, dadoing or rabbeting.*

**12.61 Radial arm saw travel limits**

*The cutting table and the saw travel stop on a radial arm saw must be designed and maintained so that no part of the saw blade can travel past the forward edge of the cutting table.*

**12.65 Hand-held circular saws**

*A hand-held circular saw must have a guard which automatically adjusts to the thickness of the material being cut, and which, when the saw is withdrawn from the material, completely covers the cutting area of the blade.*

**12.67 Band saws**

- 1. A band saw blade must be enclosed or guarded, except for the working side of the blade between the guide rolls and the table.*
- 2. A band saw wheel must be fully encased.*

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