

## Power and Hand Tools Practice

<b>Content Owner</b>	Manager, Health and Safety Solutions		
<b>Custodian</b>	<a href="#">H&amp;S Programs &amp; Projects</a>		
<b>H&amp;S Discipline</b>	Personal Safety		
<b>Program</b>	Power and Hand Tools		
<b>COMS</b>	<a href="#">See COMS Standards</a>		
<b>Document Number</b>	CEN-EHS12837		
<b>Version</b>	1	<b>Review Cycle</b>	3 years
<b>Revised Date</b>	July 17, 2017	<b>Issued Date</b>	July 17, 2017

Version	Description	Date	Sign Off		
			Requester	Reviewer	Owner
1	Initial revision	July 17, 2017	Health & Safety Solutions	Director, Health & Safety	VP, Health & Safety

**Table of Contents**

**1.0 Purpose .....3**

**2.0 Scope.....3**

**3.0 Power and Hand Tools Requirements .....3**

    3.1 Personal Protective Equipment (PPE) .....3

    3.2 Tool Inspection .....4

    3.3 Job Evaluation .....4

    3.4 Defective Tools .....4

    3.5 Power Supply.....4

    3.6 Maintenance, Repairs and Storage.....4

    3.7 Ergonomic Considerations .....4

        3.7.1 Grips .....5

        3.7.2 Handle Size .....5

        3.7.3 Weight.....5

    3.8 Pneumatic Tools.....5

    3.9 Mechanical Advantage Tools .....6

    3.10 Fixed Grinders .....6

    3.11 Handheld Grinders.....7

    3.12 Chainsaws.....8

    3.13 Circular Saws.....9

    3.14 Knives and Other Cutting Tools .....9

        3.14.1 Prohibited Cutting Tools .....10

        3.14.2 Approved Cutting Tools .....10

        3.14.3 Trade-specific Cutting Tools.....11

    3.15 Wrenches and Sockets.....12

    3.16 Powder-Actuated Tools .....13

    3.17 Non-Sparking Tools .....13

    3.18 Electrically Powered Tools in Classified Areas .....14

**4.0 References.....15**

    4.1 External Documents .....15

    4.2 Internal Documents .....15

**List of Tables**

Table 1: Prohibited Knives and Other Cutting Tools .....10

Table 2: Approved Knives and Other Cutting Tools .....10

Table 3: Trade-specific Knives and Other Cutting Tools ..... 11

Table 7: External Document References ..... 15

Table 8: Internal Document References ..... 15

**1.0 Purpose**

The purpose of the Power and Hand Tools Practice is to support the safe use of power and hand tools at Cenovus worksites. This practice integrates Cenovus lessons learned to provide best practices for the use of power and hand tools at Cenovus worksites.

**2.0 Scope**

The Power and Hand Tools Practice complies with Alberta, British Columbia and Saskatchewan Occupational Health and Safety requirements and may be amended from time to time to ensure continued compliance.

This practice encompasses Cenovus work activities. Contract companies that use power or hand tools at Cenovus worksites must meet the requirements of the Contractor Health and Safety Program Requirements, as it relates to the use of power and/or hand tools.

The term “Power Tool” applies to any portable and/or handheld tool powered by a separate energy source, such as battery or line powered electrical tools, pneumatic (compressed air) powered tools, hydraulic portable tools and powder actuated tools.

**3.0 Power and Hand Tools Requirements**

All power and hand tools must be operated in a manner that removes the operator’s body parts from the operating path. Power tools may only be operated by a competent individual. Tools may only be used for the purposes for which they were designed. Consider these general requirements:

- Never use hand tools to back up hydraulic or pneumatic tools. Use the Original Equipment Manufacturer (OEM) supplied backing or reaction arm.
- When working at heights, tools shall be attached or restrained to prevent injury to workers below and/or an adequate control zone established.
- Practice good housekeeping by keeping cords and hoses away from egress paths and avoiding trip hazards.
- Accessories can only be used on a tool if it has been designed for the specific tool, per the OEM or a professional engineer.

The following additional requirements apply:

**3.1 Personal Protective Equipment (PPE)**

Proper PPE must be used when operating tools, per CEN-EHS108, Cenovus Personal Protective Equipment Practice.

### **3.2 Tool Inspection**

All tools should be inspected at the beginning of the work day and periodically during the day, as dictated by work conditions and tool conditions.

### **3.3 Job Evaluation**

Always evaluate a job to be done in a hazardous environment. Use proper tools and equipment that eliminate ignition, such as electric motors that have been certified as explosion proof for use in the relevant hazardous work location or non-sparking tools with proper use and maintenance.

### **3.4 Defective Tools**

Defective tools must be removed from service, tagged "DO NOT USE – Repair Required", and quarantined until they can be repaired by a qualified person.

### **3.5 Power Supply**

- Use the OEM recommended size, gauge and end connector type of extension cord for line power tools.
- Ensure corded electrical tools have a 3-wire (grounding) cord and plug, excluding double insulated tools.
- Ensure on/off switches for power tools are functional and positioned in a manner that is easily accessible by the operator.
- Ensure Ground Fault Circuit Interrupters (GFCIs) are used and tested in the supply circuit to power tools used outside.

### **3.6 Maintenance, Repairs and Storage**

- Maintenance records must be kept for all active power tools.
- Chisels, punches, hammers, screwdrivers, etc., must have tips properly dressed.
- Cracked and/or splintered handles must be replaced.
- Tools should be clean and any required repairs completed prior to being properly stored.
- Repairs to tools must be performed by qualified personnel, using OEM parts or equivalent.

### **3.7 Ergonomic Considerations**

Consider ergonomics when selecting and using tools:

- Hold the tool close to the body and do not overreach.
- Keep good balance and proper footing at all times to better control the tool, especially in response to unexpected situations.

- Secure work with clamps or securing devices, freeing hands to operate the tool.
- Reduce the settings on power hand tools to the lowest setting possible to complete the task safely. This will reduce tool vibration at the source.
- Limit the use of power hand tools with vibration.
- Consider the use of anti-vibration gloves. However, do not wear thick or heavy gloves if operation of the tool requires precise movement.
- Keep areas well lighted when operating power and hand tools.

Also consider the following ergonomic information:

### 3.7.1 Grips

Consider whether the task requires a tool with a pistol grip or an in-line grip. When significant power or torque needs to be delivered, select the tool that allows for a power grip; the hand makes a fist with four fingers on one side and the thumb on the other, similar to holding the pistol grip of a power drill.

**Note:** Tools that can be used in either hand allow workers to alternate hands, and the tool can be used properly by the 10 percent of workers who are left-handed.

**Note:** A well-balanced tool with a properly designed grip or handle instantly feels comfortable in the hand.

The grip of a hand tool should be smooth, non-conductive and slightly compressible to dampen vibration and better distribute hand pressure.

Avoid tools that have grooves for fingers.

### 3.7.2 Handle Size

The right size handle is one that allows the hand to go more than halfway around the handle without the thumb and fingers meeting. The recommended grip diameter in most cases is between 50 and 60 mm.

To provide good control of the tool and prevent pain and pressure hot spots in the palm of the hand, a comfortable tool handle should be used. In general, tool handles should be at least 120 mm long.

Do not use glossy coated or highly polished handles.

### 3.7.3 Weight

To reduce hand, arm, and shoulder fatigue, the hand tool should not weigh more than 5 pounds.

**Note:** Heavy tools can be made easier to use by suspending or counterweighting them.

## 3.8 Pneumatic Tools

- Ensure pneumatic tools are supplied from a utility source that does not power instrumentation.

- Never use fuel gas, natural gas or nitrogen to power a pneumatic tool.

### **3.9 Mechanical Advantage Tools**

#### **Snipes, pipe extensions and cheater bars are banned from all Cenovus worksites.**

The following tools can provide the mechanical advantage necessary to tighten and loosen connections and fittings without the use of the banned attachments:

- Torque wrenches
- Torque multipliers
- Tubular wrenches
- Socket/breaker bars
- Extending ratchet
- 24-inch to 60-inch pipe wrenches
- Compound leverage pipe wrenches
- Chain wrenches

Any tools that are used to obtain the mechanical advantage that is necessary to safely perform a task must meet the following requirements:

- Be maintained in a condition that will not compromise the health or safety of workers using it
- Be able to safely perform the function for which it is intended or was designed
- Have adequate strength for its intended purpose
- Be free from obvious defects
- Be engineered for use as a mechanical advantage and compatible with the tool being used

Workers shall ensure they do the following if they use any of the above non-banned mechanical advantage tools:

- Are instructed in the potential hazards and safe use of the mechanical advantage tool
- Follow all manufacturer's specifications

### **3.10 Fixed Grinders**

A fixed grinder must be operated in accordance with the manufacturer's recommendations. Workers shall ensure they are instructed in the potential hazards

and safe use of the fixed grinder, prior to operating it. The following additional requirements apply:

- Grinder discs, buffers and stones must be used only for designed application and at rated speeds.
- Stationary grinders must have properly adjusted tool rests, and stones are to be properly dressed.
- Abrasive wheels should not be operated at a speed that exceeds the manufacturer's recommendations.
- Maximum speed of the fixed grinder in revolutions per minute (RPM) must be permanently affixed and visible.
- The mounting flanges for an abrasive wheel must have an equal and correct diameter for the wheel.
- Fixed grinders must have a tool rest installed that meets the following conditions:
  - Installed in a manner that is compatible with the work process
  - Attached securely to the fixed grinder
  - Set not more than 3 mm from the face of the wheel
  - Set at or above the horizontal centre line of the wheel
  - Must not be adjusted while the grinder accessory is in motion
- The sides of an abrasive wheel must not be used for grinding, unless the abrasive wheel is specifically designed for that use.
- When changing the fixed grinder accessory, the fixed grinder must be isolated from any form of energy.
- Keep combustible materials out of the area of sparks from the grinding wheel.

### **3.11 Handheld Grinders**

Handheld grinders must be operated in accordance with the manufacturer's recommendations. Workers shall ensure they are instructed in the potential hazards and safe use of the handheld grinder, prior to operating one. The following additional requirements apply:

- Grinder discs, buffers and stones are to be used only for designed application and at rated speeds.
- Angle grinders are to have Original Equipment Manufacturer (OEM) guard.
- Operation of a hand held grinder may be considered as Hot Work; see CEN-EHS095, Cenovus Hot Work Practice for details.

- When grinding is required in or near a process plant, active rig, building, floor trench or wildland area, disconnecting and removing the work to a designated safe area with minimal combustibles should be considered.
- The maximum safe operating speed of the grinder accessory in RPM is equal to or greater than the maximum speed of the grinder shaft in RPM.
- The object being ground must be secured in a manner so that it is unable to unintentionally move.
- An OEM guard is affixed to the handheld grinder and covers the area of the grinder accessory contained within an arc of at least 120° of the accessory's circumference.
- When changing the handheld grinder accessory, the handheld grinder must be isolated from any form of energy.
- The side of an abrasive wheel is not to be used for grinding unless the wheel has been designed for that purpose.

**Note:** Sparks from grinders can travel in excess of 10 metres. Combustible materials, flammable vapours and residues can be readily ignited by grinder spark or hot metal.

### 3.12 Chainsaws

Chainsaws must be operated, adjusted and maintained in accordance with the manufacturer's specifications. Workers shall ensure they are instructed in potential hazards and safe use of a chainsaw prior to operating it. The following requirements apply for chainsaws:

- Chainsaws are equipped with an effective chain brake or a chain and bar that are designed to minimize the possibility of a kickback.
- The chainsaw is designed and constructed so that the chain stops when the engine is at idle. Maintain the chainsaw to ensure the chain stops when the engine is idle.
- Maintain the chainsaw, cutting chain and safeguards in a safe operating condition.
- Where a chainsaw is to be used by a worker operating from an elevated cage or basket, the width of which is less than twice the length of the chainsaw, Cenovus workers shall ensure a secondary platform is installed outside the cage or basket and is used to store the chainsaw and to start the chainsaw engine.

When operating a chainsaw:

- Do not adjust the chain of a chainsaw while the chainsaw's motor is idling.
- Stop the chain while walking with the chainsaw.



- Do not operate the chainsaw at a height that is higher than the worker's shoulder level.
- Hold the saw firmly in both hands.

### **3.13 Circular Saws**

Circular saws must be used according to manufacturer's specifications. Workers shall ensure they have been instructed in the potential hazards and safe use, prior to using a circular saw. The following requirements apply for circular saws:

- Circular saw blades that develop a crack from the eye or the collar must be discarded.
- Where circular saw blades develop a crack in the outside diameter of the saw blade, the saw blade must be discarded unless the following conditions are met:
  - The blade is effectively repaired by a competent person
  - The original blade tension is restored
- Saw blades must be designed for the product being cut and at the rated speed.
- OEM guards must be in-place and functional.
- Portable hand-operated circular saws must be equipped with a safeguard that will automatically cover the exposed part of the blade during use and the entire blade when the saw is not in use.

### **3.14 Knives and Other Cutting Tools**

All manufacturer's specifications must be followed when using knives and other cutting tools. Workers must be instructed in the potential hazards and safe use of the knife before using. The following requirements additional apply for knives and other cutting tools:




- Store knives and cutting tools with the blades protected or retracted.
- Do not alter or remove any safety features of a knife. Tools that have defective safety features must be discarded immediately.
- A stable surface must be used when cutting objects.
- An object being cut is not rested on anyone's legs or other body parts.
- The proper cutting tool is chosen that is designed for the specific task.
- Cut away from your body and keep all body parts away from the line of operation.
- Do not carry sharp unguarded knives or cutting tools in your pocket.
- Do not throw knives or other cutting tools.

- Use only a sharp blade. Dull or rusty blades require more force and therefore are more likely to cause slip injuries, as opposed to sharp blades.
- When using an approved cutting tool, always use the minimum amount of exposed blade required to perform the task.

### 3.14.1 Prohibited Cutting Tools

The following types of cutting tools are prohibited:

**Table 1: Prohibited Knives and Other Cutting Tools**


Type	Example
Snap-off bladed knives	
Multi-tools	
Pocket knives	
Box cutter utility knife	


**Note:** Pictures are for illustrative purposes only and are not meant to identify specific brands.

### 3.14.2 Approved Cutting Tools

The following types of cutting tools are approved:

**Table 2: Approved Knives and Other Cutting Tools**

Task	Tool Description	Required PPE
Cutting/Trimming: <ul style="list-style-type: none"> <li>• Drywall</li> <li>• Cardboard</li> <li>• Rubber lining materials</li> <li>• Geotextile liners</li> <li>• Rope</li> </ul>	 <p>Auto retracting or "auto guarded" blade that retracts or is guarded automatically when it loses contact</p>	Cut-resistant gloves



Task	Tool Description	Required PPE
	with material being cut	
Cutting/Trimming: <ul style="list-style-type: none"> <li>• Bubble wrap</li> <li>• Foam</li> <li>• Twine/string</li> <li>• Thin sheet materials</li> <li>• Cardboard or Film</li> </ul>	 Concealed blade cutter	Work gloves

**Note:** Pictures are for illustrative purposes only and are not meant to identify specific brands.

### 3.14.3 Trade-specific Cutting Tools

If trades require the use of specialized knives or cutting tools, they may utilize these specialized knives or cutting tools if their workers are competent in the use of the tool, through their trade and utilize the tool in accordance with the manufacturer’s recommendations. The following trade-specific tools may be approved:

**Table 3: Trade-specific Knives and Other Cutting Tools**

Task	Tool Description	Required PPE
E/I Trades <ul style="list-style-type: none"> <li>• Electrical cable stripping</li> <li>• Insulation</li> </ul>	 Cable Stripping Knife with sheath - Trade Specific	<ul style="list-style-type: none"> <li>• Cut Resistant Gloves</li> <li>• Sheathed when not in use</li> </ul>
Insulators – Flooring Trades Workers <ul style="list-style-type: none"> <li>• Linoleum</li> <li>• Pipeline Jacket</li> </ul>	 Banana Knife with Pouch	<ul style="list-style-type: none"> <li>• Cut Resistant Gloves</li> <li>• Stored in pouch when not in use</li> </ul>

**Note:** Pictures are for illustrative purposes only and are not meant to identify specific brands.

### 3.15 Wrenches and Sockets

Follow all manufacturer’s specifications for using wrenches and sockets. A worker who uses wrenches or sockets shall be instructed in the potential hazards and safe use of the tool. The following additional requirements apply:

- Use the correct type and size of wrench or socket/driver for the job. Do not use pipe wrenches for tightening nuts and bolts.

**Note:** Metric tool for metric fastener and standard tool for standard fastener.

**Note:** The correct size wrench is preferred over adjustable, crescent, spanner, or thumb wrenches. These wrenches can damage the fasteners and are more prone to slip off than the proper wrench.

- Never place hands on hydraulic wrenches or their reaction arms while in operation.
- Use properly calibrated torque wrenches for tightening fasteners and fittings which have torque requirements. This aids in preventing both under-torqueing or over-torqueing, both of which may lead to significant hazards such as process leaks and equipment damage.

**Note:** Calibration sticker and certificate should be no longer than 1 year old.

- Inspect the jaws of pipe wrenches frequently and replace when required to ensure good grip on the workpiece.
- Maintain line of sight and voice communication on two-person bolting jobs.
- Never put hands or fingers into pinch points when using a wrench or socket/driver.
- No double wrenching.
- Do not hammer on a wrench that is not designed for that application.
- When using an adjustable wrench, position the wrench so that the applied force does not spread the jaw apart.

**Note:** Combination wrenches are preferred over adjustable wrenches.

- Adjust body position and footing to prevent a fall should the wrench slip on the workpiece or fail.
- If tightening fasteners on equipment under process pressure and/or temperature, workers must follow COMS 4.5 Operating and Maintenance Procedures Standard.

### 3.16 Powder-Actuated Tools

Follow all manufacturer’s specifications for using powder-actuated tools. A worker who operates an actuated fastening tool must be instructed in the potential hazards and safe use of the actuated fastening tool before use. The following additional requirements apply:

- Powder-actuated tools must not be utilized in electrically classified areas.
- The trigger of an actuated fastening tool must not be operated unless the worker is in control of the tool and is holding the trigger in the ON position.
- Do not secure the trigger of an actuated fastening tool, by mechanical means, in the ON position unless the manufacturer’s specifications permit the tool to be used in that way.
- Follow all manufacturer’s instructions and specifications for the safe use of powder actuated tools.

### 3.17 Non-Sparking Tools

Non-sparking, spark reducing, spark-resistant or spark-proof tools are commonly used names to describe tools made of metals such as brass, bronze, copper-nickel alloy, copper aluminum alloys, or copper-beryllium alloys.

Commonly used hand tools are often manufactured of steel alloys. Preferred non-sparking metals, although offering a form of spark mitigation in classified areas, have less tensile strength than steels usually used to make tools. A lower tensile strength indicates the metal has less strength or resistance to tearing apart when stretched under conditions. It also indicates that these tools are softer, wear down more quickly than ordinary steel tools, and have to be dressed more frequently.

**Note:** There are no truly non-sparking tools. In any work where flames are used, or sparks are produced, ensure an explosive atmosphere does not exist prior to commencing work and continuously verify throughout the course of the work. For more information, see CEN-EHS095, Cenovus Hot Work Practice and CEN-EHS090, Cenovus Gas Detection Practice.

Workers must follow all manufacturer’s specifications and be instructed in the potential hazards and safe use of the non-sparking tool.

To help non-sparking tools perform as intended, the following considerations should be employed when using and maintaining non-sparking tools:

- Make sure all non-sparking tools are kept clean and free from ferrous or other contaminants, which may hamper the non-sparking properties.
- Do not use non-sparking hand tools in direct contact with acetylene, which may form explosive acetylides, especially in the presence of moisture.
- Use local or mechanical ventilation systems as appropriate to remove hazardous materials, dusts and vapors from the workplace.

Non-sparking tools provide protection against fires and explosions in environments where there is a concern regarding igniting flammable solvents, vapors, liquids, dusts or residues. However, it is important to assess each situation carefully and use the appropriate tools for the hazards that are present. In some cases, non-sparking tools may still be able to produce a spark.

### 3.18 Electrically Powered Tools in Classified Areas

Zone 2 classified areas include those areas where explosive atmospheres may exist for short periods. Process buildings at Cenovus are typically classified as Class 1, Zone 2 (Class 1, Division 2 under legacy electrical codes). Electrically powered tools not approved for Zone 2 classified areas present an ignition source that may result in fire and/or explosion. When considering the use of electrically powered tools in classified areas, always ensure the following:

- Refer to the facilities hazardous area classification drawing or the hazardous area classification maps prior to commencing work. These maps are located at the facilities Safe Work Team’s office and/or can be obtained through a Cenovus representative.
- Prior to commencing work in a classified area, verify that all electrical equipment, including all tools, are approved for the hazardous location.
- Consider using hand tools or non-electrical tools in hazardous areas.

**Note:** The Canadian Electrical Code, Rule 2-024, requires that all electrical equipment be of a kind or type and rating approved for the specific purpose. Alberta Municipal Affairs has issued Electrical STANDATA (330-LEG-ECR-2[rev 24]) that details acceptable equipment approvals in Alberta. Examples of approval markings include Canadian Standards Association and Underwriter’s Laboratory (Canada). Labels must also include details of approvals for hazardous locations.

**Note:** During maintenance, turnaround, tank cleaning, and other non-routine operations, areas of the plant or equipment interiors may contain flammable vapours and may have insufficient ventilation to dilute the flammable vapours to below the lower explosive limit. Ensure the atmosphere has been proven safe to work in (maximum 10% and preferably 0% of the lower explosive limit). See CEN-EHS095, Cenovus Hot Work Practice and CEN-EHS108, Confined Space Entry Code of Practice for these locations.

## 4.0 References

### 4.1 External Documents

The following external documents support this practice:

**Table 4: External Document References**

Document Type or Number	Document Title
SWP00014-15/16	Alberta Construction Safety Association, Power and hand tool use
Regulatory	Alberta Occupational Health and Safety Regulations (2009), Section 12, equipment
Regulatory	Alberta Occupational Health and Safety Code (2009), Part 25, tools, equipment and machinery
Regulatory	Canadian Centre for Occupational Health and Safety (2010), General hand tool operations
Regulatory	Canadian Centre for Occupational Health and Safety (2011), Non-sparking tools
Regulatory	Canadian Centre for Occupational Health and Safety (2016), Powered hand tool ergonomics
SAFETY ALERT - #19 -2009	Enform (2009), Workers injured by explosions during tank maintenance
O-1.1 REG 1	Saskatchewan Occupational Health and Safety (1996), REG 1, Part X, machine safety
Regulatory	Work Safe Alberta (2010), Selecting hand tools

### 4.2 Internal Documents

The following Cenovus documents support this practice:

**Table 5: Internal Document References**

Document Type or Number	Document Title
Advisory	Advisory – Chop saw blade use
Advisory	Advisory – Cut off disc failure
Advisory	Advisory – Use of electrical devices in classified areas
Advisory	Advisory – Worker shoots nail through hand
Practice	CONG Alberta Safe Knife Use Practice
Policy	Corporate Responsibility Policy
Standard	COMS 4.5 - Operating and Maintenance Procedures
CEN-EHS108	Personal Protective Equipment Practice

<b>Document Type or Number</b>	<b>Document Title</b>
CEN-EHS090	Gas Detection Practice
CEN-EHS095	Hot Work Practice
CEN-EHS6267	Alert - Knife Safety
CEN-EHSReg787	Regulatory Definitions and Acronyms
CEN-EHS11924	Safety Alert – Snipes and cheater bars
CEN-EHS12658	Safety Alert – Snipes and cheater bars banned