Introduction

The information contained in this SOP is general in nature. Refer to the relevant manufacturer's manual for specific operating information. The YouTube videos are included as a compliment to the information presented.

Portable electrical power equipment refers to machines or tools that are portable by nature in their use.

They may be run on electricity from a power source or can be battery-operated.
Identified Risks and Hazards

Hazards that may arise when operating portable power equipment include:

- moving and **rotating parts** (blades and bits, tool disintegration)
- **movement of the workpiece**
- **inhalation** of fumes and dust particles
- **electrocution** from power faults, faulty equipment or incorrect use
- ejection of waste materials from **cutting blades**
- **burns** from hot materials or friction

Levels of Risk

Portable electrical power equipment can be categorised into levels of risk.

**Low** risk includes portable tools such as:

- **portable electric drills** (wood and metal)
- scroll saws (wood)
- **cordless drills / electric screwdrivers** (wood and metal)

**Moderate** risk includes portable tools such as:

- orbital sanders (wood)
- jigsaws (wood and metal)
- electric soldering irons
- spot welders (metal)

**Substantial** risk includes portable tools such
as:
  - trimmers / biscuit machines (wood)
  - belt sanders (wood)
  - electric / battery staple guns (wood)
  - routers (wood)

**High** risk includes portable tools such as:
  - electric planers (wood)
  - disc grinders 100mm (metal)
  - nibblers (metal)

**Very High** risk includes portable tools such as:
  - electric circular saw (wood)
  - angle disc grinders - 230mm (metal)

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**Hazard Control**

All workplace hazards can be controlled to a certain degree using a variety of methods. The goal of controlling hazards is to prevent workers from being exposed to occupational hazards. Some methods of hazard control are more efficient than others, but a combination of methods usually provides a safer workplace than relying on only one method.
There are six general categories of control measures:

- **elimination**  
  (removal of the hazard or exclusion of people)
- **substitution**  
  (replacement or exchange with something safer)
- **isolation**  
  (separating the source of harm from people)
- **engineering controls**  
  (mechanical devices or enclosures)
- **administrative controls**  
  (work methods or procedures)
- **personal protective equipment**  
  (supplement other controls)

The following control measures should be included as part of the Safe Operating Procedures at your workplace.
Personal Protective Equipment

Pre-operational Safety

Before using any power tool, examine the power cord, extension lead, plugs, sockets and power outlet for damage. Look for:

- cracked or damaged casing
- bare wires or loose connections
- damage to cord sheathing
- loose or missing screws

Before starting the power tool ensure that the cutting tool, fences, guards and attachments are secure and correctly fitted.
Do not use blunt or damaged cutting tools.

Do not test cutting tools for sharpness with the fingers.

Always inspect the workpiece to ensure that there aren't any items which might damage the cutting tool or cause injury to the operator.

Secure and support the workpiece using clamps, bench vices or appropriate weights.

Operating Safety Precautions

These examples of general safety precautions relate to the use of all power tools.

Keep fingers and hands clear of moving parts and the cutting tool.

Always keep the power cord clear of moving parts and the cutting tool.

Ensure that material being worked on is well supported or held securely where necessary.

Ensure that off-cuts cannot fall onto the feet of
the operator.

Never make adjustments while the power tool is running.

Do not switch off the power tool when it is under load, except in an emergency.

Allow the power tool to reach operating speed before using it on the workpiece. When the power tool has reached the operating speed, apply the load gradually.

Do not use the switch lock unless the tool is set up as a stationary bench machine.

Avoid blocking or covering the motor ventilation slots while using the power tool.

Do not strain power cords or extension leads, especially by lifting or dragging power tools by the cords, or by pulling on the cord to remove the plug from the power outlet.

Do not walk on, wheel objects over, or drop materials or tools on flexible electrical cords.

Keep flexible electrical cords clear of oil, grease, machines and sources of heat.
Always position electrical cords with care to avoid trip hazards and to prevent damage to the cord or extension lead.

**Daily Maintenance**

On completion of the machining procedure, clean down the power tool and return it to its storage position.

The cutting bits / blades should be fully protected when the power tool is on the work bench or when being stored.

Look for cracked or damaged casing, loose or missing screws, or blocked ventilation slots.

Never use a defective power tool. Report it to the teacher.

Never operate the battery charger with a damaged cord or plug.

Do not allow anything to cover or clog the charger vents.

Be aware not to operate the charger anywhere
near water.

Isolating and Lockout Switches

Electrically operated machines should be fitted with a flush green on or start switch and a red stop switch that has a raised mushroom shaped head for fast emergency contact.

As well as start and stop switches, all machines must have an isolating switch, which enables the main power supply to be switched off when the machine is being set up, adjusted or when maintenance is being carried out.

Safe Work Zones

The following Safe Work Zones for this machine are derived from a state government education authority guide.
Operating Procedures

Always obtain permission from the supervisor before using any portable power tool.

Obtain training and instructions in the safe and proper use of the power tool.

Never operate power tools in wet or damp conditions.

Switch off and remove the plug from the power outlet before fitting attachments, changing cutters, blades or bits, or making adjustments which require fingers or the hands to be near the cutting tool.

Never connect a portable power tool to a damaged power outlet.
Check the following clothing for safety hazards and take appropriate action:

- Fasten any loose clothing and tie apron cords or straps at the back
- Remove any jacket or coat and any school uniform tie
- Roll up shirt sleeves above the elbows or fasten them securely at the wrists
- Do not wear finger rings, watches, bracelets or necklaces

Wear solid firm shoes which provide adequate protection for the feet.

Wear appropriate Personal Protective Equipment such as safety glasses for eye protection.

Wear appropriate PPE such as dust mask if the operation of the tool produces airborne particles which could be a respiratory hazard.

Long hair must be contained with a suitable cap or net.

Hearing protection such as ear muffs must be worn where noise levels are identified as hazardous.
Make sure both hands are free to operate any tool that is designed to be used with two hands.

Switch off the power tool at the power outlet and remove the plug when it is not in use.

Never use defective equipment. Report it to the supervisor.

The questions in the SOP knowledge test are general in nature. The manufacturer's manual is to be used to develop specific questions relevant to this tool or machine.