

# JOB ROLE –PLUMBER (GENERAL II)

Sector – Plumbing  
(Qualification Pack Code: PSC/Q0110)



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# UNIT 03: USE OF POWER TOOLS

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# Session Objectives

The students will be able to:

- Describe the different types of power tools,
- Define the term power wrench and its types,
- Explain the term multi tool,
- Define the term impact driver,
- Precaution should be taken during handling power tools and saws,
- Explain the term plumbing grinder.

# Introduction

- When we use hand tools, a lot of labour and time is consumed in an activity. So, a need was felt to ease the plumbing task at hand. Thus, power tools were introduced. These tools are operated by an additional power source, using electric motors, engines and compressed air, etc.



# Types of power tool

## Air compressor

- It is a mechanical device which utilizes energy to compress air. It converts power using an electric motor, mostly into potential energy stored in pressurized air (that is, compressed air).



**Power wrench:** It is a type of wrench that uses a power source. A typical power source used is compressed air.

### Impact wrench

- It is a socket wrench power tool designed to deliver high torque (a force that tends to cause rotation) output with minimal exertion by the user.



### Air ratchet wrench

- These are useful for loosening or tightening of low-to-medium torque bolts.



# Pneumatic Torque Wrench

- It is a specially designed tool with a gearbox attached to a pneumatic air motor. It consists of a reaction device which absorbs the torque and lets the tool operator operate it with very little effort.





# Multi-tool

- It is used for multiple works like sawing, sanding, rasping, grinding, scraping, cutting and polishing, etc. This tool can be operated by battery or electricity. It can cut small, and precise to complex cuts.



# Impact Driver

- It is a high torque tool used by mechanics to loosen larger screws (bolts) and nuts which are corrosively frozen or over-torque. These tools can produce a strong, rotational and downward force in clockwise and anticlockwise direction.



# Precautions during handling of power tools

1. The work area should be free of any equipment or tool that could cause tripping hazards. Also, avoid working in slippery conditions.
2. Do not stand on uneven surface while working.
3. Do not work directly above other employees or within arm's reach of other employees.
4. Work should be done in proper light. Do not work in the dark or with poor lighting.
5. Always wear non-slippery leather shoes or boots.
6. Read and understand the operator's manual. Understand the method of using the tool, its proper application and limitations.
7. Always stay alert.
8. Avoid the work of operating the tool when tired.

9. It is always recommended that new employees must be deployed to work with an experienced senior employee.
10. Protective safety goggles must be used when using power tools and saws.
11. Wear ear protection when using tools for longer duration.
12. Check the tool and ensure it is in good condition; the battery must be firmly in place.
13. Do not open battery of tools during rain.
14. Tools operated with electric wire should be regularly checked. Ensure that the electric wire is not broken or damaged. Extension cords should be grounded.
15. Do not work in watery areas.
16. Tools with bad cords or missing ground plug should be red tagged and not used.

# Classification of important plumbing power tools:

## 1. Plumbing drills

- A drill is a tool fitted with a cutting tool attachment used to make holes in a surface, wall or pipes as per requirement.



## a. Drill bits

- In a drill machine, a drill bit is used for making holes as per requirement. Common sizes of drill bits are 18 and 24 inches long.



## 2. Plumbing saws

- These are tools and machines used to cut hard material such as pipes or wood.



### a. Circular saw

- It is one of the important power saws which uses a toothed or abrasive disc or blade to cut various materials using a rotary motion.



## b. Hacksaw

- The hacksaw is the most common tool to cut lengths of PVC pipe, as it is commonly available.



## c. Jigsaw

- It is an electric saw made up of an electric motor and a reciprocating saw blade. A jigsaw can work with wood, metal, drywall or fibre glass.



# Precautions during handling saw

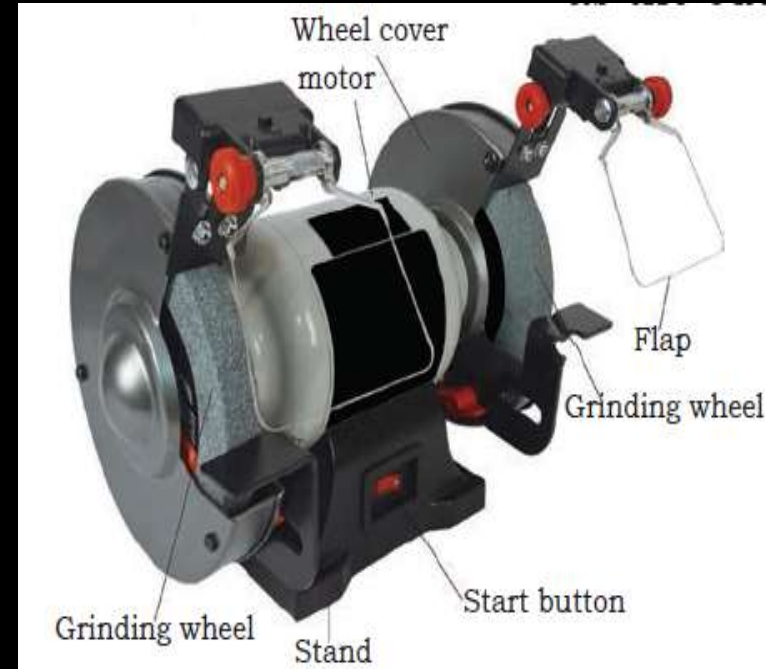
1. Place guards on the saw correctly.
2. Keep both hands on the saw's two handles.
3. Wear safety goggles and ear protection before starting the sawing.
4. Position your body to the left or right side of the blade to avoid being kicked back.
5. Going under the material when sawing is on, must be strictly prohibited.
6. Use the recommended blade for cutting the material.
7. Check for a jammed saw; do not use such a saw.
8. Remove the plug or battery while changing blades.
9. Check the blades regularly and keep in working condition.
10. Keep perfect footing for balance.



11. Use clamps and vices for holding the material to be cut, at all times.
12. Adjust the saw for actual depth.
13. Cut slowly and carefully, the green, treated or wet material.
14. Wear a respirator (mask) to avoid dust, when cutting treated wood, concrete, tile, or stone.
15. Cut the treated lumber in an open and well-ventilated area.
16. Do not exert more load against your body while you are working.
17. Never hold wood with your hand while working.
18. Turn off electricity at the place of work or the building.
19. Take special care while cutting below the intended board.
20. Always follow safety instructions given in the operator's handbook.

## Plumbing grinder

- A grinder consists of an abrasive wheel which works as the cutting tool. The grinder abrasive stone on the wheel's surface cuts a small chip from the work piece via deformation.
- A grinder helps in grinding upto the order of 0.000025 mm.



# Summary

- In this unit, we have learnt about different types of power tool used during plumbing work, like multi tool, impact driver, plumbing grinder, and also learnt what precaution should be taken during handling of saw and power tools.

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