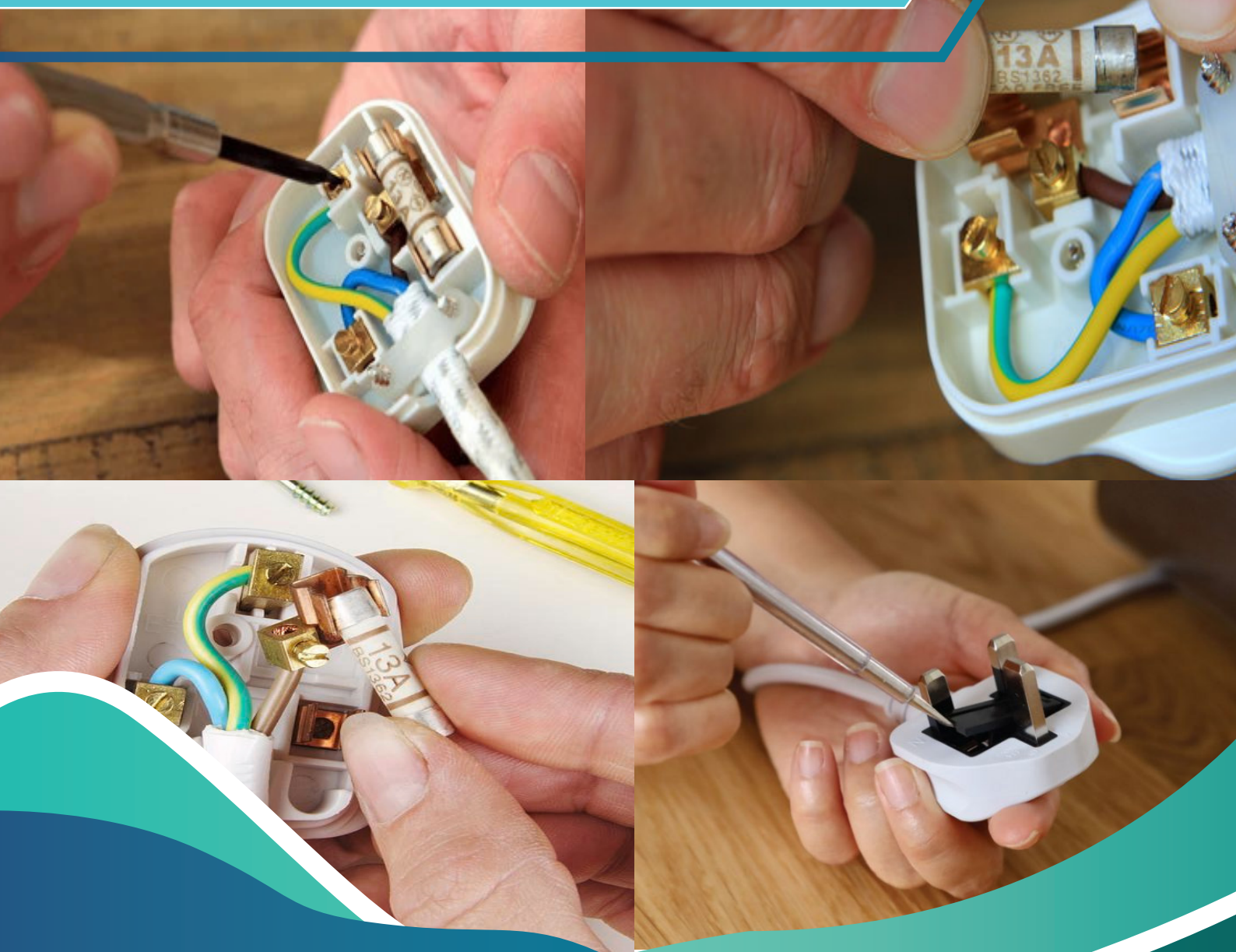


DOMESTIC APPLIANCE MAINTENANCE

Lesson 5: Teacher's guide

Fuse in plug



A. Safe Use of Fuses in Plugs



B. Competencies

Main competency: Safely handle simple tools, electrical components, and potentially hazardous materials.

Sub competencies:

1. Demonstrate proper handling of basic tools (e.g., screwdrivers, pliers).
2. Identify risks associated with overloading sockets or using damaged appliances.
3. Use tools safely to inspect and repair simple faults (e.g., replacing a fuse, tightening loose wires).
4. Follow a logical troubleshooting process (e.g., checking power supply, inspecting connections).
5. Select appropriate tools for the task (e.g., screwdriver for screws, pliers for wires).

C. Learning outcomes

By the end of this lesson students should be able to show an understanding of:

1. how fuses operate as a safety device in plugs
2. the electrical symbol of a fuse
3. the different types of fuses and their ratings

4. what happens when a fuse blows out
5. how to replace a fuse safely.

D. Resources and materials

For demonstration by the teacher:

- a 3-pins electrical plug UK type
- replacement cartridge type fuses (3A, 5A, and 13A) with visible markings
- neon tester or screwdriver (insulated)
- glass fuse
- a blown-out fuse as an example

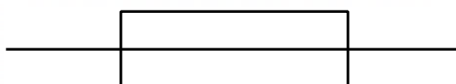
For hands-on activity by the students:

- a 3-pins electrical plug UK type
- replacement cartridge type fuses (3A, 5A and 13A) with visible markings
- neon tester or screwdriver (insulated)

E. Implementation guidelines

Introduction

1. Begin with a brief discussion about electrical safety.
 - Ask students: “What do you think happens if too much electricity flows through your devices?”
 - Guide them toward understanding that too much current can cause overheating, fires, or damage to appliances.
 - Explain: “Today we’ll learn about a small but important safety device called a fuse.”
2. Show students the circuit symbol of a fuse.



Part 1: What Is a Fuse?

1. Explain the Purpose of a Fuse:

Explain: that a fuse is a safety device designed to protect electrical appliances by breaking the circuit if too much current flows.

2. Types of Fuses

Introduce: the two different types of fuses used in plugs — glass fuses and ceramic fuses. Emphasise that both fuses work the same way.

	
glass fuse	ceramic fuse

Demonstration: show a physical fuse and explain its structure (thin wire, inside a glass or ceramic casing, with metal caps at each end). Show examples of both types of fuses

3. Fuse Ratings

Explanation: fuses come in different ratings, like 3 A, 5 A, and 13 A. The number indicates the maximum current it can safely handle before 'blowing'.

Demonstration: show each type of fuse and point out the rating written on it.



Ask the following question:

According to you why do we have fuses of different ratings?

Part 2: Blown-Out Fuse

1. When does a fuse blow out?

Demonstration: show a blown-out fuse and compare it to a working one. Highlight the melted wire inside the blown fuse.

Explanation: if too much current flows, the thin wire inside the fuse melts, breaking the circuit. This stops electricity from flowing and prevents damage to the appliance.



2. Why is it important for the fuse to blow out?

Inform the students that if the fuse does not blow, the appliance could overheat, catch fire, or be damaged.

Activity 1: Demonstration of how to replace a fuse

This activity is to be done as a demonstration by the teacher.

Follow the instructions:

1. Show the students a 3 pin plug (with a blown fuse).
2. Unscrew the plug cover using an insulated screwdriver.



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3. Show the students how to remove the blown fuse carefully.



4. Replace the blown fuse with a new fuse of the correct rating.
5. Screw the plug cover back on securely.



Activity 2: Replacing a fuse in a 3-pins plug

Students complete the hands-on activity under the guidance of the teacher.

Instructions:

1. Divide students in small groups and provide each group with a 3-pins plug (fitted with a blown fuse), a replacement fuse (good one) and a screwdriver.
2. Explain the task clearly. To replace the blown fuse in the plug with a functional fuse.
3. Monitor and guide students to complete the task.
4. After the successful completion of the task, a continuity test can be done (by the teacher as a demonstration/assessment) to check if the new fuse is operating as intended.

Conclusion:

Recap the following key points.

- A fuse is thin piece of wire that is designed to protect an appliance from large/excess current.

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- A fuse blows if the current flowing through it exceeds its rated value.
 - To safely replace a fuse, several steps must be followed.

Safety Reminder: Stress that an adult or electrician's help must **always** be sought when the student is unsure about handling plugs or fuses.

F. Assessment(in worksheet)

G. Extension activity

1. Introduce the concept of circuit breakers and how they differ from fuses.
2. Use a multimeter to perform a continuity test across a working and a blown fuse.